COMPARISON OF OBJECTIVE STRUCTURED CLINICAL EXAMINATION WITH TRADITIONAL PRACTICAL EXAMINATION IN ASSESSMENT OF NURSING STUDENTS' CLINICAL COMPETENCIES IN SOUTHWESTERN NIGERIA

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ABSTRACT

Clinical examination is crucial to assess competencies of nursing students in the delivery of quality nursing care. Globally, Traditional Practical Examination (TPE) and Objective Structured Clinical Examination (OSCE) are the methods of clinical assessments in Nursing. The Nursing and Midwifery Council of Nigeria (NMCN) had always used TPE for clinical examinations. The NMCN adopted OSCE for midwifery two decades ago while the examination in general nursing remains TPE. There is dearth of information on the effectiveness of OSCE and TPE in assessing students in general nursing. The goal of this study was to compare the effectiveness of OSCE and TPE in the assessment of clinical competencies of nursing students in Southwestern Nigeria.

The study utilised quasi-experimental design among nursing students. Using a ballot system, two out of the sixteen hospital-based and two out of the five university-based nursing programmes were selected. The four schools participated in OSCE and TPE. The two programmes have similar curricula for nursing clinical procedures. Out of the 186 nursing students selected, 100 were second year hospital-based (51 students in Wesley Guild School of Nursing, Ilesa and 49 students in School of Nursing, Akure) while 86 were 300 level university-based (36 students in the Department of Nursing, University of Ibadan and 50 students in the Department of Nursing, Ladoke Akintola University of Technology, Osogbo). Data were obtained using adapted and validated instruments: Traditional Practical Examination Instrument (TPEI), Objective Structured Clinical Examination Instruments ($OSCEI_s$) and Students' Demographic and Perception Questionnaires (SDPQ). Pre-test was administered to the students to obtain the baseline data after which clinical teaching of selected nursing procedures were taught to all students for four weeks. The TPE (post-test I) was conducted at fifth week while OSCE (post-test II) was conducted at sixth week. The means of the performance scores in OSCE and TPE were computed while competency data were obtained by grouping performance scores into two levels of competencies: fairly competent (50.0%-59.9%) and very competent (60.0% and above). The SDPQ was used to collect data on students' preference and perception of the two examination formats. Data were analysed using descriptive statistics, Students t-test, Chi-square test and ANOVA at $\alpha_{0.05}$.

Age of respondents was 21.5±3.8 years. At baseline, the mean of students' performance score was 53.3±3.7. There was a significant difference between the mean scores obtained at baseline and the two practical examination formats: pre-test 53.3±3.7, OSCE(post-test II) 64.6±5.2, TPE (post-test I) 59.3±2.9. More respondents were very competent in OSCE (80.1%) compared to TPE (45.7%). Perception of Objective Structured Clinical Examination and Traditional Practical Examination revealed: consumed less time (53.0% versus 48.0%); more objective (52.1% versus 47.9%); assessed wider range of learned materials (54.4% versus 45.6%); less destabilizing during practical sessions (53.5% versus 46.5%) less stressful (56.1% versus 44.0%). Lastly, 56.8% of respondents preferred OSCE while 43.2% preferred TPE.

Objective Structured Clinical Examination was more effective in assessing competency of nursing students.

Keywords: Practical examination formats, clinical examinations, Clinical teaching, Nursing students' performance, Nursing students' perception

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Certification

I certify that this thesis was carried out by Mary Idowu Edward in the Department of Nursing, Faculty of Clinical Sciences, University of Ibadan.

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DEDICATION

This study is dedicated to the Almighty God with profound gratitude whose hands were obvious in all that I accomplish during this program.

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ABBREVIATIONS/GLOSSARY

OSCE	Objective Structured Clinical Examination
OSCEI	Objective Structured Clinical Examination Instrument
OSPE	Objective Structured Practical Examination
TPE	Traditional Practical Examination
TPEI	Traditional practical Examination Instrument
U.I.	University of Ibadan
LAUTECH	Ladoke Akintola University of Technology
S.O.N./SON	School of Nursing
SON AK.	School of Nursing, Akure
DEPT. U.I.	Department of Nursing University of Ibadan
DEPT. LAUTECH	Department of Nursing University, Ladoke Akintola University of Technology
OAUTHC	Obafemi Awolowo University Teaching Hospital Complex (Wesley Guild, Ilesa)
N&MCN	Nursing and Midwifery Council of Nigeria

CHAPTER ONE

INTRODUCTION

This chapter provides general background to the study. It describes research problem, objectives, significance of the study, delimitation of the study and operational definition of terms.

1.1 Background to the Study

Clinical evaluation in nursing education is an important activity. Evaluation of the clinical performance of nursing students has been a challenge for nurse educators for many years. Evaluations of students' performance in institutions of learning have been carried out for ages. Methods of evaluation have become more sophisticated, particularly with the development and implementation of innovative educational curricula. There are no universally agreed techniques and methodologies for assessment of variety of domains learned in nursing education (Ngatia & Mutema, 2006). Watson (2004) reported that assessment of clinical practice has long been recognised as problematic, making clinical evaluation in nursing education an activity that needs attention.

Assessment of clinical performance provides data from which to judge the extent to which students have acquired specified learning outcome. Assessment of clinical performance must be done in a way to clearly show whether students can think critically within the clinical setting, interact appropriately with patients, prioritize problems, and have basic knowledge of clinical procedures and complete care-procedures correctly (Basavantanppa, 2009).

It is well documented in literature that diplomate nurses have deficits in some practical skills when newly qualified, it was such concerns that prompted the investigative study culminating in the publication of 'Fitness for Practice', a documented report by United Kingdom Central Council for Nursing, Midwifery and Health Visiting (now Nursing and Midwifery Council) U.K.C.C.(UKCC, 1999). Time, effort and resources have been

invested in implementing the recommendations of this report in order to ensure that qualifying students are indeed 'fit for practice' (Duffy, 2003). Determining fitness for practice involves nursing students fulfilling theoretical, clinical and professional criteria as laid down by the Nursing & Midwifery Council (NMC) in United Kingdom (UK) and interpreted by each individual educational institution providing pre-registration education.

Traditional Practical Examination (TPE) and Objective Structured Clinical Examination (OSCE) are two formats of assessing clinical competence during practical examinations approved by Nursing and Midwifery Council of Nigeria. The oral practical method of assessment is a highly favoured method of clinical evaluation especially for General Nursing and Psychiatric Nursing Examinations (Osaji, Opiah & Onasoga, 2015) while Objective Structured Clinical Examination is the format of practical examination approved for midwifery program in Nigeria.

Traditional Practical Examination (TPE) has been in use for centuries, and has been the predominant method and perhaps the only formats used to assess clinical skills. The traditional practical examination is used for its flexibility and its potential for testing higher order cognitive and psychomotor skills. The face-to-face interaction between the student and the examiner provides a unique opportunity to test interactive skills, which cannot be assessed in any other way. Studies have shown that the majority of questions in practical examinations require little more than recall of isolated fragments of information (Patel, Kubavat, & Piparva, 2013; Newbel & Cannon, 2004). The traditional method gives the examiner freedom to vary the questions from one student to another.

The use of Objective Structured Clinical Examination (OSCE) as a tool for formative and summative clinical evaluation in nursing has a relatively short history. This assessment method was first developed in 1979 in Dundee, Scotland by Harden and Gleeson, where it was used to assess the clinical performance of medical students. Since then, OSCE has been adopted as an assessment tool for evaluating the clinical performances of both undergraduate and graduate medical students. In Nigeria, the method is only being used in Midwifery examinations; as it was first introduced in the 1990s (Osaji, Opiah &

Onasoga, 2015). However, only a small volume of this effort has been reported in the nursing literature.

In developing countries and with emphasis to professional disciplines there is shortage of assessment experts to guide the formulation of valid and reliable assessment methods. There are no universally agreed techniques and methodologies for assessment of variety of domains learned in nursing education programme (Ngatia & Mutema, 2006). Many problems have been identified in the use of both traditional practical examination and Objective structured Clinical examination methods for assessing clinical competence. The traditional method of clinical assessment and the subjectivity of the common measures in rating students' progressive performance have often been questioned (Thomas, Filomena, Annie, Teresa, Marian and Sarah, 2007).

Practical examination in clinical settings is one of the ways by which nursing students are assessed. The purposes of clinical evaluation according to Basavantanppa (2009) are to:

- assess quality and standard of clinical performance of students.
- determine good or poor performance and or skill acquisition ability of the students.
- determine whether there is gap or not between theory and practice (procedures) learnt in the school and clinical areas.
- identify need for further training, supervision and or guidance.
- provide basis for making judgment.
- determine suitability of nursing students' movement from one level to higher level of training and/or graduation.

Objectivity in practical examination of nursing students cannot be compromised due to its importance in decision making. Nursing training institutions cannot afford to hold with levity, issues relating to the objective assessment of students through practical examination. The instruments, for practical evaluation must imbibe the following principles:

- objectivity
- reliability

- validity
- acceptability
- feasibility (Basavantanppa, 2009).

Objectivity of the instrument should be based on facts and observed behaviours while reliability of the instrument should be consistent and stable. For example, there should be agreement in the scores of performance of students when subjected to at least two assessors. Validity of the instrument on the other hands should measure what it is intended to measure while acceptability means that the instruments should be acceptable not only to clinical instructors or practical assessors but also to students whose performance are being evaluated and feasibility of the instruments means that it should be realistic, practical and not too time consuming or too costly.

Nurse educators have sought ways to ensure objectivity, fairness, reliability and validity of clinical competence assessment because the traditional clinical competence assessment methods have low reliability and validity (Hijazi & Downing, 2008). The method adopted for the general nursing examination gives room for subjectivity that may have detrimental impact on the student, consumers of nursing care and the nursing profession. There is therefore a need to ensure objectivity in assessment of nursing students' clinical competency during general nursing practical examinations.

1.2 Statement of the Problem

The purpose of practical examination is to ensure that nursing students are assessed without sentiment or bias with the understanding that they can rise up to challenges of clinical practice. Assessment of clinical competence of nursing students has been a challenge to nurse educators. Many problems have been identified in the use of both traditional practical examination and Objective structured Clinical examination methods for assessing clinical competence.

Traditional practical examination assessment scoring sheets have been discovered over time to have some deficiencies in terms of reliability, validity and objectivity. Marks awarded by different examiners to candidates indicate low reliability between the ratings because there are no standardized checklists for rating students. Agreement between examiners is often poor (Thomas et al., 2007). This examination has been unreliable

because two examiners may not get the same scores for the same candidate under the same circumstances. This is because questions are not structured along a clearly defined pattern

It is difficult to establish in any formal way how valid an oral practical examination is (Duffy, 2003). The problem that may readily arise from assessors' inability to determine and assign the correct scores to the students during clinical examination is that clinical competency will be difficult to determine. There is possibility of the examiners being stringent, that is examiners may be too strict. At times examiners may be bias either negatively or positively. Patients carried out procedures on by the students are not the same. Some may be co-operative while some may be difficult. At most times, the prevailing situation determines what case or procedures are to be given to the students. Also, patients are exposed to be cared for by unskilled students under examination condition with attendant's risks, delays, fretfulness and uncertainty of care rendered coupled with the fact that the examiner may not want to correct the students. This invariably has led to turning clinical examination to clinical teaching as the examiner may not want patient's life to be endangered where the procedures are being done wrongly.

On the part of the students, their scope of preparation is limited as they can guess the procedure they are to be examined based on the examination timetable. They may also be over lingering on one procedure in an attempt to avoid being given other procedures during the course of the examination. There is an inverse relationship between anxiety and performance in practical examinations (Jafarzadeh, 2009) as candidates who are less anxious perform better in the traditional practical examinations.

Objective Structured Clinical Examination (OSCE) has been used for students in other disciplines such as Midwifery, Community Health Nursing, Medicine, Pharmacy and Physiotherapy. According to El-Nemer and Kandeel (2009) implementation of OSCE is time-consuming, and requires huge effort and extensive resources. It also requires a large number of qualified personnel to observe and evaluate students during OSCE.

The immediate question arising from all of these and which stirred up interest is which of these two formats in spite of their inadequacies is best suitable to adopt for general nursing program if competent nurses are to be certified to meet the ever-changing health needs of modern world?

OSCE has limited literature on its use for basic/generic nursing programme in Nigeria *vis a vis* its comparison with the Traditional Practical Examination (TPE). This study therefore compared the Objective Structured Clinical Examination (OSCE) and Traditional Practical Examination (TPE) in assessing nursing students' clinical competencies in selected Schools of Nursing in Southwestern Nigeria.

1.3 Objective of the Study

General Objective:

The broad objective of the study is to compare Objective Structured Clinical Examination (OSCE) and Traditional Practical Examination (TPE) in assessing nursing students' clinical competencies in Southwestern Nigeria in order to identify the most effective of the two formats.

Specific Objectives

The specific objectives of the study were to:

1. Compare the nursing students' performance scores in Pretest with TPE (posttest I) in the selected Schools and Departments of Nursing in the study settings.
2. Compare the nursing students' performance scores in Pretest with OSCE (Posttest II) in the selected Schools and Departments of Nursing in the study settings
3. Compare the nursing students' performance scores in OSCE (Posttest II) and TPE (posttest I) in the selected Schools and Departments of Nursing in the study settings.
4. Compare the ability of OSCE and TPE in testing clinical competencies of nursing students.
5. Assess nurse educators' knowledge on OSCE before and after training
6. Assess the perception of nursing students towards the use of OSCE and TPE
7. Assess the preference of nursing students / for the use of OSCE and TPE.
8. Assess the perception of nurse educators towards the use of OSCE and TPE.

1.4 Research Questions

In order to achieve the objectives of this study the following questions were asked:

1. What is the difference between the nursing students' performance scores in Pretest and TPE (posttest I) in the selected Schools?
2. What is the difference between the nursing students' performance scores in Pretest and OSCE (posttest II) in the selected Schools?
3. What is the difference between nursing students' performance scores obtained from OSCE (posttest II) and TPE (posttest I)?
4. What is the difference in the ability of OSCE and TPE in testing nursing students' clinical competencies?
5. What is the difference in the knowledge of nurse educators on OSCE before and after the training?
6. What is the perception of nursing students towards the use of OSCE and TPE methods for assessing them during practical examination?
7. Which of the two methods of practical examination did nursing students prefer?
8. What is the perception of nurse educators towards the use of OSCE and TPE methods for assessing nursing students during practical examination?

1.5 Significance of the Study

The assessment of clinical competencies in nursing has been posing challenges for nurse educators. Through the review of literature, OSCE and TPE have been identified to have deficiencies and limited literature with regards to nursing in Nigeria. It is believed that the results of the study will enhance nursing education and nursing practice and also have impact on the following stakeholders in Nursing:

Nursing Students

Nursing students' clinical competencies will be better assessed with the most effective clinical examination as reflected by the results of this study. The teaching of some nursing procedures to nursing students in the study settings will enhance their understanding in those procedures and this will invariably improve their performances in all their forthcoming internal and qualifying examinations.

Nurse Educators

Evaluation of the clinical performance of nursing students which has been a challenge for nurse educators for many years will have a solution as the most effective evaluation format of assessing nursing students' clinical competencies will be discovered through the results of this study. The training on implementation of OSCE apart from enhancing educators' knowledge will provide a guideline for implementation of OSCE by Nursing and Midwifery Council and any School of Nursing that want to adopt OSCE for clinical examination in Nigeria.

Nursing Education

The study will provide comparative data between OSCE and the TPE formats of assessing nursing students' clinical competencies. The results will provide an informed decision on the best format of clinical examination for nursing students in Nigeria. Also the study will contribute to the available literature on OSCE and TPE as formats for evaluating clinical competencies in nursing programmes in Nigeria.

Nursing Practice

Nurses form an important link in the health care delivery system all over the world and so the formats and mode of the training and assessment is very crucial. The results of this study will furnish information on the best format for assessing clinical competencies. This will enhance certification of the competent nurses who will invariably deliver quality nursing care to the public.

Nursing and Midwifery Council of Nigeria

Nursing and Midwifery Council of Nigeria and other stakeholders can make informed decisions on the use of most effective formats of clinical assessment of nursing students based on the outcome of the study.

1.6 Delimitation

The scope of the study is delimited to two basic schools and two departments of nursing in Southwestern Nigeria.

1.7 Operational Definition of Terms

Effectiveness – This is the evaluation of differences between OSCE and TPE in terms of performance scores obtained from the two examinations, perception of nursing students and nurse educators in terms of objectivity, time consumption and assessment of learned materials of OSCE and TPE.

Clinical Competency – These are various nursing procedures carried out by nursing students during OSCE and TPE. These are assessed, scored and evaluated. The scores were grouped into 2 levels of clinical competencies viz*:* fairly competent (50.0%-59.9%) and very competent (60.0% and above).

Nurse educators – These are tutors/preceptors/lecturers who volunteered to participate in the study. They were trained and participated in the assessment of nursing students during both OSCE and TPE. They served as research assistants

Objective Structured Clinical Examination (OSCE): It is the experimental (posttest II) **exa**mination in this study. The examination used OSCEIs which are various checklists designed for this examination in this study.

Objective Structured Clinical Examination Instruments (OSCEI) - These are the instruments which researcher designed and used in this research for assessing nursing students' performance in OSCE in the selected schools of nursing in Southwestern Nigeria.

Pretest – This is the instrument designed to test nursing students' knowledge on clinical teaching prepared on selected clinical competencies/nursing procedures, TPE and OSCE before training.

Students – These are nursing students in training selected from two Schools of Nursing and two Departments of Nursing in Southwestern Nigeria.

Traditional Practical Examination (TPE): It is the present format of examination by which nursing students are examined during practical examination. This approach makes use of two examiners. It is used in this study as control or Posttest I examination in this study.

Nursing Training Institutions – These are two Hospital-Based Schools of Nursing and two University-Based Departments of Nursing selected for the study in Southwestern Nigeria.

CHAPTER TWO

LITERATURE REVIEW

The literature review presents the relevant literature on this study, relevant empirical reviews and the theoretical framework for the study The literature review is discussed under the following outlines:

Introduction

Assessment

- Principles of Assessment
- Selection of Assessment/Evaluation Tools
- Types of evaluation
- Formats and strategies of assessment
- Who can assess?

Clinical Performance Evaluation

Evaluation Standards

Psychomotor Skills

Evaluation of Clinical Competency

Classification of Competencies

Modifications of OSCE

Traditional Practical Examination (TPE)

Objective Structured Clinical Examination (OSCE).

Historical development of examinations using simulation/OSCE

History of OSCE usage in advanced nursing

OSCE Process

Empirical Studies on Objective Structured Clinical and Traditional Practical Examination (OSCE and TPE)

Theoretical Framework

2.1 Introduction

The assessment of nursing students' clinical skills performance continues to pose a challenge for nurse educators. Evaluations of students' performance in institutions of learning have been carried out for ages. Methods of evaluation have become more sophisticated, particularly with the development and implementation of innovative educational curricula (Ngatia & Mutema, 2006). In developing countries, there is shortage of assessment experts to guide the formulation of valid

and reliable assessment method. There are no universally agreed techniques and methodologies for assessment of variety of domains learned in nursing education programme (Ngatia & Mutema, 2006).

Oral practical examinations guide used presently has been criticised as having some deficiencies in terms of reliability. Marks awarded to candidates by different examiners indicate low reliability between the ratings of student for different procedures. Agreement between examiners is often poor and there is variation in questions asked from candidate to candidate. Objective Structured Clinical Examination (OSCE) is widely used in Medicine as a major instrument of evaluation for medical students and this is evident in OSCE abounding more in medical literature. The use of OSCE may also be a powerful tool in the evaluation of clinical competence, facilitate learning and bridge the theory practice gap in nursing. (Ross, Carroll, Knight, Chamberlain, Fothergill-Bourbonnais and Linton, 2008).

Objective Structured Clinical Assessment (OSCA) is suggested to be an effective way of assessing student comprehensive nursing performance (Bujack, McMillan, Dwyer and Hazeton, 1991). Although the Objective Structured Clinical Examination (OSCE) appears to be promising method for evaluating competence in the performance of clinical skills, there are few studies in the nursing literature examining the use of the OSCE as a method for evaluating the performance of clinical skills by nurses.

2.2.1. Assessment

Generally, the assessment of student learning is the process of evaluating the extent to which participants in education have developed their knowledge, understanding and

abilities (Harvey, 2004). Assessment plays a significant role in the learning experience of students. It determines their progression through their programmes and enables them to demonstrate that they have achieved the intended learning outcomes. It is assessment that provides the main basis for public recognition of achievement, through the awarding of qualifications and/or credit.

Wojtczak (2002) defines assessment of students in the context of medical education as a system of evaluation of professional accomplishments using defined criteria and usually including an attempt at measurement either by grading on a rough scale or by assigning numerical value. The purpose of assessment in an educational context is to make a judgment about the level of skills or knowledge, to measure improvement over time, to evaluate strengths and weaknesses, to rank students for selection or exclusion, or to motivate. Assessment should be as objective and reproducible as possible.

Assessment is usually construed as being diagnostic, formative or summative. Any assessment instrument can, and often does, involve more than one of these elements. For example, coursework is formative in that it provides an opportunity for students to be given feedback on their level of attainment, it also often counts towards the credit points being accumulated for a summative statement of achievement. An end-of-module or end-of-programme examination is designed primarily to result in a summative judgement on the level of attainment the student has reached. Both formative and summative assessment can have a diagnostic function. Assessment primarily aimed at diagnosis is intrinsically formative, though it might, rarely, contribute towards a summative judgement (Harvey, 2004)

Assessment is a critical element of the mentoring process. In a study about 'failure to fail', Duffy (2004) stated that mentors must ensure that assessment of clinical skills does occur as required. Passing a student who fails to meet required assessment standards, in the hope that they will improve, puts patients at risk.

It is essential that educator:

✦ provide opportunities for learning and assessment
✦ support students to self-assess and reflect on their learning
✦ ensure that assessment of a student is valid and reliable, and that performance can be demonstrated consistently.

Assessment of clinical performance provides data from which to judge the extent to which students have acquired specified learning outcome. Assessment of clinical performance must be done in a way to clearly show whether students can think critically within the clinical setting, interact appropriately with patients, prioritize problems, and have basic knowledge of clinical procedures and complete care-procedures correctly (Basavantanppa, 2009).

2.2.2 Principles of Assessment

When designing assessments/evaluation instruments the following principles should be considered:

- Validity
- Reliability
- Transparency
- Relevance
- Manageable
- Practicable
- Range of assessment
- Assessment criteria

Validity

Validity ensures that assessment tasks and the assessment criteria effectively measure the student's attainment of the intended learning outcomes at an appropriate level. Validity of assessment ensures that a test measures what it was designed to measure (Stuart, 2007). Two key issues are important: how and what we measure. This means nurse educators should use appropriate methods, depending upon what is being assessed. For example, assessors would not assess performance of bed bathing by verbal question alone rather they would need to observe the skill being performed. However, using both methods to test theory and practice of technique capability will enhance validity. Assessors will have to be cleared about what is to be assessed bearing in mind that the focus of measurement must be that of "the ability to actually care for patients" (Royal College of Nursing, 2009).

Reliability

An assessment is said to be reliable if it gives similar results when used on separate occasions, and with different assessors. Stuart (2007) identifies three key issues:

- Consistency of student performance – how consistent is the student's performance across different care giving situations?
- Consistency of interpretation – would I interpret the student's performance of a particular skill in the same way if I see it again?
- Consistency between assessors – would other assessors agree with my interpretations of the student performance?

Total reliability of a particular assessment would mean that different assessors using the same assessment criteria and marking scheme would arrive at the same results. This may be the case in some quantitative assessments. Complete objectivity is otherwise hard to achieve. With summative assessment it is, however, necessary that we aim for the goal of complete objectivity. This means that there is need to be explicit intended learning outcomes and assessment criteria. Students should have access to them when the assessment task is set. Where there are multiple markers they should be discussed. In an ideal world, they should be 'tested' on a sample of cases to ensure that all markers are applying the criteria consistently. Moderation and/or double marking are means of ensuring consistency between markers and internal consistency for an individual marker.

Transparency

It is important that all those involved in an assessment – students, tutors, external examiners – receive clear, accurate, consistent and timely information on the assessment tasks and procedures. Are they aware of the purpose of the assessment; the associated assessment criteria; and the assessment regulations? Do students receive detailed briefs on the task(s)?

Relevance

Clinical performance evaluation should be about assessing both knowledge and skills. When devising assessment tasks, it is important that it addresses the skills you want the student to develop.

Manageability

The scheduling of assignments and the amount of assessed work required should provide a reliable and valid profile of achievement without overloading staff or students.

Practicability

Can the task(s) be done in the time available? Can the task(s) be achieved within existing constraints such as student numbers, accommodation facilities etc? Are the tasks achievable by the students at their level of study? It is important that the overall workload is examined from the point of view of both staff and students? Are students over assessed? Is it necessary for each intended learning outcome to be assessed separately?

Range of assessment methods

Are students exposed to a range of assessment methods across their program? Do they have opportunities to practice a new assessment method before a summative assessment?

Assessment criteria

It is important that students are aware of the criteria against which their work will be judged. This is part of transparency. Are students able to use the criteria to judge their own work? Are they involved in the formulation of assessment criteria? (Queen's University Belfast, 2013).

2.2.3 Selection of Assessment/Evaluation Tools

Wojtczak (2002) opined that the first step in making choices of measurement instruments is to determine the purpose and desired content of evaluation, as it is important to choose the measurement methods that are congruent with the evaluation questions. The choice of measurement methods and construction of measurement instruments is a crucial step in the evaluation process because it determines the data that will be collected. If the assessment methods are inappropriate, or if there is imbalance between theoretical knowledge assessment and clinical assessment, unfortunate learning consequences for students and curriculum may occur. Equally of importance, if the

assessments are of low quality, improper decisions could be made which might be detrimental to the future of a student or to the welfare of the community.

Most evaluations will require the construction of specific measurement instruments such as tests, rating forms, interview schedules, or questionnaires. The methodological rigor with which the instruments are constructed and administered affects the reliability, validity, and cost of the evaluation. It is also necessary to choose measurement methods that are feasible in terms of technical possibilities and of available resources. With the emergence of complex performance assessment methods in general, there is a need to re-examine the existing methods to determine standards of performance, which separate the competent from the non-competent candidate. Setting standards for performance assessment is a relatively new area of study and consequently, there are various standard setting approaches currently available for both written and clinical performance tests.

In designing assessment tests, it is necessary to incorporate performance criteria designed to provide evidence that students have successfully completed the task, to demonstrate acquired competencies by responding correctly to the task criteria, and to achieve maximum scoring points. In reality, however, candidates may demonstrate a variety of performance profiles that range from non-competent, to minimally competent, to fully competent. Planners and users of evaluations should be aware of various rating biases, which can affect both an instrument's reliability and validity. A more careful specification of content, a proper number of activities performed and observed, and use of structured and standardized approaches such as checklists and rating forms for marking, improves the quality of clinical assessment.

2.2.4 Types of Evaluation

The following are two major forms of evaluation.

Formative Evaluation

A formative evaluation is a method of judging the worth of a program while the program activities are forming (in progress). This part of the evaluation focuses on the process. They permit the designers, learners, and instructors to monitor how well the instructional goals and objectives are being met. Its main purpose is to catch deficiencies so that the

proper learning interventions can take place that allows the learners to master the required skills and knowledge.

In other word, formative evaluation is conducted while the event to be evaluated is occurring and focuses on identifying progress towards purposes objectives or outcome to improve the activities, course, curriculum, program, or teaching and student learning (Billings and Halstead, 2009).

Formative evaluation is also useful in analyzing learning materials, student learning and achievements, and teacher effectiveness. Formative evaluation is primarily a building process which accumulates a series of components of new materials, skills, and problems into an ultimate meaningful whole.

Summative Evaluation

A summative evaluation (sometimes referred to as external) is a method of judging the worth of a program at the end of the program activities (summation). The focus is on the whole event and emphasizes what is or was and the extent to which objectives and outcomes were met for the purpose of accountability, resource allocation, assignment of grades (students) and certification (Billings and Halstead, 2009).

Other types include:

- **Norm-referenced assessment** – Measures a student's achievements compared to other students. There will normally be a base line set by students that is thought to be the average achievement. Other students are assessed against this average to determine if they are above or below in attainment.
- **Criterion-referenced assessment**– Assessed against a pre-determined set of criteria the students must achieve.
- **Diagnostic assessment** – Designed to identify particular strengths, weaknesses and problems in a student's learning in order to support their development (Watson, 2011).

All assessments must be recorded appropriately in the student's practice documentation. If there is a need to be critical of a student' performance, be objective and give suggestions on how they can improve. Ensure that the student has a full understanding of what the problem is, and ensure that the student is being informed of any failure to perform immediately you become aware of such situation. Faculty Development ... "To

Go!(2010) identified top ten tips for Assessing Student Performance which are as follows

- Clearly communicate your expectations in multiple venues well ahead of the due dates for exams and assignments.
- Provide clear rubrics that illustrate how the work will be assessed. Provide examples of excellent, mediocre and unsatisfactory work, so standards are clear.
- Assess often, even if such "dip-sticking" is merely for preview or review; this helps monitor student understanding and informs the instructor's course design and pacing.
- Assess the process and not only the product. Certain skills related to research, media projects writing, and scientific research are often overlooked in the assessment process as faculty focus on the final product. Assessing the process or benchmarks along the way to the final product also helps monitor the authenticity of student work.
- Build into the course opportunities for students to assess their work and to experience the complexities of establishing standards and criteria for evaluations, and to appreciate the differences between outstanding, average and unsatisfactory work.
- Use language in assessments that is specific and directed to precise elements of the student's work. Be clear, for example, about what in particular distinguishes unsatisfactory or poor performance from average or mediocre, or from outstanding or excellent work. Letter grades can easily correspond to alternative rubrics that describe in a narrative the grades' defining characteristics.
- Assert clear expectations regarding the authenticity of student work, be clear about what distinguishes collaborative efforts and what is cheating; offer examples of each. Guide students to resources that will help them compose proper citations.
- Provide options for student expression of their knowledge and skills. Consider the purpose of the assessment and what is the targeted knowledge or skill: would the student express things more effectively in a lab or with open notes? Is the point of the assessment to evaluate their writing skills or the ability to represent abstract ideas in any way possible?

- Emphasize the importance of readings and preparations for lessons by administering small quizzes or queries at the onset of class, and highlight the relevance of that reading or preparation throughout the lesson.
- As part of a class discussion, ask students to develop their own test questions, or projects based on a specific unit of study. Engage them in conversation about what might make an appropriate instrument to measure what they want to measure, and what might be inadequate. Such conversations may help students distinguish between various types of competencies.

2.2.5 Formats and Strategies of Clinical Assessment

Clinical Assessment Formats in Nursing Institutions in Nigeria

The following are clinical evaluation formats used currently in Nigeria.

- Traditional Practical Examination(TPE) also known as Oral/practical examinations used by Schools of Nursing and Psychiatry Nursing
- Objective Structured, Clinical Examination (OSCE) used in Midwifery practice.

Oral/practical format of examination

The oral practical format of assessment is a highly favoured format of clinical evaluation especially for General Nursing and Psychiatric Nursing Examinations in Nigeria. This format of practical examination has the following strategies:

- A few examiners are involved.
- A number of students are examined in different clinical areas of practice.
- Common checklist is used
- Question asked usually are not consistent
- Each student is examined for a period of 1 hour going through two examiners, that is, 30mins per examiner per student.
- During the period with each examiner, the student carries out a procedure or more as deemed fit at the spore of the moment by the examiner.
- Used to assess clinical skills.
- The traditional method gives the examiner freedom to vary the question from one student to another.

Objective Structure Clinical Examination (OSCE)

Found to be quite appropriate in final qualifying examination and also in giving feedback to students and teachers during course assessment (Ngatia & Mutema, 2006). It is used in Midwifery clinical examination in Nigeria. OSCE uses a simulated and standardized format to measure synthesis of knowledge and clinical skills.
OSCE assesses students' clinical competence. It has the following strategies:

- Examiners plan carefully the areas to be examined.
- The clinical competencies are broken down into various components for example taking history, giving a health talk, checking vital signs e.t.c. and making conclusions on the basis of their findings
- Each component is assessed in turn and the objective of each of the stations in the examination is taking into consideration.
- The students normally rotate a number of stations and they spend a specified time at each station. On a signal, by the ring of a bell, the students move on to the next station.
- The time allowed is the same for all the stations and the stations must be designed with this in mind. About 5mins is an appropriate time for each station.
- A further 30 seconds should be allowed for students to move from
- one station to another.
- At a procedure station, an examiner is present.
- The examiner uses a checklist to record the performance of students as they pass through the stations.
- The OSCE is potentially a more reliable method of assessment because:
    - Large sample of student's clinical abilities can be assessed
    - The examiner can specify in advance what has to be assessed
    - The use of checklist encourages a more objective assessment.
    - Each student has a number of examiners
    - All students have the same, nearly identical patients
    - Appropriate for assessing clinical skills in health professions (Ngatia & Mutema, 2006).

The NMC (2006) advises that the total assessment strategy should include assessment through direct care, simulation, Objective Structured Clinical Examinations (OSCEs) and other strategies:

- Observation – the NMC requires most assessment of competence to be undertaken through direct observation in practice
- Simulation – summative assessment, using simulation, may occur where opportunities to demonstrate competences in practice are limited (NMC, 2006).
- OSCEs
- Testimony of others
- Student self-assessment
- Written portfolio evidence
- Active participation
- Interactive reflective discussion
- Learning contracts
- Guided study
- Interviews
- Patient comments
- Peer evaluation
- Collection of data
- Case studies
- Team mentorship.

2.2.6 Who can assess?

According to NMC (2006) in the Standards written and documented to support learning and assessment in practice, the NMC states the following:

- all mentors may assess specific competencies and confirm their achievement, including those to be achieved at, or by, a progression point
- only sign-off mentors may confirm overall achievement of proficiency that demonstrates a student's fitness for practice; they determine that the student has met the relevant competencies or standards of proficiency for entry to the register

- other mentors, practice teachers, teachers or registrants from other professions may be involved in developmental (formative) assessment where the student is gaining a breadth of experience but where their learning is not intended to demonstrate competence as a nurse, midwife or specialist community public health nurse.

2.3.1 Clinical Performance Evaluation

Clinical performance evaluation is a process whereby students' psychomotor skills are judged as they relate to an established standard of patient care. Acceptable clinical performance involves behaviour, knowledge and attitude that student gradually develop as they progress from novice to competent nurses.

The ultimate outcome for quality clinical performance evaluation is safe quality patient care. Clinical performance evaluation provides information to the student about performance and provides data that may be used for individual student development, assigning grade, and making decisions about the curriculum. Student has the right to a reliable and valid evaluation that assesses achievement of competencies required (Billings and Halstead, 2009).

Clinical evaluation represents a particular application of the broader discipline of evaluation, specifically a combination of the fields of performance evaluation, that is, evaluation of student work and evaluation of students.

2.3.2 Historical Perspective of Clinical Performance

The assessment of clinical performance historically involves the direct observation of assesses by professional colleagues. This stems from traditional apprenticeship model which existed hundreds of years ago. In the last decade, rapid evolution of assessment methods used in medical education from the traditional ones towards more sophisticated evaluation strategies has been observed. Single methods were replaced by multiple methods, and paper-and-pencil tests were replaced by computerized tests. The normative pass/fail decisions moved to assessment standards, and the assessment of knowledge has been replaced by the assessment of competence. Efforts have been made to standardize subjective judgments, to develop a set of performance standards, to generate assessment

evidence from multiple sources, and to replace the search for knowledge with the search for "reflection in action" in a clinical environment (Wojtczak, 2002)

Assessment tools such as the objective structured clinical examination (OSCE), the portfolio approach, and hi-tech simulations are examples of the new measurement tools. The introduction of these new assessment methods and results obtained has had a system-wide effect on medical education and the medical profession in general nursing inclusive. Recent developments of so-called "quantified tests", standardized patient examinations, computer case simulations, and the present focus on the quality of the assessment evidence and the use of relevant research information to validate the preferred assessment approaches have been impressive, initiating the birth of ‘’Best Evidence-Based Assessment (BEBA)’’**.** However, the problem is that such performance-based assessments consume resources and require a high level of technology. They are not readily applied in developing countries or even in most developed ones, due to their high cost and logistical problems.

Patient safety health care is becoming increasingly litigious and the need to protect the patient and maintain patient safety is clearly paramount. Some educationalists feel it is more appropriate to allow the student time to learn practice and be assessed in a simulated environment prior to experience with patients in a clinical area. These educationalists acknowledge that there is a need for students to be assessed in clinical practice as well, but maintain that practice and assessment outside of the clinical area using simulation will enhance real clinical experience (Wojtczak, 2002).

2.4.1 Evaluation Standards

In the field of evaluation and in particular educational evaluation the Joint Committee on standards for educational evaluation has published three sets of standards for evaluations.

The Personnel Evaluation Standards was published in 1988

The Program Evaluation Standards (2nd edition) was published in 1994, and

The Student Evaluation Standards was published in 2013.

Each publication presents and elaborates a set of standards for use in a variety of educational settings. The standards provide guidelines for designing, implementing,

assessing and improving the identified form of evaluation. Each of the standards has been placed in one of four fundamental categories to promote educational evaluations that are proper, useful, feasible, and accurate. In these sets of standards, validity and reliability considerations are covered under the accuracy topic. For example, the student accuracy standards help ensure that student evaluations will provide sound, accurate, and credible information about student learning and performance.

2.4.2 The Student Evaluation Standards

According to Joint Committee on standards for educational evaluation (2003), the Student Evaluation Standards are given under the following subheadings:

Propriety Standards

Utility Standards

Feasibility Standards

Accuracy Standards

Propriety Standards

The propriety standards help ensure that student evaluations will be conducted legally, ethically and with due regard for the well-being of the students being evaluated and other people affected by the evaluation results.

P1 Service to Students Evaluations of students should promote sound education principles, fulfilment of institutional missions, and effective student work, so that educational needs of students are served.

P2 Appropriate Policies and Procedures - Written policies and procedures should be developed, implemented, and made available, so that evaluations are consistent, equitable, and fair.

P3 Access to Evaluation Information - Access to student's evaluation information should be provided, but limited to the student and others with established legitimate permission to view the information, so that confidentiality is maintained and privacy protected.

P4 Treatment of Students - Students should be treated with respect in all aspects of the evaluation process, so that their dignity and opportunities for educational development are enhanced.

P5 Rights of Students - Evaluations of student should be consistent with applicable laws and basic principles of fairness and human rights, so that students' rights and welfare are protected.

P6 Balanced Evaluation - Evaluations of students should provide information that identifies both strengths and weaknesses, so that strengths can be built upon and problem areas addressed.

Utility Standards

The utility standards help ensure that student evaluations are useful. Useful student evaluations are informative, timely, and influential.

U1 Constructive Orientation - Student evaluations should be constructive, so that they result in educational decisions that are in the best interest of the student.

U2 Defined Users and Uses - The users and uses of a student evaluation should be specified, so that evaluation appropriately contributes to student learning and development.

U3 Information Scope - The information collected for student evaluations should be carefully focused and sufficiently comprehensive, so that evaluation questions can be fully answered and the needs of student addressed.

U4 Evaluator Qualifications - Teachers and others who evaluate students should have the necessary knowledge and skills, so that evaluations are carried out competently and the results can be used with confidence.

U5 Explicit Values - In planning and conducting student evaluations, teachers and others who evaluate students should identify and justify the values used to judge student performance, so that the bases for the evaluations are clear and defensible.

U6 Effective Reporting - Student evaluation reports should be clear, timely, accurate, and relevant, so that they are useful to students, their parents/guardians, and other legitimate users.

U7 Follow-Up - Student evaluations should include procedures for follow-up, so that students, parents/guardians, and other legitimate users can understand the information and take appropriate follow-up actions.

Feasibility Standards

The feasibility standards help ensure that student evaluations can be implemented as planned. Feasible evaluations are practical, diplomatic, and adequately supported.

F1 Practical Orientation - Student evaluation procedures should be practical, so that they produce the needed information in efficient, no disruptive ways.

F2 Political Viability - Student evaluations should be planned and conducted with the anticipation of questions from students, their parents/guardians, and other legitimate users, so that their questions can be answered effectively and their cooperation obtained.

F3 Evaluation Support - Adequate time and resources should be provided for student evaluations, so that evaluations can be effectively planned and implemented, their results fully communicated, and appropriate follow-up activities identified.

Accuracy Standards

The accuracy standards help ensures that a student evaluation will produce sound information about a student's learning and performance. Sound information leads to valid interpretations, justifiable conclusions, and appropriate follow-up.

A1 Validity Orientation - Student evaluations should be developed and implemented, so that interpretations made about the performance of a student are valid and not open to misinterpretation.

A2 Defined Expectations for Students - The performance expectations for students should be clearly defined, so that evaluation results are defensible and meaningful.

A3 Context Analysis - Student and contextual variables that may influence performance should be identified and considered, so that a student's performance can be validly interpreted.

A4 Documented Procedures - The procedures for evaluating students, both planned and actual, should be described, so that the procedures can be explained and justified.

A5 Defensible Information - The adequacy of information gathered should be ensured, so that good decisions are possible and can be defended and justified.

A6 Reliable Information - Evaluation procedures should be chosen or developed and implemented, so that they provide reliable information for decisions about the performance of a student.

A7 Bias Identification and Management - Student evaluations should be free from bias, so that conclusions can be fair.

A8 Handling Information and Quality Control - The information collected, processed, and reported about students should be systematically reviewed, corrected as appropriate, and kept secure, so that accurate judgments can be made.

A9 Analysis of Information - Information collected for student evaluations should be systematically and accurately analyzed, so that the purposes of the evaluation are effectively achieved.

A10 Justified Conclusions - The evaluative conclusions about the student performance should be explicitly justified, so that the students, their parents/guardians, and others can have confidence in them.

A11 Meta evaluation - Student evaluation procedures should be examined periodically using these and other pertinent standards, so that mistakes are prevented or detected and promptly corrected, and sound student evaluation practices are developed over time (Joint Committee on Standards for Educational Evaluation, 2013).

2.5.1 Concept of Competence

According to Ofi (2014) competence has always been a hallmark of the profession since its inception. As the profession evolved the concern for accountability through evaluation and assurance of competence of practitioners became more apparent. Profession competence is a phenomenon that is applicable to all practicing professionals and a professional obligation to the society that is served. Competence according to Honby (2010) is ability to do something well. Competent means having enough skill or knowledge to do something well or to the necessary standard (Honby, 2010). UKCC (2002) defined it as possessing the skills and abilities required for lawful, safe and effective professional practice without direct supervision.

One of the attributes expected of the professional nurse is that of competence. It is also one of the criteria used for measuring quality of care and the degree of satisfaction by clients. As consumers become more knowledgeable through formal education and access to informal education as provided by a vast array of media, they have become more aware of what is expected of the professionals. The consumers are demanding for care by competent staff. Competence and adequate staff have been found also to be related to positive outcome, length of hospital stay, etc. Consumers have the right to challenge incompetence, seek redress through legal means or professional disciplinary processes.

Professional competence requires adequate preparation which begins from the type of education given to professionalism, that is, curriculum that is competent based. Society expects nursing to provide competent professionals, continuously evaluate the level of competence, promote and enhance competence through continued education and research. Professional competence is applicable in education, practice and research. It is also related to professional accountability, standards, quality of care and client satisfaction. It is an absolute prerequisite for professional accountability. It is also related to rating individual and outcome of corporate performance of task and achievement. Professional competence does not just occur overnight but throughout a professional carrier.

Each professional nurse progresses on a novice expect continuum followed by sustenance in competence through continue and life-long education for excellent. The nurse of today can no longer rely on today's knowledge for future performance because

of the numerous changes occurring in the society served, advancement in technology, health care reforms and information explosion.

Education preparation is the back bone of professional competence. Effective education will provide both knowledge skills and attitudes expected of the professional nurse. Nursing today is much more than the traditional role performed in the past and this has been modified based on numerous changes occurring around health, health care, society, technological advancement to mention a few. It is important therefore to examine the forces shaping nursing so as to develop the visionary and futuristic curriculum. Nurses of today are expected to demonstrate an expanded practice base requiring a higher level of competence. It is also critical that while roles are expanding the graduate articulates what is within the nursing domain and that which falls within a more collaborative and interdisciplinary mode.

Parry (1996) defined competency as a collection of knowledge, skills, and attitudes that affect and correlate with performance and can be measured using well established standards. That curricular are now based on competency to ensure quality and standard education. Competence measurement may be difficult but not impossible. There are models like Competence Outcome and Performance Assessment (COPA) model developed by Len burg and Hinton (1999) in Ofi (2014) as a Framework for curriculum review, competence can be affected by changes in health care and student preparedness.

According to Benner (1984) competence is apparent when a nurse develops the ability to cope and manage the many eventualities in the real world of nursing (Bradshaw, O' Counor and Egan, 2012).

2.5.2 Requirements for Promoting Competence

In order to promote and sustain competencies in the profession the following are required in nursing education.

- Curriculum change
- Competent faculty
- Competence based curriculum program

- Experiential Learning and clinical laboratory that provide for the competencies identified
- A mandatory continuing education programme for lifelong learning
- Performance evaluation programme to identify incompetence. Only curriculum change, faculty and clinical laboratory will be discussed briefly.

Curriculum Change

The need for a curriculum change is based on many factors:

- The health care policy and the trend in health care system
- Needs of the learner
- Needs of society
- Professional standards
- Psychology and theories of learning
- Subject matter

Curriculum design and implementation vary from country to country and colleges because apart from the global forces shaping nursing and health care there are other national and local trends that will specifically be peculiar to each nation that will affect the design. The invitation to nursing is to create a dynamic curriculum where learners are prepared with skills in knowledge acquisition, tempered with intellectual flexibility, personal creativity and commitment to lifelong learning and skills compatible to functioning in a complex society (Ofi, 2014).

Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. According to ICN (2004) in Ofi (2014) advocacy, promotion of a safe environment, research, participation in shaping healthy policy and in patient and health systems management, and education are also key nursing roles. This definition is enough to guide competency based curriculum. The definition points to areas nurses should function. It is explicit on what nurses can do should do and should be doing.

Competent Faculty

De Young (2001) highlighted some characteristics of good teachers. She stated that an effective teacher does not just occur based on imitating former teachers. The process involves knowledge of educational theory and research, a willingness to learn new roles, new styles of interacting and new teaching methods and ability to critique one's own performances. She grouped the qualities of a good teacher into:

- Good interpersonal relationship with students (evidence shows that it enhances learning)
- Professional competence
- Personal qualities.

Good interpersonal relationship: Good interpersonal relationship with student means being sensitive to students' feelings and problems, conveying respect for students, alleviating student's anxieties, being accessible for conference, being fair in all dealings with others, permitting students to express differing points of view. Creating an atmosphere in which students feel free to ask questions and conveying a sense of warmth (De Young, 2001). Positive interpersonal relationship includes:

- Empathy or understanding student's world or the world as student sees it.
- Congruence or genuine in interaction with students.
- Positive regard or respect for student.

When all these are demonstrated by teachers, students will replicate it in clients' care. Studies on effective teacher's behaviour showed that the teachers, students and administrators differ in their opinion of the most important quality in a teacher based on each groups' focus. Each response is unique and critical for effective learning. Administrators ranked "motivates students to do their best work as most important. Faculty said the most important quality was to be concerned about fair evaluation of students. Students ranked "evidences of broad accurate, up to date knowledge of the subject matter and social aspects of teaching behaviour.

Professional Competence: This is seen as second hall mark for good teacher and this is characterized by thorough knowledge of subject matter and presentation of materials in an interesting, clear and organized manner, De Young (2001) stressed that teachers who display confidence, creativity and stimulate and can demonstrate skill and expertise will excite students interest and often are rated high. Professional competence requires

thorough knowledge of subject matter and polishing of skill throughout career, maintaining and expanding knowledge through reading, research, clinical practice and continuing education.

Personal Qualities: Teachers qualities valued by students include: enthusiasm, willingness to admit to errors, cheerfulness, consideration, honesty, calmness and pose, also, sense of humour, control of anger, flexibility, lack of annoying mannerisms, patience and a neat appearance.

Other requirements of faculty include:

Clinical Behaviour: Teachers in clinical setting are expected to display and possess some qualities. These include providing conference time, being willing to help, answering questions freely, allowing students to recognize and correct errors, giving verbal encouragement, showing interest in patients and their care, conveying confidence in the learner and supervising without taking over. Although student's need not to be 'babied' they do need a great deal of guidance and support during clinical learning (De Young, 2001).

Teacher Style: Apart from the above the teacher's style which is a blending of certain ways of talking, moving, relating, thinking are also important. The teachers' style is more than ability to entertain or a sense of humour. It is an outgrowth of the teacher's personality and character. It emerges not just from the intellectual but the personality. It is the style that makes a good teachers memorable, interesting inspiring and worth listening to. Other characteristics of style are willing to share information to illustrate and evoke emotions. All these along with personal and professional attributes makes it had to forget the teacher. The style can be shaped by student feedback and peer review. Style emerges slowly and like leadership, it can be learned and modified based on situations and circumstances. The competence of faculty is crucial for competency of students because it is the backbone of identifying incompetence and ensuring competence of the beginner.

2.5.3 Professional Developmental Task for Promoting Competence

Competence is one attribute that always been expected of the professional nurse. This is not the forum of contesting whether nursing is a profession or not but whatever is done must be well done and qualitative. The key to expertise in practice lies both in knowledge and skill development and underlying all skills is a command of nursing knowledge. Competence is an absolute prerequisite for accountability.

In the development of professional self, the development of competence can be viewed within the context of achievement of professional developmental task which is modified from Erickson life cycle (Leddy and Pepper, 2013).

All development theories are based on the assumption that the growth and development of the human is sequential aid that successful negotiations of earlier tasks are critical for later development. As parents and other socializing agents are required to assist the child to grow to adulthood and beyond, the profession, professionals, nurse leaders and other significant persons are expected to assist the beginning professional nurse to move from stage of novice to expert and excellence in the process of developing competencies along the career path.

Student's problems

Nursing students are known to have the following deficit:

- Lack of self confidence
- Fear of making mistakes in clinical areas
- High stress levels
- Too much anxiety which interferes with learning
- Need for security
- Need for positive feedback

2.5.4 Evaluation of Clinical Competency

Evaluation of nursing competency is critical to assuring patient safety and maintaining high professional standards in the practice of nursing (Schoene and Kanusky, 2007). Competencies refer to skills or knowledge that leads to superior performance. These are formed through an individual/organization's knowledge, skills and abilities and provide

a framework for distinguishing between poor performances through to exceptional performance. A competency is a combination of skills, abilities, and knowledge needed to perform a specific task in a given context (Jones, Voorhees, and Paulson, 2002). Cassidy (2009) acknowledge that competence should be concerned with the ability to master specific clinical skills and possess necessary personal characteristics to function effectively as a nurse including the capacity for reflection.

Assessment of competence of practising nurses has been identified as crucially important in maintaining professional standards identifying areas for professional development and educational needs and ensuring that nurse competencies are put to the best possible use in patient care. In view of the holistic definition of competence, there is general agreement that competence assessment in nursing cannot solely be based on demonstration of theoretical content knowledge or technical skills but should also involve some inference about a candidate's attitudes and practice.

The literature identifies a tension between academic award and a professional's competence to practice. This tension is further complicated by the lack of consensus about what should be measured. It has been suggested that this lack of consensus raises the potential for confusion and repetition as nurses attempt to meet the requirements of a number of different systems.

2.5.5 Competency Iceberg Model

It can be helpful to think of competencies in terms of an iceberg. Technical competencies are at the tip - the portion above the waterline that is clearly visible (and therefore easier to assess).

Behavioral competencies are below the waterline - they are more difficult to assess, and often harder to develop. Behavioral competencies can be understood as manifestations of how a person views him or herself **(self-image),** how he or she typically behaves **(traits),** or what motivates him or her **(motives**).

Skill: - This indicates a person's ability to do something well. For example, a person can be said to be good at giving bed bath

Knowledge: - This involves demonstration of information that a person gained in a particular area. For example, this might differentiate the outstanding nurse who speaks

many languages/dialects from his or her average counterpart in a ward of an international clientele.

Self-image: - A person's view of him or herself, identity, personality and worth. For example, seeing oneself as a leader, mentor or as a developer of people.

Trait: - A typical aspect of a person's behaviour. For example, being a good listener.

Motive: - What drives someone's behaviour in a particular area (an underlying need for achievement, affiliation or power).

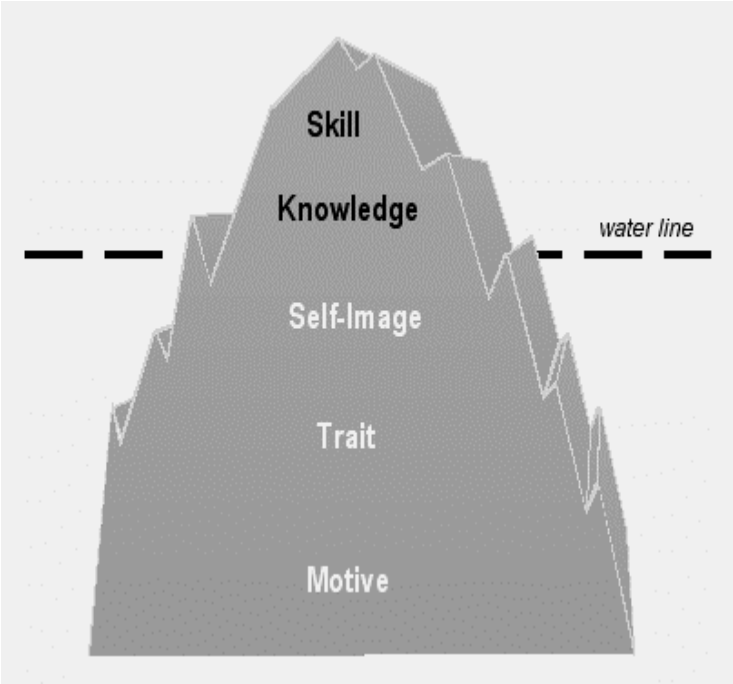

Fig 2.1 Competency iceberg model

2.5.6 Classification of Competencies

Core Competencies

A core competency is defined as an internal capability that is critical to the success of business. These are organizational competencies that all individuals are expected to possess. These competencies define what the organization values the most in people. The goal of the core competencies is for individuals to be able to perform in a diverse number of positions throughout the organization.

Core Competencies are not seen as being fixed. Core Competencies should change in response to changes in the company's environment. They are flexible and evolve over time. As a business evolves and adapts to new circumstances and opportunities, so its Core Competencies will have to adapt and change.

Professional Competencies or functional competencies

These distinctive competencies are grouped for each job within the organization. The goal is to optimize performance by having the technical skills to perform a job.

Behavioural Competencies

These refer to competencies that are required by people in terms of behaviour. Team working is an example of competency required by an employee working in a typing group in an office where they may be required to cover up for others as the work grows

Threshold competencies

The characteristics required by a jobholder to perform a job effectively are called threshold competencies. For the position of a typist it is necessary to have primary knowledge about typing, which is a threshold competency

Differentiating competencies

The characteristics, which differentiate superior performers from average performers, come under this category; such characteristics are not found in average performers (Sampelesson, 2013).

2.6.1 Psychomotor Skills

Psychomotor learning is the relationship between cognitive functions and physical movement. Psychomotor learning is demonstrated by physical skills such as movement, coordination, manipulation, dexterity, grace, strength, speed; actions which demonstrate the fine motor skills such as use of precision instruments or tools, or actions which evidence gross motor skills such as the use of the body in dance, musical or athletic performance (Cratty, Noble, Duignan &Young, 2012).

According to Bloom cited by Tomei (2005) psychomotor domains of learning embraces physical skills and the performance of actions involves in the learning described

manipulative or motor skill area. Psychomotor domain is concerned with the development of physical skills ranging from simple physical competencies to those that demand complicated muscle coordination. In the early stage of psychomotor development, the learner mirrors the teachers, repeating demonstrated physical activity and utilising trial and errors until and appropriate response is achieved.

The learner continues to practice a particular skill or sequence until it can be performed with proficiency but may still lack confidence n the task. Confidence is indicated by a quick accurate skill performance, requiring a minimum of energy so that the response is performed without hesitation. At even more advanced levels of development, the skills are so well ingrained that the individual modifies most patterns to fit special requirements or to meet an unfamiliar problem situation. Until finally the psychomotor response is totally automatic and the learner begins to experiment creating new motor-base ways to manipulate materials, abilities and skills (Tomei, 2005).

2.6.2 Stages of Psychomotor Skills

When learning psychomotor skills, individuals progress through:

- the cognitive stage
- the associative stage and
- the autonomic stage.

- The **cognitive stage** is marked by awkward slow and choppy movements that the learner tries to control. The learner has to think about each movement before attempting it.

- In the **associative stage**, the learner spends less time thinking about every detail, however, the movements are still not a permanent part of the brain.

- In the **autonomic stage**, the learner can refine the skill through practice, but no longer needs to think about the movement (Cratty, Noble, Duignan &Young, 2012).

Psychomotor skills require the ability to complete a task using thinking (cognition) and motor control. If the learning task requires the use of motor control and coordinating muscular movements, then the task is psychomotor. Psychomotor tasks involve physical skills. Psychomotor learning requires the use of muscular movement. Psychomotor tasks are skills that teach new muscular movements. There are different categories of psychomotor skills. The following are some of those categories:

Discrete Skills: Skills that consist of a single step or a few steps and have distinct task-determined beginnings and endings.

Continuous Skills: Skills whose beginning and ending points are subtle and are performer-determined.

Closed Skills: These are skills that are performed without active influence from the environment.

Open Skills: Skills that are used when the environment causes the performer to make continuous adjustments.

Person and object motion: Skills that can be performed at rest or in motion.

There are two characteristics that distinguish skilled behavior from other activities:

- Skilled behaviour employs executive subroutines to control decisions and supply coordinate skills in a hierarchical organization or plan.
- Skilled behaviours also employ temporal patterning of skills to integrate the sequence of performance overtime.

2.6.3 Levels of psychomotor skill

According to National guidelines for educating EMS instructors (2002), there are five levels of psychomotor skills. These are:

- **Imitation**
  - Student repeats what is done by the instructor
  - "See one, do one"
  - Avoid modelling wrong behaviour because the student will do as you do
  - Some skills are learned entirely by observation, with no need for formal instruction
- **Manipulation**

  Using guidelines as a basis or foundation for the skill (skill sheets)
  - May make mistakes

    - Making mistakes and thinking through corrective actions is a significant

way to learn

- Perfect practice makes perfect

  - Practice of a skill is not enough; students must perform the skill correctly

- The student begins to develop his or her own style and techniques

  - Ensure students are performing medically acceptable behaviours

- **Precision**

- The student has practiced sufficiently to perform skill without mistakes
- Student generally can only perform the skill in a limited setting
  - Example: student can splint a broken arm if patient is sitting up but cannot perform with same level of precision if patient is lying down

- **Articulation**

- The student is able to integrate cognitive and affective components with skill performance
  - Understands why the skill is done a certain way
  - Knows when the skill is indicated
- Performs skill proficiently with style
- Can perform skill in context
  - Example: student is able to splint broken arm regardless of patient position

- **Naturalization**

- Mastery level skill performance without cognition
- Also called "muscle memory"
- Ability to multitask effectively
- Can perform skill perfectly during scenario, simulation, or actual patient's situation.

2.6.4 Teaching psychomotor skills

When teaching psychomotor skills, the process is expected to progress using whole-part-whole technique. It requires that the skill be demonstrated 3 times as follows:

- **Whole**: The instructor demonstrates the entire skill, beginning to end while briefly naming each action or step
- **Part**: The instructor demonstrates the skill again, step-by-step, explaining each part in detail

- **Whole:** The instructor demonstrates the entire skill, beginning to end without interruption and usually without commentary.

2.6.5 Dimensions of Psychomotor skills

There are three dimensions of motor skills: fine/gross performance, continuous/discrete movements, and closed/open looped tasks (Quinn, 2010)

Fine versus gross performance– this involves distinguishing motor skills in terms of the involvement of muscles. Fine performance involves fingers and wrist as in removing sutures. Gross performance involves the use of large muscles as in lifting a patient.

Continuous versus discrete –The former involves continuous movements such as those of external cardiac massage, while the latter consist of single - direction movement such as switching off a patient's nurse-call button.

Closed-looped versus open-looped – Closed looped performance relies entirely on proprioceptive feedback, so could be performed with eyes closed, whereas open-looped is affected by external stimuli that influence the movement such as inflating the cuff on a sphygmomanometer according to the level of the column of mercury.

2.6.6 Factors affecting psychomotor skill

Cratty, Noble, Duignan and Young (2012) opined the followings as factors affecting psychomotor skills

Amount of practice

The practice of sensorimotor tasks usually produces changes in scores that reflect diminishing returns. Repetition is the most powerful experimental variable known in psychomotor-skills research. But practice alone does not make perfect; psychological feedback is also necessary. The consensus among theoreticians is that feedback must be relevant and reinforcing to effect permanent increments of habit strength.

Laboratory investigations have supported the following generalizations about psychomotor learning:

- without some kind of relevant feedback, there is no acquisition of skill;
- progressive gains in proficiency occur in the presence of relevant feedback;
- performance is disrupted when relevant feedback is withdrawn;

- delayed feedback in continuous (but not discrete) tasks is typically decremental;
- augmented or supplementary feedback usually results in increments;
- the higher the relative frequency of reinforcing feedback, the greater is the facilitation of skill; and
- the more specific the feedback (e.g., in designating location, direction, amount), the better is the performance.

Task complexity

The complexity of discrete psychomotor tasks may be specified either as the number of response sequences a subject can make or as some measure of a subject's uncertainty about choices among stimuli. Other factors that have been investigated as instances of complexity include variations in the number of possible responses at each choice point, different lengths of series, and regular versus unpredictable stimulus sequences. Experimental procedures involving an increase of complexity produce more errors, require more trials to reach proficiency, and result in longer latencies per trial. Difficulty in psychomotor learning, therefore, generally increases with the complexity of the task to be mastered.

Work distribution

Some generalizations can be made about work and rest in psychomotor learning:

- massed practice is usually superior to distributed practice for simple discrete-trial tasks;
- distributed practice is usually superior for complex continuous-action tasks;
- short practice sessions are generally superior to long practice sessions;
- long rest periods are generally superior to short rest periods, although forgetting must be counteracted;
- for continuous-tracking tasks practiced under constant work sessions and variable rest periods, the final proficiency level grows curvilinearly as the inter-trial interval is lengthened;
- gains in proficiency under distributed practice, or with interpolated rest periods during massed practice, usually reflect improvements in performance rather than in learning;

- losses in proficiency under massed practice, or with increased work load, usually pertain to inhibitory rather than motivational decrements;
- under certain conditions (such as “cramming” for examinations) it may be most efficient to mass practice as long as adequate rest can be obtained before criterion performance is demanded.

Environmental factors

Many practical skills are executed outside the laboratory under unfavourable conditions of temperature, humidity, illumination, and motion. It is generally found that, below the limiting levels of extreme stress, such conditions affect psychomotor performance to a greater extent than they affect psychomotor learning. Environmental stress variables found to exert negative influences are vibration, low illumination, high atmospheric pressure, noise, glare, toxic gases, ionization, and sub gravity. Certain drugs have positive effects on psychomotor performance (e.g. amphetamines, methyl caffeine); some have deleterious effects (e.g., alcohol, barbiturates, diphenhydramine hydrochloride, lysergic acid, phenothiazines); and others are either neutral or have inconsistent effects (e.g., caffeine, nicotine).

Individual and group differences

Statistical indices of psychomotor ability (e.g., means, variances, and correlations) not only differ among individuals but may also serve to distinguish from each other groups of persons classified by such traits as age, sex, personality, and intelligence. Comparative psychological studies of identical and fraternal twins indicate that heritability influences perceptual, spatial, and motor abilities.

Age

The most pervasive differences in human performance on psychomotor apparatus are associated with chronological age. Scores obtained from nearly all the devices mentioned above are sensitive to age differences. Researchers generally report a rapid increase in psychomotor proficiency from about the age of five years to the end of the second decade, followed by a few years of relative stability and then by a slow, almost linear decrease as the ninth decade are approached. For simple hand or foot reactions, complex discrimination-reaction time, and coordinated automobile steering, the peak of

skill is attained between ages 15 and 20 on the average. After this, performance declines, meaning that performance at age 70 is about the same as at age 10. This decline is a two-stage process that starts with a developmental phase (through maturation) and is followed by the more gradual deterioration of aging.

Sex

The assessment of sexual differences in perceptual and reactive abilities is complicated by a number of factors (including age and personality), girls and women tend to be more proficient than boys and men in such psychomotor skills as finger dexterity and inverted-alphabet printing. On the other hand, males generally do better than females at pursuit tracking, repetitive tapping, maze learning, and reaction-time tasks. Whereas girls tend to attain their maximum proficiency in speeded tasks earlier in life than boys do, males continue to gain proficiency over a longer period and maintain that proficiency well into middle age. Not all psychomotor differences associated with sex are intrinsically biological; unequal opportunities, distinctive social learning, role playing, and other cultural phenomena also influence the learning and execution of skills by males and females.

Other factors

Many other characteristics contribute to psychomotor behaviour. The following, for instance, have been observed:

- speed scores in reaction-time tasks are positively correlated with body temperature in adults;
- psychotics show longer reaction times and poorer tracking scores than do people of normal personality;
- right-handed operators are favoured on the rotary pursuitmeter, while left-handed persons tend to do better on the complex coordinator;
- left-handed people are more variable in finger-dexterity and paper-cutting skills and also show more signs of ambidexterity;
- intelligence quotients (IQ) are weakly related to physical strength and endurance yet are strongly associated with performance in such activities as running the 35-yard dash, balancing on one foot, discrimination reaction, rotary pursuit, and selective mathometry;

- body build (somatotype) is associated with specific athletic skills—the best fencers, oarsmen, and basketball players, for example, tend to be tall and lean (ectomorphic); top swimmers, divers, and pole-vaulters are likely to be broad-shouldered and slim-hipped (mesomorphic); champion wrestlers, shot putters, and weight lifters are apt to be thick-trunked and short-limbed (endomorphic). While body type does not guarantee athletic prowess, it can contribute to success in certain sports.

2.7.1.1 Traditional Practical Examination

Traditional practical examination also called oral/viva practical examination was the earliest form of clinical assessment method in Nursing in Nigeria. Viva or examination "by word of mouth. For centuries, the oral practical examination has been the predominant method and sometimes the only method used to assess clinical skills.

According to (Shaikh, 2015) traditional clinical examination, age-old methods like orals provide the students an incentive to explore topics, give them a chance to interact one on one with examiners and get excited about learning. Despite this, there are some challenges often faced in the traditional viva examinations. The atmosphere during traditional oral examination is often threatening and at times the dialogue takes the shape more of a confrontation than discussion. The subjectivity in the traditional viva can at times be intimidating to the students. Questions asked vary from examiner to examiner and may not cover the syllabus. Most of the times questions are of recall type rather than those which test the analytical and problem-solving ability of the students. As far as skills assessment is concerned the conventional methods are not only subjective in nature, but also lack scope for direct observation of the performance of skills by the assessor. Moreover, the coverage of contents may be limited.

The oral practical method of assessment is a highly favoured method of clinical evaluation especially for General Nursing and Psychiatric Nursing Examinations. A few examiners (2 - 4) are involved in examining a number of students and in different clinical areas of practice e.g. paediatric, male, and or female wards. Students are then evaluated based on the clinical procedures and patients in the given ward as at the time of the evaluation. Although there is a common checklist for each examiner to assess

each student, the questions asked are usually not consistent. Each student is examined for a period of 1hour going through two examiners, that is, 30 minutes per examiner per student. During the period with each examiner, the student carries out a procedure or more as deemed fit by the examiner. There is marked examiners' inconsistency as structured marking sheets or rating forms are not prepared. Examiners are also not briefed on their use. Few examiners are used thus, prolonging the examination to longer sessions. Each examiner marks independently (Emuobo, Adnah, and Nduka, 2015).

According to Bode, Ugwu and Donkor (2011) there some draw backs associated with oral /viva examination. These are: low objectivity score, non-uniform questions and examiners' biases. Despite the draw backs, the oral practical examination format is still in use due to its popularity and enormous logistics of alternative options.

How to reduce the deficiencies associated with Traditional practical examination

Some of the undesirable features of oral practical examinations can be minimized through regular training workshops for examiners to highlight the several limitations of this method and teach about newer concepts on candidate assessment. Examining bodies should also realize the inherent limitations of oral practical and place less emphasis on its scores in the final computation of marks, but rather use such scores only as an adjunct to those obtained from other methods. Objectivity of scoring is increased when many examiners are involved. Examiners should be well selected, trained, guided and monitored on well entrenched examination protocols. Examiners should be kind, polite and interactive with candidates, rather than intimidating. It is unacceptable to make fun of a poorly performing candidate. The examiner may give a clue when a candidate encounters a brain-block (Bode, Ugwu and Donkor, 2011).

In the traditional assessment method, each student performed a clinical skill which was followed by a bedside viva-voca on the same and the judgement of the students was done based on overall performance of the students. Each student received different clinical procedure to demonstrate and the questions asked were unique to each one with no standardisation or uniformity (Wani, Kini and Dalvi, 2012).

2.7.2.1 Objective Structured Clinical Examinations (OSCE)

An Objective Structured Clinical Examination (OSCE) is a modern type of examination often used in health sciences (e.g. Midwifery, Orthoptics, Optometry, Medicine, Chiropractic, Physical therapy, Radiography, Nursing, Pharmacy, Dentistry, Paramedicine, Veterinary medicine). It is designed to test clinical skill performance and competence in skills such as communication, clinical examination, medical procedures /prescription, exercise prescription, joint mobilisation / manipulation techniques, radiographic positioning, radiographic image evaluation and interpretation of results (Wikipedia, 2010).

The OSCE was first developed as a method of assessment to objectively measure the clinical competence of medical students in the late 1970s. Their development was in response to recognition that the more traditional methods of assessment, such as written examinations and essays, whilst reflecting academic attainment, did not always test clinical competence. Consequently, it was recognised that a formal assessment of clinical skills that moved beyond informally testing clinical skills at the bedside was required. While the OSCE is now an established method of clinical assessment for medical education, it has taken rather longer to be adopted for assessing clinical skills in nursing. However, it has recently gained in popularity and is now widely used to assess advanced clinical competence in students such as registered nurses preparing to become either nurse practitioners or nurse independent prescribers (Ward, 2008).

The OSCE can be a valuable educational tool when used alongside other traditional methods of assessment, such as essays or exams, bringing together both clinical and academic strands of the educational development of advanced nursing students. The advanced nursing OSCE is a practical assessment of advanced clinical skills. In this, students complete a set of individual OSCE stations that are designed to test a range of clinical skills with an examiner using a previously determined, objective scoring scheme. A group of collated OSCE stations to be used in actual student examinations is called an OSCE ‘session’. The students are not normally aware of the actual planned station topic content of an OSCE session, as OSCEs in line with traditional written examinations, are normally attempted as unseen examinations, to mirror the uncertainty of everyday clinical practice (Ward, 2008). The objective structured clinical examination

is commonly referred to as an 'OSCE' and is a way of assessing a student's competency with clinical skills. The OSCE involves the student demonstrating a skill during a simulated clinical situation in a controlled environment instead of using real patients in the practice setting (Baid, 2011)

Modifications of OSCE

OSLER: Objective Structured Long Examination Record

OSPE: Objective Structured Practical Examination

OSVE: Objective Structured Video Examination

OSTE: Objective Structured Teaching Evaluation

OSPRE: Objective Structured Performance-Related Examination

OSSE: Objective Structured Selection Examination

2.7.2.2 History of OSCE usage in advanced nursing

According to Ward (2008) building on the success of OSCEs in undergraduate medical education, the Royal College of Nursing Institute nurse practitioner programme first pioneered the use of the OSCE in advanced nursing, beginning in the early 1990s. This innovative, but often controversial, programme pushed the boundaries of nursing from the traditional 'handmaiden', task-orientated approach into a more modern one; integrating critical questioning and clinical problem solving in a clearly defined curriculum of advanced clinical skills. While developing this programme, it became clear that an objective practical assessment strategy was needed to assess the clinical competence of the student nurse practitioners who were developing the advanced clinical skills of history taking, physical examination and clinical reasoning; skills that were previously solely within the remit of the medical profession.

The OSCE was adapted from the original medical student model in order to assess the clinical competence of the nurse practitioner students at the Royal College of Nursing Institute. This original nurse practitioner OSCE was developed as a session of 10 stations, each of 10 minutes duration, which included two written stations and eight simulated patient scenarios. These stations were initially developed to reflect the advanced clinical skills taught in the classroom and then developed in clinical practice. This 10-station model proved successful and a variant of it is still used today by the

former Royal College of Nursing Institute nurse practitioner team, which was transferred to the RCN Development Centre at South Bank University in 2000, and laterally to London South Bank University in 2003.

The OSCE process is now also widely used in pre-registration nursing to assess fundamental clinical skills, such as recording and interpreting vital signs. In contrast, advanced nursing OSCEs assess the clinical performance of post-registration nurses, as opposed to novice pre-registration nurses, and therefore do not include assessments of basic clinical skills such as recording vital signs, because pre-validated attainment of these skills is implicit in a nurse practitioner student's professional registration as a qualified nurse. Instead, assessment of the combined experiential, practical and theoretical clinical skills at the competent or proficient level of advanced nursing practice is required. As such, advanced nursing OSCEs assess a level of clinical complexity beyond that required of an initial registrant in nursing, and therefore carefully planned, consistent, and sustained OSCE preparation is required throughout a nurse practitioner degree programme on the parts of both students and academic staff (Ward, 2008)

2.7.2.3 Historical development of examinations using simulation/OSCE

Objective Structured Clinical Examinations (OSCE) was first developed in 1979 by Harden and Gleeson for the assessment of clinically focused skills in medical students. In the original development students rotated around 20–30 stations and would spend 5–10 minutes at each station either performing one skill or writing answers to an exam. Harden and Gleeson (1979) felt that this approach was more reliable than traditional forms of assessment. It also places emphasis on the importance of developing effective clinical skills. The popularity of the assessment of clinical skills using simulation rapidly spread throughout medical schools in the UK and now the majority of medical schools test their students using these methods. Because of the widespread adoption of this assessment method there are similarities between what is assessed and the structure of the assessment throughout medical schools in the UK. This has led to some standardization of what is assessed and how it is assessed. Since this initial development in the UK, the use of OSCEs to assess students has spread internationally and to other disciplines. They have been widely adapted in medicine to assess clinical competence

and modified to suit local conditions. In the last decade the use of OSCE as an assessment tool has become very popular in nursing (midwifery in Nigeria) and allied health professions.

2.7.2.4 Simulated assessment/OSCE

Within health care, several terms are used when discussing examinations using simulation and this may appear confusing. Therefore, to ensure consistency and to simplify discussion the term OSCE will be used throughout the study. An OSCE examination or simulated assessment is one that is examined using a simulated patient and/or a simulated situation. Assessors are provided with objective marking criteria and these criteria are used to judge the student's performance (Jones, Pegram, and Fordham, 2010).). Students are normally allocated a set amount of time to complete the assessment and they are provided with feedback in relation to their assessment. This is referred to as an OSCE (Objective Structured Clinical Examination) in several universities, although other terms may be used. Whilst there are considerable variations, in the use of simulated examinations in health care it is important to acknowledge that common features exist.

These common features include:

- Examinations which are held in a simulated environment usually within a university setting, clinical skills room/simulation area.
- Examinations which use actors or other students/lecturers in the place of real patients.
- Examinations which usually adhere to university examination regulations.
- Assessors are usually university lecturers. Occasionally expert practitioners will be involved in the university assessments
- Students are normally required to 'rotate' around a number of clinical assessment 'stations'.

This allows the assessment of several skills during one examination.

Several health care professions now use simulated examinations including:

- Nursing
- Paramedics
- Physiotherapists

This type of assessment began in medicine where simulated examinations have been a common feature of clinical assessment throughout the UK for several years

2.7.2.5 Why have simulated/OSCE examinations been developed?

Initial simulated examinations were designed to allow the assessment of clinical skills in a safe environment away from the clinical area where mistakes in assessment and diagnosis would not be detrimental to patient care. They were initially derived to be an assessment strategy but are more importantly viewed as a learning tool whereby the student is provided with objective, expert clinical feedback to allow the student to learn from the assessment and improve their practice. However, alongside the need for learning from clinical assessment, several other factors have encouraged the development of the simulated examinations across all health care courses. These factors include: Professional regulation, some regulatory bodies, most notably the Nursing and Midwifery Council (NMC), have made explicit the need for simulated examinations during nursing pre-registration programmes (Bloomfield, Pegram, and Jones, 2010).

Whilst the NMC does acknowledge the need for the majority of skills to be assessed in practice it has begun to acknowledge the importance of assessment through simulation. The essential skill clusters (NMC 2007) clearly identify the need for skills to be assessed using simulation prior to admission to branch. The only area that this explicitly relates to currently is assessment of aseptic technique, where the NMC states that this must be assessed through simulation by the end of year1. The inclusion of skills that require assessment using simulation has meant that most universities that provide pre-registration nursing programmes are required to include these examinations as part of the student nurse's educational programme.

Patient safety Health care is becoming increasingly litigious and the need to protect the patient and maintain patient safety is clearly paramount. Some educationalists feel it is more appropriate to allow the student time to learn practice and be assessed in a simulated environment prior to experience with patients in a clinical area. These educationalists acknowledge that there is a need for students to be assessed in clinical practice as well, but maintain that practice and assessment outside of the clinical area using simulation will enhance real clinical experience (NMC, 2007).

Recent educational studies by Duffy (2004) have identified some inconsistencies in clinical assessment. These inconsistencies according to Duffy have affected the objectivity of clinical assessments and it is argued that several students have passed clinical skills assessments where they perhaps should have failed. Other factors may also make objective assessment of clinical skills difficult. These include lack of time or resources for clinical assessment, interruption of the business of ward areas, increasing scarcity of appropriate clinical placements and the limited opportunity to assess some skills in some clinical areas. It is also acknowledged that care of the patient should always take priority over assessment of the student and in some very busy areas this does reduce the time professionals have for student assessment. The use of simulated examinations in health care requires a huge investment of resources by educational establishments. The resources required include:

- setting up the examination,
- running the examination,
- providing feedback,
- Post assessment counselling/developing action plans.

Investment in these costly resources highlights the value that universities attach to the development of clinical skills.

An Objective Structured Clinical Examination (OSCE) is a series of stations/exercises through which students rotate individually to demonstrate a range of skills and knowledge. OSCEs have been identified as a satisfactory way of assessing communication, clinical skills, knowledge and intention. However, OSCEs have been reported as costly to run and can be time-consuming. A number of studies reported the OSCE setting to be stressful or intimidating for participants – although none compared the level of stress to other forms of formal examination. Time constraints at each station can also limit the ability for reflection.

2.7.2.6 OSCE Process

In an OSCE the assesses rotate sequentially around the series of structured cases. At each OSCE station specific tasks have to be performed, usually involving clinical skills such as history taking or examination of patients, or practical skills, and stations can include simulations. The marking scheme for each station is structured and determined

in advance. There is a time limit for each station after which assesses have to move into the next task.

The basic structures of an OSCE may be varied in the timing for each station, use of checklist or rating scale for scoring and the use of clinician and standardised patient as assessors. Assesses often encounter different fidelities of simulation, for example simulated patient, part task trainers, charts and results, resuscitation manikins or computer based simulations where they can be tested on a range of psychomotor and communication skills. High level of reliability and validity can be achieved in these assessments.

2.7.2.7 Validity of the OSCE

The term 'validity' refers to the extent to which OSCE measurement actually measures what it is intended to, that is, does the OSCE do what it says it does? OSCEs /OSCEIs comprise two types of validity: content validity and face validity. The content validity, in relation to the OSCE, is judged by a panel of experts about the range which the content of the examination appears to coherently examine, and includes the characteristics and domains that it is designed to appraise and assess (Barat and Ward, 2008).

Content validity is addressed by regularly reviewing the process through which OSCE stations are developed and their content is updated. The content of the OSCE must reflect the curricular content taught on the programme for which the OSCE forms the practical clinical assessment. An OSCE specification table, which explicitly indicates where the core clinical practice skills are assessed in each OSCE station helps to ensure validity, via cross-referenced demonstration of programme learning outcomes.

Face validity addresses the question of whether the marking criteria actually measure what they are intended to measure. For example, if the marking criteria requirements of a station are too difficult for the students to answer successfully, or cannot be completed in the allocated time for the station, then its inclusion needs to be reviewed (Barat and Ward, 2008).

2.7.2.8 Reliability of the OSCE

The test score obtained is reliable if it gives a reasonable indication of a student's performance in that particular test, that is, the OSCE scores is stable, predictable and dependable method of assessment. The issue of examiner subjectivity can be addressed through the use of an independent OSCE examiner who observes the conduct of the examiner at each station to monitor the fairness and consistency of the examiners' decisions. One key factor influencing the reliability of the OSCE is its length. As the number of items being assessed is increased, the chance factors influencing the score are reduced, thus giving a better estimate of the true score the student is likely to achieve, which in turn, increases the reliability of the OSCE (Barat and Ward, 2008).

According to Wass, Vleuten, Shatzer, and Jones (2001) reliability is a measure of the reproducibility or consistency of a test, and is affected by many factors such as examiner judgments, cases used, candidate nervousness, and test conditions. Two aspects of reliability have been well researched: inter-rater and inter-case (candidate) reliability.

- Inter-rater reliability measures the consistency of rating of performance by different examiners. The use of multiple examiners across different cases improves inter-rater reliability. In an oral examination, the average judgment of ten examiners, each assessing the candidate on one question, produces a more reliable test than that of one examiner asking ten questions.
- The consistency of candidate performance across the cases (intercase reliability) is perhaps the most important issue in clinical competence testing. Broad sampling across cases is essential to assess clinical competence reliably. This observation might not be surprising given the differences in individual experiences encountered during training and practice, but it challenges the traditional approach to clinical competence testing, whereby the competence of the candidates was assessed on a single case.
- Tests of clinical skills have moved into the multi case format with the development of the objective structured clinical examination (OSCE), consisting of a series of tasks and encounters (stations). Many stations and sufficient testing time are essential to achieve adequate inter case reliability for the test. Whatever the test format, length is critical to the reliability of any clinical competence test.

According to Moattari; Abdollah-zargar; Mousavinasab; Zare and Beygi, Marvdast (2009) in a study conducted on reliability and validity of OSCE in evaluating clinical skills of Nursing students the split half reliability (the correlation between the two tests) was positive and significant and the correlation between the scores of the same station and the total test score was weak and insignificant. Therefore, the split half reliability of the test is approved by more confidence. The findings related to split half reliability of the examination shows that the correlation between the mean score of the odd stations and that of even stations is significant. Also, it was reported that the correlations between scores given by the first and the second observer (inter-rater reliability) at different stations represented the desired reliability for test being conducted.

2.7.2.9 Objective Assessment

Subjective assessment draws upon the instructor's professionally developed awareness of quality in academic or other work. This may be essential for assessing with validity, because some outcomes require sensitivity to context and thus cannot be assessed in a fixed way across contexts. Objective assessment, in contrast, relies on quantitative scales that could apply to description of student work or performance.

Objective assessment has the virtue of being reliable and the reputation of being fair, while subjective assessment is often assumed to be unstable or biased. Hence, instructors often prefer to rely on objective assessment as a basis for grading. Some criteria of achievement, such as complex thinking and contextually-sensitive performance, cannot really be measured with validity by objective ratings; valid assessment of such qualities requires the developed subjective awareness of an experienced professional (The Trustees of Indiana University, 2002).

OSCE is said to be objective because 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. 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 (Wikipedia, 2010).

2.8 Empirical Studies

2.8.1 Traditional/Conventional Practical Examination (TPE/CPE)

In conventional assessment techniques, the examiner evaluated the psychomotor skills and asked relevant questions. All these exercises were followed by a viva or a question answer session. They are relatively subjective, unstructured, can have errors of bias, ambiguity and obsolesce. On the other hand, our conventional methods allow for an in-depth analysis of the subject, with more interaction between the examiner and the student. The examiner's professional judgment and experience can make the examination a learning exercise as it provides an instant feedback to the student. These advantages justify their inclusion (Mahajan, Shank and Tandon, 2012)**.**

For centuries, Traditional Practical Examination (TPE)/Oral/practical examination has been the predominant method and sometimes the only method used to assess clinical skills. This format of assessment is the approved format of clinical evaluation especially for General Nursing and Psychiatric Nursing Examinations in Nigeria. It is used for both formative and summative evaluation in both basic and generic nursing programs. Students are evaluated based on the clinical procedures and patients in the given ward as at the time of the evaluation. Although there is a common checklist for each examiner to assess students, the questions asked are usually not consistent. Each student is examined for a period of 1hour going through two examiners, that is, 30 minutes per examiner per student. During the period with each examiner, the student carries out a procedure or more as deemed fit by the examiner (Osaji, Opiah & Onasoga, 2015). The traditional method gives the examiner freedom to vary the question from one student to another. Few examiners are involved and students are examined in different clinical areas of practice or the same area with different patients or procedures. Common checklist is used for all procedures.

This approach has been shown to have many deficiencies. There has been a search for new approaches to student assessment, particularly for clinical and practical skills where traditional approaches have been found to be deficient.

Deficiencies in the conduct of Traditional Practical Examination

- The questions are not identical and equivalent in content and difficulty. For clinical viva just as for theoretical, students should be faced with similar or equivalent patients and asked to perform the same task (Osaji, Opiah & Onasoga, 2015).
- the scoring of TPE leaves room for examiner subjective conclusion because the criteria on which the candidates are judged are not stated in specific terms (Nwonu, 2014)

The shortcomings of oral examinations and other highly prevalent assessment approaches have also been thoroughly documented. It was in light of this available evidence that OSCE was commenced which seems to be a reliable method that splits students into a large number of groups in terms of traditional method of examination.

According to Nwonu (2014) in a paper presented in Nursing and Midwifery Council examiners' workshop, it was inferred that the scoring of TPE leaves room for examiner subjective conclusion because the criteria on which the candidates are judged are not stated in specific terms. For example, such statements as "handles patients gently and --skillfully" and "adapts the environment for the patient's comfort" are not specific enough as to what the candidate is expected to do and therefore leaves room for assessor's subjective conclusions.

It was further stated that with the method currently in use, sometimes, the length of time required to accomplish a certain task the assessor assigned to a candidate to perform may not allow the assessor opportunity to assess the candidate on all the areas that are listed on the clinical performance assessment guide. Since all the items sum up to give the maximum score, it creates the difficulty of determining what to do about scoring those items particularly as it was not the fault of the candidate that he/she was not examined in those areas by the particular assessor (Nwonu, 2014).

2.8.2 Objective Structured Clinical Examination (OSCE)

Review of literature on the studies carried out on OSCEs in nursing and midwifery revealed that few studies have been conducted on the use of OSCEs in Nigeria. OSCE has been in use in the Midwifery more than two decades. Notwithstanding, few or no study have been found conducted on the effectiveness of this in comparison with traditional method of oral/viva practical examination being used in assessing nursing students.

Brosnan, Evans, Brosnan and Brown (2006) in a study conducted on implementing objective structured clinical evaluation (OSCE) in nurse registration programmes in a centre in Ireland the OSCE process was found to have a positive impact on all stakeholders. OSCEs were perceived to be a meaningful and fair form of assessment. Students in their opinion felt more prepared for and more confident about forthcoming placements. The OSCE process was, however, perceived to be a stressful experience and requires considerable preparation effort by students and academic staff. Mature students claimed that more practice effort was required but also felt more prepared for placements and achieved higher OSCE scores.

According to El-Nemer and Kandeel (2009) in a study carried out in Faculty of Nursing at Mansoura University, Egypt, most students viewed OSCE as a fair assessment tool which covered a broad area of knowledge, allowed them to compensate in some areas and minimized their chances of failing. Students provided positive feedback about the quality of OSCE performance in terms of the clarity of the instructions of the exam, the sequence of OSCE stations, the reflection of the tasks taught and the time at each station. OSCE was seen as a positive and a useful practical experience by most students. However, OSCE was perceived as a stressful experience and intimidating by a considerable percentage of students, particularly first year nursing students. This perception could be due to the fact that this was the first time that the OSCE has been implemented at Faculty of Nursing, Mansoura University. Hence, it was a new experience for all nursing students which made them feel anxious about it.

Feedback from nursing students suggests that OSCE is an objective tool for evaluating clinical skills. Students perceived OSCE scores as a true measure for essential clinical skills being evaluated, standardized, and not affected by student's personality or social

relations. The evaluation of OSCE by nursing students highlighted some areas that need to be enhanced in future, such as the inadequate time of some of the stations, and the limited period of orientation about OSCE. OSCE generated a considerable uncertainty among students regarding aspects of OSCE attributes, performance, scoring and objectivity. Such uncertainty may reflect inadequate knowledge about the nature of OSCE and insufficient training on OSCE procedure. The experience showed that the implementation of OSCE is time consuming, and requires huge effort and extensive resources. It also requires a large number of qualified personnel to observe and evaluate students during OSCE (El-Nemer and Kandeel, 2009).

In a study conducted by Smith, Price and Houston (2012) two hundred and twenty-nine final year medical students were assessed in paediatrics using an objective structured clinical examination (OSCE) and a traditional viva voce examination, and the results were compared with other assessments of the students made during and at the end of the undergraduate course. Results of the OSCE correlated positively with other forms of assessment and more strongly than the viva voce examination. There was little correlation between the OSCE and viva results. Eighty per cent of students felt the OSCE to be a fairer system than other examinations and all external examiners commented favourably on it. An OSCE is an acceptable alternative to traditional means of examination in paediatrics and may be superior in certain aspects.

In a study conducted on Objective structured practical examination (OSCE) as a tool for the formative assessment of practical skills of undergraduate students in pharmacology by Supriya, Kartik and Varsha, (2013) the results suggest that OSCE and CPE are in agreement as seen in the Bland Altman plot of the two methods, which shows that 96% of the values lie within the limits of the mean of ±1.96 SD. Thus OSCE can replace CPE in the formative assessment. These findings differ from the previous studies, which show a significant difference between the CPE and OSCE scores. The students' perceptions with regard to the difficulty level only about few numbers of the students perceived OSCE as more difficult than CPE, suggesting that it would be acceptable to a majority of students in case it replaces CPE. The time for conducting OSCE was also less, as perceived by a majority (95%) of the students. For the faculty also, the time for conducting OSCE was reduced compared to CPE. About 63% of the students felt that

OSCE provided optimum coverage of the course. It was also shown that the students responded positively (66.4%) to the OSCE format and it was perceived to be more fair and objective than the conventional examination. The strength of the study was that all the students were exposed to both the types of examinations, CPE and OSCE, and were in position to give their opinion. Large group of students were assessed with OSCE in a shorter time than with CPE.

Om Lata, Bharti, Bharati and Sabyasachi (2014) reported in a study on objective structured practical examination and conventional practical examination: a comparison of Scores that the average scores obtained by the students in the two methods were nearly equal, that, is, 61.2 in OSCE and 61.5 in CPE. It was also reported that there were some students who scored more in OSCE and some who scored more in CPE: that there was no consistent pattern in these differences. It was then inferred from this study that the law of averages conceals the stark subjectivity inherent in viva voce; it corrupts the reliability of the marks obtained by the student in practical assessment. It was also reported that this can be overcome by the use of OSCE.

2.8.3 Comparison of Objective Structured Clinical Examination (OSCE) and Traditional/Conventional Practical examination

According to Coovadia and Moosa (2009), traditional methods, in particular those which are inherently subjective, were found to upgrade students more often than OSCE scores. There were some correlations between OSCE marks and results of traditional examinations.

Findings from study conducted by Hassan et al (2009) revealed that the mean score of TDPE was found to be significantly higher than that of OSCE and that the correlation was weak indicating that they both test different abilities. The student's attitude towards OSCE was found to be positive, though they found the Observed Stations difficult due to fear/anxiety of being observed. Individual deficiency and competency was discovered. OSCE appeared to be a valid index of the learning attitude of students. A combination of CPE and OSCE was preferred over pure OSCE and a majority of students considered it as an effective, useful, interesting and challenging examination

and it has been considered as a reliable device to discriminate between different categories of students.

The OSCE system involves wider coverage of the course and it tests individual competency in different topics and skills by asking targeted questions at the Non-Observed Stations. On the contrary, the Conventional system evaluates randomly the subjective recall of the given practical(s). Students both regular and irregular were able to score high in TDPE (TPE) by memorizing the procedure. OSCE has been shown to have a better scope for being structured so that all the objectives of laboratory teaching can be tested. In the current study, the students' attitude and communication skills were also tested by the teachers appointed at the observed OSCE stations.

It was further reported that the major reasons for not practicing OSCE are time constraints and space restraints in small setups. More time is required to examine a batch, if less number of stations could be set due to lack of space. Cutting the time limit at each station would amount to testing how fast they could do the task rather than how well they could perform it. In conduction of OSCE, more effort is required on the part of faculty as more objective questions have to be designed for different stations (Hassan et al, 2009).

Comparison of the two examination styles according to Mondal, Sarkar, Nandi and Hazra (2012) showed that students faired better in objective structured clinical examination than in conventional examination. Out of the 42 subjects who appeared in both examinations, all passed in objective structured clinical examination and 35 passed in conventional examination – this difference was significant by McNemar's chi-square test ($p = 0.016$). 73.8% of the students opined in favour of objective structured clinical examination as a better formative assessment tool whereas 9.5% students preferred conventional examination.

Eman, Elsayeda, Amel, Mona, and Mastoura (2014) discovered in their study that there was a highly statistically significant difference between the mean of Traditional Clinical Examination (TCE) score (16.08 ± 2.1) and the mean of and Objective Structured Clinical Examination (OSCE) score (14.45 ± 2.5) ($p < 0.0000$) the student's perception of OSCE,

two third of students (65%) indicated that the OSCE is a fair examination and around half of them (55%) felt that it is a stressful exam and maximize the chance of excellence (49%). Student's feedback about the preparation of OSCE, around half of them considered that OSCE was well structured examination (58%) with clear instruction (57%), realistic scenario (57%) and suitable time for each station (41%).

According to Mohammad, Marzeih, Shahla, Ali, and Mehri,(2015) the mean of students' score in OSATS was significantly higher than their mean score in traditional method ($p = 0.01$). Most students believed that OSATS can evaluate a wide range of students' knowledge and skills compared to traditional method.

In a study conducted by Ameh, Abdul, Adesiyun and Avidime (2014) on Objective structured clinical examination vs traditional clinical examination: An evaluation of students' perception and preference in a Nigerian medical school, one hundred and thirty-one respondents (84%) felt TCE is more difficult and 20 (12.8%) felt OSCE was more difficult. One hundred and forty-two (91%) felt OSCE was easier to pass, 8 (5.1%) felt TCE was easier to pass and 6 (3.8%) were undecided. Majority of the students preferred OSCE for assessment. In relation to validity and reliability of OSCE, 124 (79.5%) of all the students felt it provides a true measure of essential clinical skills, 130 (83.3%) felt its scores are standardised, 143 (91.7%) felt it is a practical and useful experience and 135 (86.5%) felt students' personality, ethnicity and gender will not affect OSCE scores. Overall, there were no significant differences in preference and perceptions. Students preferred OSCE as method of assessing clinical competence and considered it a more valid and reliable method of examination.

The students' perceptions of OSCE compared to CPE, 73% responded that OSCE could partially or completely replace CPE. OSCE was judged as an objective and unbiased test as compared to CPE, by 66.4% of the students (Supriya et al, 2013)

According to Wadde, Deshpande, Madole, and Pathan (2013) in a study conducted on Assessment of III MBBS Students using OSCE in Community Medicine: Teachers' and students' Perceptions, students disagreed that OSCE is a stressful examination in contrast with the opinion of the teachers, students found difficulty in management of time at some stations so they demanded more time to be given for these stations. Most of

the students and teachers agreed that examiner bias may be eliminated by following this type of assessment. They also agreed that it is easier to pass OSCE as compared to traditional practical examination. Both students and teachers accepted that this type of examination is better than the traditional practical examination.

Also in a study conducted on Objective Structured Clinical Evaluation (OSCE) versus Traditional Clinical Students Achievement at Maternity Nursing: A Comparative Approach by Shadia and Nagwa (2013), regarding the effectiveness of OSCE, the students obtained higher mean scores in OSCE maternity exams (26.003+ 2.99), as compared to their mean scores with traditional methods (23.16 + 5.43) with a highly statistically significant difference ($p<0.00$) in the first trail. Also, the comparison between OSCE versus traditional method of evaluation revealed higher mean OSCE scores with a high statistical significant difference in second trail ($p< 0.00$).

In addition, the students‘ opinion regarding advantages of OSCE compared with the traditional method of evolution revealed that the highest rate of satisfaction belonged to OSCE methods of evaluation as the students reported that OSCE measure course objectives (70.6%) enhancing teaching level (71.6%), relate theory to practice (71.6), increased decision making ability (70.5%), enhanced methods of evaluation (70%), require analytical questions (66.3) and makes examination well developed (72%), than the traditional method. The mean score of students' opinion was (28.1+ 9.6).

In relation to student's perspectives regarding OSCE preparation, results revealed that preparation to OSCE was ranked as very satisfactory by more than one third of the students.

2.9 Theoretical Framework

Miller’s Model of clinical competency (1990), Ackerman’s (1988) Theory of Ability-Performance Relations during Skill Acquisition and Dreyfus Model of Skills Acquisition Stages /Benner's Stages of Clinical Competence were used for this study.

2.9.1. Miller's Model of Clinical Competency

This has been used over the past twenty years as a framework for assessing clinical competence.

The Miller pyramid

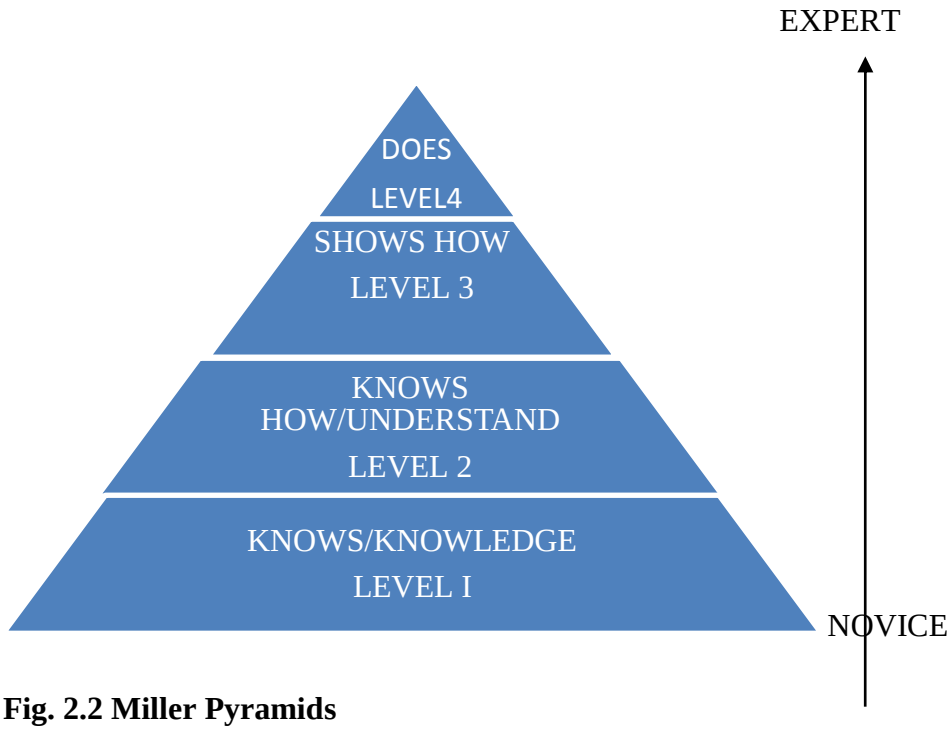

Fig. 2.2 Miller Pyramids

Miller's pyramid traditionally only has 4 stages. The first two stages, 'knows' and 'knows how', can be assessed using the traditional assessment tools of written and oral tests. In order to demonstrate clinical competence, assessment at levels 3 and 4 becomes more important, but also more challenging. Level 3, 'shows how', is currently assessed by practical examinations, observed long or short cases, or OSCE style examinations. However, the only way to assess level 4, 'does', is to observe the practitioner at work in the real world. In other words, this measures our ability to perform (Cheek and Lamb 2010).

2.9.2 Ackerman's (1988) Theory of Ability-Performance Relations during Skill Acquisition

Ackerman (1988) proposed three broad phases of abilities underlying skill acquisition:

(a) General intelligence phase (General ability)

(b) Associative phase (Perceptual speed), and

(c) Autonomous phase (Psychomotor ability)

Ackerman's (1988) theory describes the relation of ability classes to phases of skill acquisition, and can be used to predict the association between individual differences in performance across levels of skill. The theory proposes that in the initial declarative stage of skill acquisition (general ability), substantial demands are made on cognitive abilities such as memory, reasoning, and knowledge retrieval (Ackerman, 1988).

The associative phase (perceptual speed) is when learners develop rules for performance, and performance is more reliant on perceptual speed ability than general abilities, with attentional load reduced (Ackerman, 1988).

In the autonomous phase (psychomotor ability), the individual has essentially automatised the skill, thus performance is fluent and relatively free of attentional demands (Ackerman, 1990). Psychomotor ability then becomes more important for performance. As practice progresses, measures of intellectual ability become less related to task performance, a finding which is consistent with the development of resource independence, that is, resource availability has less importance in the final stage of skill acquisition.

2.9.3 Dreyfus Model of Skills Acquisition Stages /Benner's Stages of Clinical Competence (Novice to Expert)

Dreyfus and Dreyfus (1986) proposed a model of skill acquisition that posited five progressive stages of development: Novice, Advanced Beginner, Competent, Proficient and Expert. According to this model, as individuals begin learning a skill, they first master the rules governing the situation and then how and when to apply them. As their level of skill improves, they tend to rely less and less on these rules, and can handle more complex situations with facility. At the higher levels of skills development, actions stem more from intuition than simply applying rules and accepted standards. At these levels, individuals perceive patterns in the situations they encounter and reflexively know what actions are appropriate. Benner (2004) adapted the Dreyfus model of skills acquisition to define comparable stages in the development of clinical competence.

Table 2.1 Characteristics of Dreyfus Model of Skills Acquisition Stages /Benner's Stages of Clinical Competence (Novice to expert)

Novice	Beginners have had no experience of the situations in which they are expected to perform. Novices are taught rules to help them perform. The rules are context-free and independent of specific cases; hence the rules tend to be applied universally. The rule-governed behavior typical of the novice is extremely limited and inflexible. As such, novices have no "life experience" in the application of rules. "Just tell me what I need to do and I'll do it."(Berner) Rigid adherence to taught rules or plans, little situational perception, no discretionary judgment (Dreyfus).
Advanced Beginner	Advanced beginners are those who can demonstrate marginally acceptable performance, those who have coped with enough real situations to note, or to have pointed out to them by a mentor, the recurring meaningful situational components. These components require prior experience in actual situations for recognition. Principles to guide actions begin to be formulated. The principles are based on experience (Berner). Guidelines for action based on attributes or aspects, situational perception still limited, all attributes and aspects are treated separately and given equal importance(Dreyfus)
Competent	Competence, typified by the nurse who has been on the job in the same or similar situations two or three years, develops when the nurse begins to see his or her actions in terms of long-range goals or plans of which he or she is consciously aware. For the competent nurse, a plan establishes a perspective, and the plan is based on considerable conscious, abstract, analytic contemplation of the problem. The conscious, deliberate planning that is characteristic of this skill level helps achieve efficiency and organization. (Berner**)**. Coping with "crowdedness", now sees actions at least partly in terms of longer-term goals, conscious deliberate planning standardized and routinized procedures (Dreyfus)
Proficient	The proficient performer perceives situations as wholes rather than in terms of chopped up parts or aspects, and performance is guided by maxims. The proficient nurse learns from experience what typical events to expect in a given situation and how plans need to be modified in response to these events. This holistic understanding improves the proficient nurse's decision making (Berner). Sees situations holistically rather than in terms of aspects, sees what is most important in a situation, perceives deviations from the normal pattern, decision-making less labored, uses maxims for guidance, whose meaning varies according to the situation (Dreyfus)
Expert	No longer relies on rules, guidelines or maxims, intuitive grasp of situations based on deep tacit understanding, analytic approaches used only in novel situations or when problems occur, Vision of what is possible (Dreyfus)

2.9.4 Application of the theory/models to the study

The theory/models are:

- Dreyfus staged Model of Skills Acquisition/Benner's Stages of Clinical Competence (1984; 2004)
- Ackerman's (1988) Theory of Ability-Performance
- Miller's model of performance assessment
- Dreyfus staged Model of Skills Acquisition and Benner's Stages of Clinical Competence (1984; 2004) have the following stages in common:
  - Novice
  - Advanced Beginner
  - Competent
  - Proficient
  - Expert
- Ackerman's (1988) Theory of Ability-Performance Relations During Skill Acquisition
  - General intelligence phase (general ability)
  - Associative phase (Perceptual speed), and
  - Autonomous phase (Psychomotor ability)
- Miller's model of performance assessment from novice to expert:
  - Knows/knowledge
  - Knows how/understand
  - Shows how
  - Does

Miller's pyramid identifies 4 different levels by which a novice student being trained to become an expert can be assessed. These levels are: know, knows how, shows how and does. These levels are assessed differently using different mode of examinations. For example, the first two levels which denote cognition are assessed in nursing using essay, objective questions and Objective Structured Clinical Examination.

The third and fourth levels which denote behaviour are assessed during skill demonstrations in the skills lab/demonstration room, direct observation, simulation, Objective Structured Clinical Examination and Traditional Practical Examination.

In this study, all these levels of nursing students' performance were assessed using the Objective Structured Clinical Examination Instruments (OSCEIs) and Traditional Practical Examination Instrument (TPEI). Both examinations are independent variables.

The pyramid conceptualises the essential facets of clinical competence. The base represents the knowledge components of competence: knows (basic facts) followed by knows how (applied knowledge). These can be more easily assessed with basic written tests of clinical knowledge using multiple-choice questions. The shows-how is behavioural rather than a cognitive function and involves hands on, not in the head, that is, it involves demonstration or use of psychomotor skills.

The aim of school of nursing curriculum is to prepare competent polyvalent nurse practitioners who will use problem solving skills in providing care, acceptable, and affordable health services to meet the health needs of individual's families and the community at all levels of care. In order to ensure achievement of this aim there is need for effective assessment using both theoretical and practical parameters.

This study has taken one of the parameters of assessment which is practical examination to assess development of competent nurse from the stage of novice. The ability of nursing students to demonstrate clinical competencies depends on many factors such as: students' intelligence, general ability, psychomotor ability and perceptual speed (students related factors). The examination related factors includes: examiner's disposition, examination atmosphere, structuredness of questions and patients' condition.

The Miller's model is applicable to this study in that nursing students were able to know how/understand different nursing procedures which was made possible during training process. The nursing students' ability of showing how and demonstration of nursing skills learnt during training was assessed in the two practical examinations, that is, TPE and OSCE. Using Ackerman's (1988) Theory of Ability-Performance Relations during Skill Acquisition, the general ability, perceptual speed (the procedures were timed) and psychomotor ability or level of skills demonstrated were assessed and scored.

Using Dreyfus staged Model of Skills Acquisition and Benner's Stages of Clinical Competence, the nursing students' scores in the two examinations were compared using competency parameters – fairly competent and very competent.

The expected outcomes of the study are: determination of competent Nursing students, as reflected in performance, determination of the most effective practical examination as reflected in perception of nursing students about the two Practical Examinations in terms: perception about time consumption, objectivity, ability to assess wide range of learned materials, preparation for the examination and destabilisation and stress level during the practical examination session.

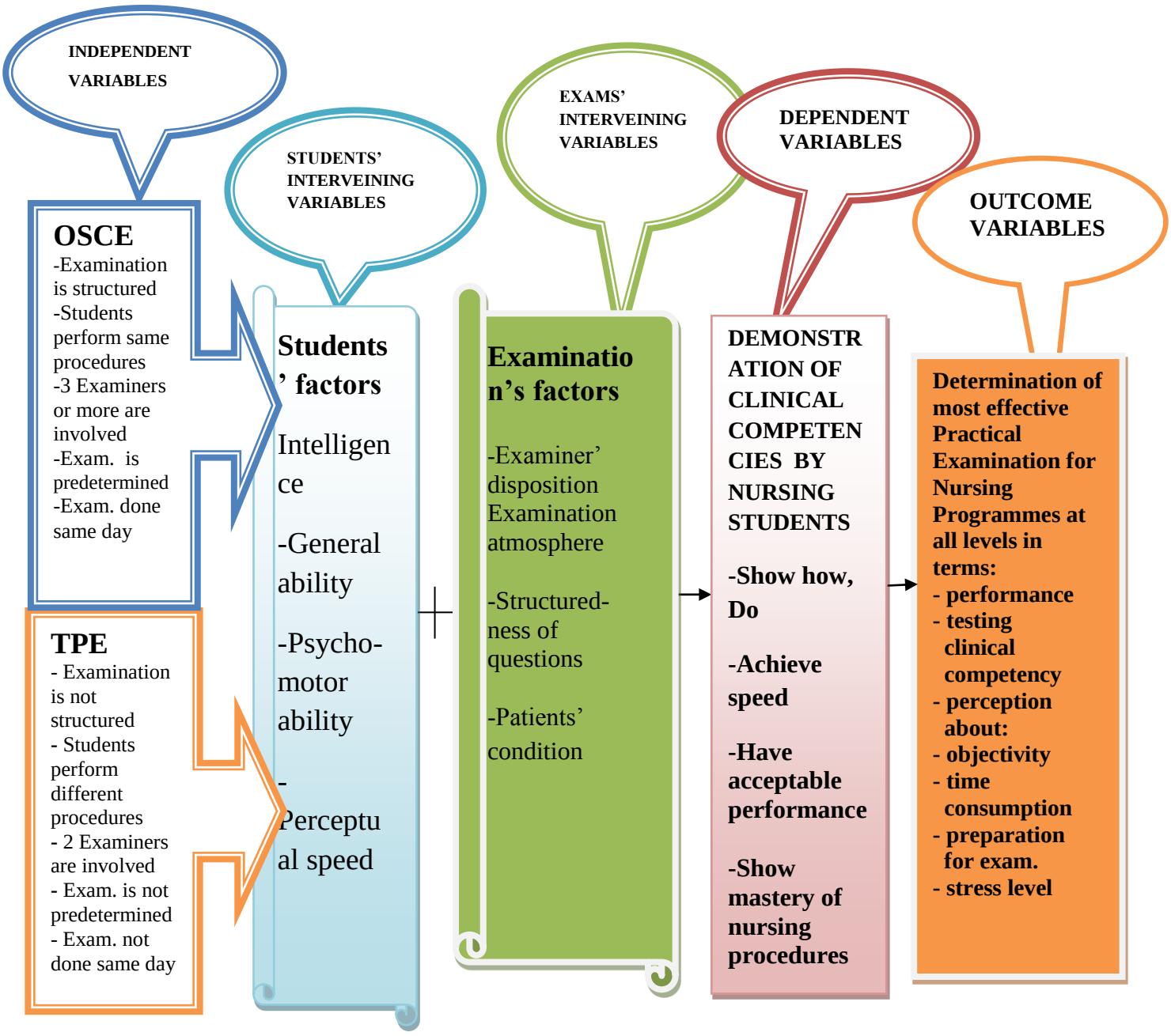

FIG. 2.3 Conceptual framework for the study by the researcher

2.10 Summary of literature

The term clinical/practical examination in Nursing is the assessment of clinical competencies of Nursing students which is normally carried out in clinical areas or skills laboratory in nursing institutions. The literature review provided information on different assessment methods, principles of assessment, how to select assessment tools and different forms of evaluation in nursing education.

The two formats and strategies of clinical assessment used in Nigeria were discussed which are Traditional practical examination also called Oral/practical examination which is being used for General Nursing and Psychiatry Nursing. Traditional Practical Examination (TPE) has been the predominant method and the only method used to assess clinical skills in Nigeria. This format of assessment is the approved format of clinical evaluation by Nursing and Midwifery Council of Nigeria. It is used for both formative and summative evaluation in both basic and generic nursing programs. The second format is Objective Structured Clinical examination used only for Midwifery in Nigeria. The OSCE involves the student demonstrating a skill during a simulated clinical situation in a controlled environment instead of using real patients in the practice setting.

The key findings from the review revealed that both formats of clinical examination have some identified challenges and deficiencies. It was also discovered that evaluation of clinical performance has been a challenge to nurse educators for many years. It was further discovered in the reviews that limited literature was available on these formats of education in Nigeria. Review confirmed that other allied health professional such as Medicine, Physiotherapy and Pharmacy have been making use of OSCE some years ago. Some of the comparative empirical reviews on OSCE and TPE were done using other allied health professionals studies. This confirmed that there are limited study in Nigeria on TPE, OSCE and comparison of these two formats in Nursing.

The theoretical framework designed for this study revealed the expected outcome variables of the study as set out in the objective of the study is determination of clinical competencies of Nursing students and the most effective of the two formats of Clinical examinations. When nursing students are assessed using any of the two formats of examination, the expectation is to determine the competent nursing students bearing in

mind the intervening variables. Any of the two formats that is able to assess nursing students clinical competencies better together with nursing students and nurse educators perception is identified as the most effective of the two.

2.11 Hypotheses

1. There is no significant difference in the nursing students' performance scores in Pretest and TPE (posttest I).
2. There is no significant difference in the nursing students' performance scores in Pretest and OSCE (posttest II).
3. There is no significant difference in the scores obtained by the students in TPE (posttest I) and OSCE (posttest II).
4. There is no significant difference in the ability of OSCE and TPE in testing nursing students' clinical competency?
5. There is no significant difference in the knowledge of nurse educators on OSCE before and after the training.
6. There is no significant difference in the perception of nursing students towards OSCE and TPE.
7. There is no significant difference in the preference of nursing students towards OSCE and TPE
8. There is no significant difference in perception of nurse educators about OSCE and TPE.

CHAPTER THREE

RESEARCH METHOD

This chapter describes the methodology for carrying out this study. This is discussed under the following subheadings. Research design, research setting, target population, sampling technique, instrument for data collection, reliability and validity of instrument, ethical consideration, method of data collection and procedure for data analysis.

3.1 Study Design

This is an intervention study of comparative type. It utilised one group pretest-posttest quasi experimental design. It compared the Objective Structured Clinical Examination with Traditional Practical Examination in assessing nursing students' clinical competency in Southwestern Nigeria. The participants were second year hospital based schools of Nursing and 300level University based Department of Nursing. The groups were comparable as they were all familiar with TPE and have one year before writing Nursing and Midwifery Council Qualifying Examination. All institutions selected for the study were accredited. These schools have been established for a period of time, they have trained a lot of competent nursing professionals using the same curriculum.

The nursing students were approached and consent sought to partake in the study. The pretest was administered to them to elicit their knowledge base on different nursing procedures/clinical competencies to be taught. Following this, the nursing students were taught ten nursing procedures and OSCE process for a period of four (4) weeks in each school. Post intervention data was collected a week after the intervention ended which is the fifth (5^{th}) week using TPE/Posttest I (control examination) while OSCE/ posttest II (examination control) was conducted sixth (6^{th})

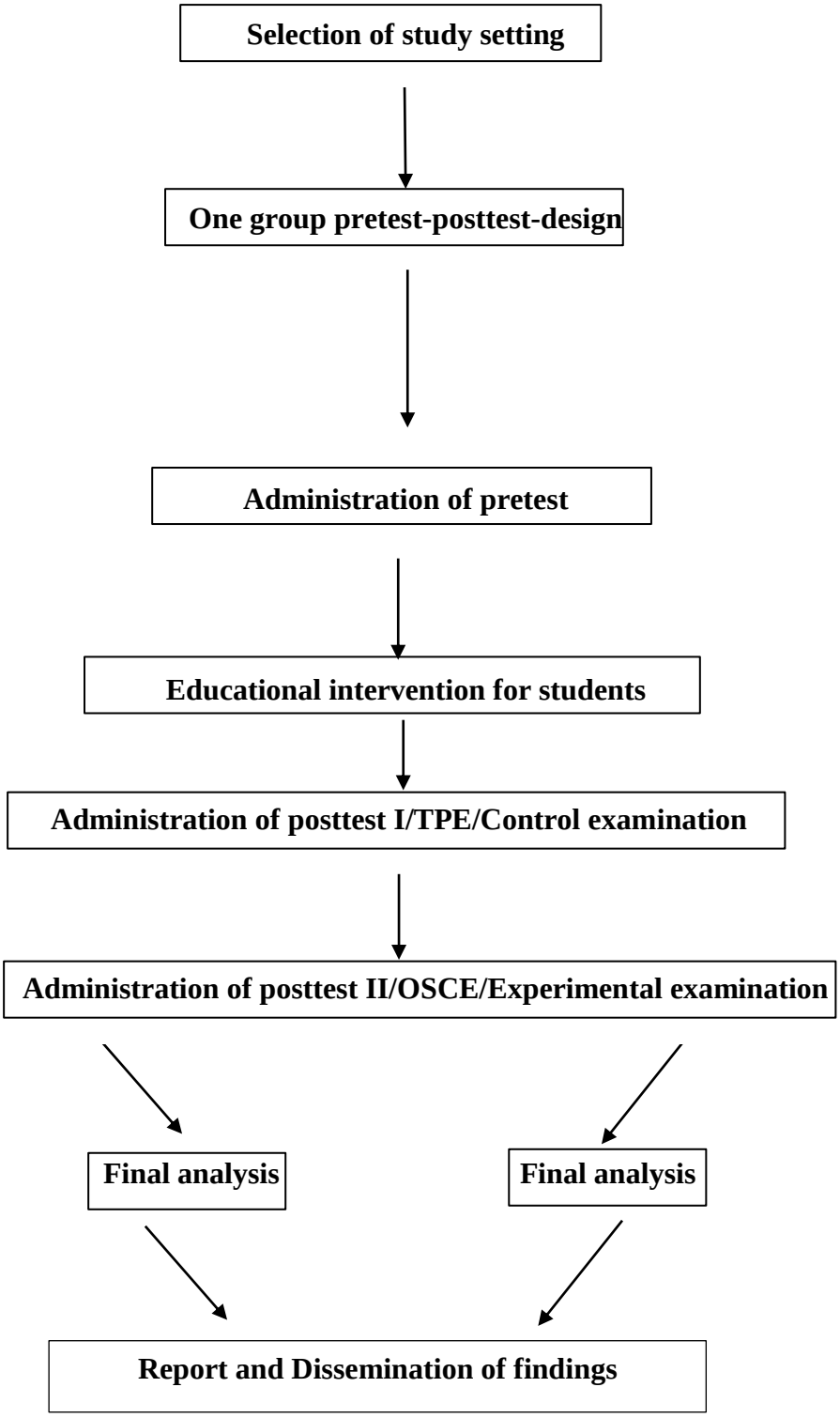

Figure 3.1: Study Design Flow chart

3.2 Research Setting

The study was conducted in two Schools of Nursing and two Departments of Nursing in south western States of Nigeria.

Figure 3.1 Map of Southwestern Nigeria

Four study areas were captured by this study: Wesley Guild School of Nursing, Ilesa and Ondo State School of Nursing, Akure, Department of Nursing University of Ibadan and Department of Nursing, Ladoke Akintola University Technology, Osogbo, Osun State.

Wesley Guild School of Nursing, Ilesa is located in Ilesa East Local Government Area of Osun State. The total number of basic students is 91 while post basic students are 20. The staff strength is 7 with 3 preceptors. The School is hospital-based School of Nursing with the hospital founded in 1912.

Ondo State School of Nursing, Akure, is located in Akure South Local Government Area of Ondo State, along Igbatoro Road, Akure. The school was founded in 1976. The student population is 167 (50 basic students per class and 17 post basic students). The

total number of academic staff is 16 with 5 preceptors. The School uses State Specialist Hospital, Akure as the major hospital for both clinical practice and practical examinations.

The Department of Nursing, University of Ibadan was founded in 1965. The total population of students is 139. The total number of academic staff was 13 and 3 clinical instructors. The school uses University College Hospital as the major hospital for clinical practice and practical examinations.

Ladoke Akintola University of Technology was founded in 1990 and is jointly owned by Oyo and Osun states. The University has two campuses located in Ogbomoso and Osogbo. The Department of Nursing is in both campuses with 100 and 200 level students in Ogbomoso while the 300, 400 and 500 hundred level students are in Osogbo. The total numbers of nursing students were 390, 10 lecturers and 1 clinical instructor.

3.3. Target Population

The target population were nursing students in Southwestern, Nigeria.

3.4 Sampling Technique and Sample

There are 16 Schools of Nursing and five Departments of Nursing in Southwestern Nigeria. Two Schools and two Departments of Nursing were randomly selected.

3.4.1 Sample

There are 111 students [30(Ist year), 51(2^{nd} year), and 30(3^{rd} year)] from Wesley Guild School of Nursing, Ilesa, 148 students [51 (1^{st} year), 49(2^{nd} year), 48(3^{rd} year)] from School of Nursing, Akure, 137 students [27(100L), 15(200L), 36(300L), 29(400L), 30(500L)] students from Department of Nursing University of Ibadan and 370 students[60(100L), 60(200L), 50(300L), 80(400L), 120(500L)] from Ladoke Akintola University of Technology, Osogbo. The total population of nursing students in the four (4) schools used for the study was seven hundred and sixty-six (766).

3.4.2 Sample Size Determination/Calculation

This was done by using Slovin's Formula

$$\text{Sample size (n)} = \frac{N}{1+N(e)^2}$$

n = sample size

N = Total population

e = level of precision/ significance @ 0.05

n =?

N = 766

$$= \frac{766}{1+766(0.05)^2} = \frac{766}{3}$$

$$= \frac{255}{4 \text{ schools}} = 63$$

The sample size to be selected was supposed to be 63 students in each school. The 1st year students in schools of Nursing were not familiar with TPE while 3rd year students were busy preparing for the qualifying examination; hence they were not free to participate in the study. On the other hand, the 100 and 200 levels students in the University are not yet exposed to detailed TPE while 400 level students were also busy preparing for their qualifying examination; hence they were not free to participate in the study. The 2nd year nursing students and 300 level nursing students were familiar with TPE. That explained selection of 2nd year students in the two Schools of Nursing and 300 level students in the two Departments of Nursing.

However, there was no class/level that had up to 63 students, therefore the total number of student available were selected was as follows: Wesley Guild School of Nursing, 51 nursing students, School of Nursing, Akure, 49 nursing students, Department of Nursing, University of Ibadan, 36 nursing students and Department of Nursing, Ladoke Akintola University of Technology, 50 nursing students. The total samples selected were 186 students.

Table 3.2 Population and Sample of Students in Selected Nursing Training Institutions in Southwestern Nigeria

S/N	Names of Schools	Levels	No in class	Samples	Total
1	Wesley Guild School of Nursing, Ilesa	Ist year	30		
		2nd year	51	51	
		3rd year	30		111
2	School of Nursing, Akure	Ist year	51		
		2nd year	49	49	
		3rd year	48		148
3	Department of Nursing University of Ibadan	100	27		
		200	15		
		300	36	36	
		400	29		
		500	30		137
4	Ladoke Akintola University of Technology, Osogbo.	100	60		
		200	60		
		300	50	**50**	
		400	80		
		500	120		370
	Total			**186**	**766**

3.5 Instruments for Data Collection

The instruments for data collection were divided into 6 segments as follows:

- **Objective Structured Clinical Examination Instruments (OSCEI).** This was developed to score students during OSCE which is the experimental practical examination. The newly designed OSCE instruments were administered by nurse educators/assessors on the nursing students of four (4) selected nursing programmes during practical examination to assess the students' clinical skills.
- **Traditional Practical Examination Instrument (TPEI).** This is the accepted assessment format by Nursing and Midwifery Council of Nigeria (NMCN) used to assess nursing students during practical examination at all levels. It was adopted in this research during the TPE which was the Control Examination to assess nursing students.

- **Students' Pretest (SPT)-** This consisted of questions drawn from planned clinical educational content which focussed on specific competencies, knowledge on TPE and OSCE. This was administered to students prior the teaching of the contents.
- **Nurse educators' Pretest (EPT1) and Nurse educators' Posttest (EPT_2).** These were administered to nurse educators before and following the training on OSCE process /implementation respectively.
- **Students Demographic and Perception Questionnaire (SDPQ).** This is a structured questionnaire which was administered to students following the examination to collect their demographic data and elicit their perception on the use of OSCE in assessment of nursing students' clinical competencies in comparison with the TPE.
- **Nurse educators' Demographic and Perception Questionnaire (EDPQ).** This is a structured questionnaire which was administered to nurse educators following the examination to collect their demographic data and elicit their perception on the use of OSCE in assessment of clinical competency of nursing students in comparison with TPE.

3.6 Validity

Content validity of these instruments (checklist) was assured by subjecting it to experts' opinion of the researcher's supervisors and Postgraduate Seminar Committee for content validation and correction before administration.

In order to further ensure the validity of the instruments (OSCEI and TPEI), the scores obtained from OSCE and TPE during pilot testing were subjected to criterion reference validity test using spearman's correlating coefficient statistical test. The results were as follows: the correlation between mean OSCE scores and the grade point average of 50% (pass mark recognised by Nursing and Midwifery Council of Nigeria) are significant r value = 0.800, P value = 0.006. Similarly, for TPE r = 0.911, P = 0.001 indicating that scores obtained using both instruments were statistically valid.

3.7 Reliability

The reliability of the instrument was determined by pilot testing. This was done in Ondo State School of Nursing. The reliability coefficients of the instrument were determined using Cronbach's Alpha statistical method. The values obtained are as follows:

- Students Demographic and Perception Instrument (SDPI) 0.840
- Nurse educators' Demographic and Perception 0.700
- Traditional Practical Examination Instrument (TPEI) 0.575
- Objective Structured Practical Examination Instruments **(OSCEI)**

- Procedure checklist (Urine testing) 0.645
- Procedure checklist (Bed Bath) 0.840
- Procedure checklist (Vital signs) 0.638
- Question stations 0.874

3.8 Ethical Consideration

An introductory letter was obtained from the Department of Nursing, University of Ibadan. The letter was taken to ethical committee of each of the schools selected for the study to obtain ethical protocol for ethical clearance. The ethical committees include:

- Obafemi Awolowo University Teaching Hospitals' Complex, Ile-Ife, Nigeria Ethics and Research Committee
- The Chairman, UI/UCH Ethics Committee, College of Medicine, University of Ibadan, Ibadan.
- Ondo State Ministry of Health Akure Ethics and Research Committee.
- Ladoke Akintola University of Technology, Osogbo, Osun State.

Following the collection of ethical clearances, the Principals and Heads of Departments of Schools and Departments of Nursing under consideration were informed about the study. The Principals and Heads of Departments of Schools were assured of the confidentiality of the data which will be used for research purposes only. Voluntary participation was solicited from the Nurse educators and

Nursing students. They were assured that the study would not cause any harm either to them or their organization.

3.9. Procedure for Data Collection

The procedure for data collection was multi-staged.

Table 3.3: Study Plan/Phases

Phases	Stages and weeks allotted/school	Job description
Pre-intervention phase	**Stage 1** 2weeks	- Pre-visit made to the study settings with letter of introduction from the Department of Nursing, University of Ibadan - Obtaining of ethical clearance from research and ethical committees. - Submission of ethical clearance from research and ethical committee of the schools to the Principals and Head of Departments of the study settings - Planning of mode of research execution with the principals and Head of Departments of nursing programmes.
Intervention phase	**Stage 1I** **2** weeks	- Administration of educational package pretest to students - Exposure of students to educational package content including nursing procedures at 4 hours per week for 4weeks - Educating of nursing students and nurse educators on TPE/OSCE process and implementation **(Intervention)** all lasted 4 weeks per schools
	Stage III 2wk	- Traditional practical examination (**Posttest I/TPE/Control examination)** conducted 5th week - Objective Structured Clinical Examination **(**Post–test II/OSCE/ Experimental examination**)** 6th wk
Post Intervention phase	**Stage IV** 1wk	- Administration of Students' demographic and Perception Questionnaires - Administration of Nurse educators' demographic and Perception Questionnaires.
	Stage V	- Collation of results, analysis and report

Pre-intervention phase

Stage I

This stage involves:

Pre-visit made to the study settings with letter of introductions from the Department of Nursing, University of Ibadan to introduce the reseacher and mission for coming. Ethical clearances from research and ethical committees were obtained and submitted to the Principals and Head of Departments of the study settings. This was followed by planning of mode of study execution with the Principals and Head of Departments of nursing programmes.

Intervention phase

Stage II

The teaching sessions were organised for the students of the four schools selected for the study. They were taught ten nursing procedures. The ten procedures are:

- Bed making
- Bed bath
- Oral hygiene
- Tepid sponging
- Vital signs
- Wound dressing
- Administration of oral medication
- Catheterization
- Urine testing
- Oxygen Administration

The teaching sessions lasted four weeks of 4 hours per week per school.

In addition to teaching of content, both nursing students and nurse educators were educated on TPE and OSCE process.

This took place within 4 weeks in each of the study settings. The training session was divided into three main sessions which incorporated the following modules:

Module 1: Clinical educational content for students

Module 2: The role of nursing students and nurse educators in OSCE process and implementation.

Module 3: Practical demonstration. This involved incorporating a practical session into the training whereby students were assessed by practical assessors using newly designed OSCEI.

Stage III

Posttest I which is TPE [Control Examination] was conducted following the training. This examination was scored using TPEI. The purpose was to obtain the baseline scores against which to compare OSCE scores. This took place within the 5^{th} week.

OSCE was organized sixth week. This was conducted using OSCEI. The OSCEIs were structured after the ten procedures taught the students. The OSCE examination was conducted using 10 stations of 6 minutes each. The ten stations consisted of five procedure stations alternated with five question stations. Three out of the five procedure stations were observed stations, that is, the examiner observed and scored the students during the procedure. The ten Stations were: Station 1(Bed Bath – Observed station), Station 2 (Questions), Station 3 (Catheterisation- skill description), and Station 4 (Questions), Station 5 (Vital Signs – Observed station), Station 6 (Questions), Station 7 (Urine Testing – Observed station), Station 8 (Questions), Station 9 (Oral hygiene - skill description), Station 10 (Questions). The trained nurse educators participated as research assistants observed and scored the skills demonstrated by the nursing students in the observed stations. In the skill description stations, the students described the skills by writing it down according to the instructions given. The question stations comprised of various forms of objective questions answered by the students.

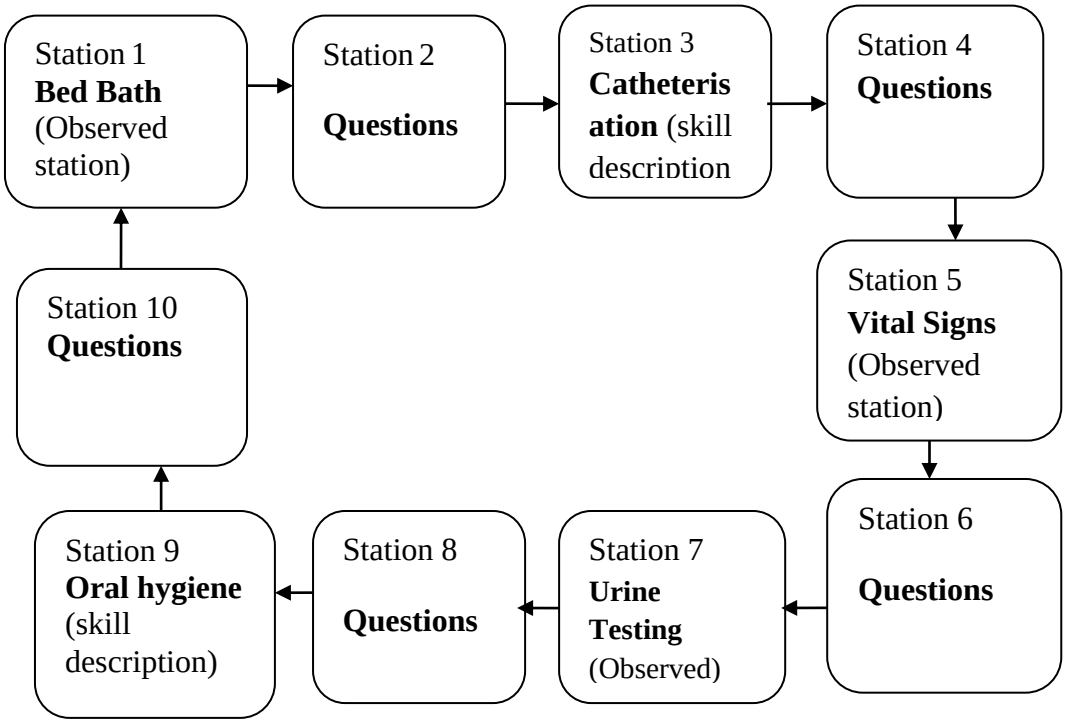

Figure 3.2 Students rotation through ten stations during OSCE examination

Post-intervention phase

Stage IV

Following the examination, the students' and nurse educators' perception of both practical examinations (OSCE and TPE), that is, new OSCE and the old traditional method of practical examinations were elicited through the use of researchers' designed structured questionnaires, that is, Students Demographic and Perception Questionnaire (SDPQ) and Nurse educators' Demographic and Perception Questionnaire (EDPQ) respectively. The perception responses from the students were compared using ANOVA

Stage V

The mean scores obtained from the four schools altogether both from OSCE and TPE were compared to establish any variation**.**

Summary of data collection procedure

The researcher spent six weeks in each school selected for the study. The six weeks consisted of the administration of pretest followed by the teaching of Nursing students the ten procedures and TPE/OSCE process which lasted four weeks. At the end of the fourth, the researcher with the trained nurse educators in each of the study settings

organised Posttest I (TPE) and Posttest II (OSCE) at fifth and sixth week respectively. Following OSCE, Demographic and Perception Questionnaires were administered, collected and collated.

3.10 Procedure for Data Analysis

Data were collected and collated. Data obtained were analysed using both descriptive and inferential statistics utilizing the Statistical Package for Social Sciences (SPSS) version 19. The socio-demographic data of participants were analysed by simple frequencies. Categorical variables were summarised using percentages. Continuous variables were summarised using means and standard deviation (SD). All hypotheses were tested at 0.05level of significance.

Objective 1: To compare the nursing students' performance scores in Pretest and TPE (posttest I) in the selected Schools and Departments of Nursing in the study settings.

In order to compare the performances of nursing students in Pretest and TPE (posttest I), the scores obtained from pretest and TPE (Posttest I) in all the 4 study settings were computed. The mean score was computed for each of the 4 schools. Likewise, the mean scores for the 4 schools combined were computed. Mean differences between the performances of students in both Pretest and TPE (posttest I) were established. The two sets of results for the total participants in the four schools were obtained and compared using the T-test statistics for independent sample at 95% confidential interval.

Objective 2: To compare the nursing students' performance scores in Pretest and OSCE (Posttest II) in the selected Schools and Departments of Nursing in the study settings.

In order to compare the performances of nursing students in Pretest and OSCE (Posttest II), the scores obtained from Pretest and OSCE (Posttest II) in all the 4 study settings were computed. The mean score was computed for each of the 4 schools. Likewise, the mean scores for the 4 schools combined were computed. Mean differences between the performances of students in both Pretest and OSCE (posttest II) were established. The

two sets of results for the total participants in the four schools were obtained and compared using the T-test statistics for independent sample at 95% confidential interval.

Objective 3: To compare the nursing students' performance scores in TPE (posttest I) and OSCE (Posttest II) in the selected Schools and Departments of Nursing in the study settings.

In order to compare the performances of nursing students in TPE and OSCE, the scores obtained from TPE and OSCE in all the 4 study settings were computed. The mean score was computed for each of the 4 schools. Likewise, the mean scores for the 4 schools combined were computed. Mean differences between the performances of students in both TPE (control) and OSCE (experimental) methods of evaluating student clinical competency were established. The two sets of results for the total participants in the four schools were obtained and compared using the T-test statistics for independent sample at 95% confidential interval.

Objective 4: Assess the difference in the effectiveness of OSCE and TPE in testing clinical competency of nursing students.

The nursing students' scores in OSCE and TPE were graded into two (2) competency levels: The nursing students' scores in OSCE and TPE were grouped into two (2) competency levels: fairly competent (50.0% - 59.9%), Very Competent (60.0% and above). Clinical competencies were tested using chi-square test at 0.05level of significance.

Objective 5: To assess the knowledge of nurse educators on OSCE before and after the training

Nurse educators' knowledge of OSCE was assessed by the administration of pretest prior to the training on the OSCE. Following the training the posttest was administered. The results of the two tests were collated and mean difference of the results computed.

Objective 6: To assess the perception of nursing students towards OSCE and TPE

Students' perception toward both OSCE and TPE methods of examinations regarding: Time Consumption, Objectivity, Assessment of learned materials, Preparation for the examination, destabilisation during examination and stress level were scored and analysed. Differences were tested for significance using ANOVA test.

Objective 7: To assess the preference of nursing students for the use of OSCE and TPE

The nursing students' preference responses for OSCE and TPE were collated and computed using percentages and Chi-square.

Objective 8: To assess the perception of nurse educators towards OSCE and TPE.

Nurse educators' perception toward both OSCE and TPE methods of examinations in terms of: Time Consumption, Objectivity, Assessment of learned materials, destabilisation during examination and stress level Preparation for the examination were scored and graded. Differences were tested for significance using ANOVA test.

Hypotheses Testing

Hypothesis 1: There was no significant difference in the nursing students' performances scores in Pretest with TPE (posttest I)

In order to find the difference in the performances of nursing students in Pretest and TPE (posttest I), the scores obtained from pretest and TPE (Posttest I) in all the 4 study settings were computed. The mean score was computed for each of the 4 schools. Also, the mean scores for the 4 schools combined were computed. Mean differences between the performances of students in both Pretest and TPE (posttest I) were established. The two sets of results for the total participants in the four schools were obtained and compared using the t-test statistics for independent sample at 95% confidential interval.

Hypothesis 2: There was no significant difference in the nursing students' performances scores in Pretest with OSCE (posttest II)

In order to find the difference in the performances of nursing students in Pretest and TPE (posttest I), the scores obtained from pretest and OSCE (Posttest II) in all the 4 study settings were computed. The mean score was computed for each of the 4 schools.

Also, the mean scores for the 4 schools combined were computed. Mean differences between the performances of students in both Pretest and OSCE (Posttest II) were established. The two sets of results for the total participants in the four schools were obtained and compared using the t-test statistics for independent sample at 95% confidential interval.

Hypothesis 3: There was no significant difference in the nursing students' performance scores obtained from (OSCE) and (TPE).

The scores obtained from OSCE and TPE in all the 4 study settings were computed. Also, the mean scores for individual and the 4 schools combined were computed. Mean differences between the performances of students in both TPE (control) and OSCE (experimental) methods of evaluating student clinical competency were established. The differences in the two set of results were computed and tested for significance using the t-test statistics at 95% confidential interval.

Hypothesis 4: There was no significant difference in the effectiveness of OSCE and TPE in testing clinical competency of nursing students.

The nursing students' scores in TPE and OSCE were grouped into two (2) competency levels: fairly competent (50.0% - 59.9%), Very Competent (60.0% and above). Clinical competencies were tested using chi-square test at 0.05level of significance.

Hypothesis 5: There was no significant difference in the knowledge of nurse educators on OSCE before and after the training.

The difference in the knowledge of nurse educators before and after training was computed using student t-test.

Hypothesis 6: There was no significant difference in the perception and preference of nursing students towards OSCE and TPE.

Students' perception toward both OSCE and TPE methods of examinations regarding: Time Consumption, Objectivity, Assessment of learned materials, Preparation for the

examination, destabilisation during examination and stress level were scored and graded. Differences were tested for significance using ANOVA test.

Hypothesis 7: There was no significant difference in the preference of nursing students towards OSCE and TPE

The nursing students' preference responses for OSCE and TPE were collated and computed. Chi-square was used to test for significance. The hypothesis was tested at 0.05level of significance.

Hypothesis 8: There was no significant difference between perception of nurse educators about OSCE and TPE.

Nurse educators' perception toward OSCE and TPE methods of examinations was assessed using: Time Consumption, Objectivity, Assessment of learned materials, Preparation for the examination, destabilisation during examination and stress level were scored and graded. The differences in the perception were tested for significance using ANOVA.

CHAPTER FOUR

RESULTS

The results of research on the comparison of Objective Structured Clinical Examination and Traditional Practical Examination in assessment of nursing students' clinical competencies in Southwestern Nigeria are presented in this chapter. Results are presented in tables and figures.

4.1 Population distribution of Nursing students in four Nursing Training Institutions

Table 4.1 shows the population distribution of nursing students across the four schools used for the study. There were 186 students in all classes selected for the study in the four schools. One hundred and seventy-five (175) students volunteered and registered for the two examinations, that is, TPE and OSCE while 157 turned up and took part in the two examinations.

Table 4.1 Distribution of Nursing students in four Nursing Training Institutions

Schools	No in class	No registered	No present for the examination
SONAK.	49	49	45
OAUTHC	51	51	51
DEPT. U.I	36	30	24
DEPT. LAUTECH	50	45	37
Total	**186**	**175**	**157**

4.2 Socio-Demographic Characteristics of Nursing students in the Study

The population distribution of nursing students in the study as presented in Table 4.1. shows that 157 students took part in the two practical examinations, that is, OSCE and TPE. Table 4.2 showed that 148 out of 157 respondents completed and returned the questionnaires thus given 94.2% return rate. One hundred and forty-one respondents (95.1%) were within the age range of 18 to 25 years. The mean age was 21.5 years ± 3.8years. Majority 110(74.3%) respondents were female and more than half 87(58.7%) were hospital based second year nursing students with the rest 61(41.3%) being university-based generic nursing students. Majority of respondents 123(83.1%) were of Yoruba ethnic group spread across the Yoruba speaking States of southwestern Nigeria. The rest were from Edo 9 (6.1%), Imo 6(4.1%), Kogi 6(4.1%) and Anambra 4 (2.7%).

Table 4.2 Socio-Demographic Characteristics of Nursing students

Socio-demographic characteristics	Variables	Frequency N=148	%
Sex	Male	38	25.7
	Female	110	74.3
Age on admission	<20	66	44.5
	20 – 25	75	50.6
	25 and above	7	4.7
Level of study	Basic 2nd Year	87	58.7
	Generic 300 level	61	41.3
State of origin	Ondo	32	21.6
	Oyo	25	16.9
	Osun	26	17.6
	Ogun	10	6.8
	Lagos	7	4.7
	Ekiti	23	15.5
	Edo	9	6.1
	Imo	6	4.1
	Kogi	6	4.1
	Anambra	4	2.7
Ethnicity	Yoruba	127	83.1
	Igbo	10	6.8
	Benin	9	6.1
	Igbira	6	4.1
Religion	Christianity	100	67.6
	Islam	48	32.4

4.3 Socio-Demographic Characteristics of Nurse educators

The socio-demographic characteristics of nurse educators in the study as presented in Table 4.3 shows that there were 26 nurse educators who filled and returned the demographic and perception questionnaires out of 31nurse educators educated and who eventually participated in the practical assessment of the nursing students. The demographic distribution of the nurse educators is as follows: SON AK- 8 nurse educators, representing (30.8%), DEPT. U.I. 8 nurse educators, representing (30.8%), DEPT. LAUTECH 4 nurse educators, representing (15.4%), SON OAUTHC 6 nurse educators, representing (23.1%), 8 nurse educators, representing (30.8%) were male while 18 nurse educators, representing (69.2%) were female. Qualification profiles of nurse educators: 1 educator, representing (3.8%) had RN/RM, 20 nurse educators, representing (76.9%) had BSc/BNSc while 5 nurse educators, representing (19.2%) had MSc.

Lengths of service: 4 nurse educators, representing (15.4%) had worked for 5-10years, 10 nurse educators, representing (38.5%) had worked for 11-15 years, 3 nurse educators, representing (11.5%) had worked for 16-20 years, while 9 nurse educators, representing (34.6%) had worked for 20 and above years. Grade Level (GL): 4 nurse educators, representing (15.4%) were GL 8-9, 8 nurse educators, representing (30.8%) were on GL10-12, 11(42.3) were on GL13-14 while 3 nurse educators, representing (11.5%) were GL15-16.

Numbers of practical examination experienced by nurse educators: 2 nurse educators, representing (7.7%) had assessed nursing students during practical examination between 1-5 times, 12 nurse educators, representing (46.2%) had assessed between 6-10 times, 5 nurse educators, representing (19.2%) had assessed between11-15 times while 7 nurse educators, representing (26.9%) had assessed nursing students during practical examination between 16 and above times.

The State of origin of nurse educators: 1 educator, representing (3.8%) came from Anambra, 1 nurse educators, representing (3.8%) came from Cross River, 1 nurse educators, representing (3.8%) came from Kogi, 9 nurse educators, representing (34.6%) came from Ondo, 12 nurse educators, representing (42.2%) came from Osun

while 3 nurse educators, representing (11.5%) came from Oyo. Regarding ethnicity 24 nurse educators, representing (92.3%) were Yoruba and while 2(7.7%) were Igbo. This figure is similar to Christianity and Islamic religion makeup of the respondents.

Table 4.3 Socio-Demographic Characteristics of Nurse educators

Variables	Categories	No = 26	%
School of Nurse educators	SON AK	8	30.8
	DEPT. U.I	8	30.8
	DEPT. LAUTECH	4	15.4
	SON OAUTHC	6	23.1
Gender of Nurse educators	Male	8	30.8
	Female	18	69.2
Educational qualification	RN/RM	1	3.8
	BSc/BNSc	20	76.9
	MSc	5	19.2
Length of service in year	5-10	4	15.4
	11-15	10	38.5
	16-20	3	11.5
	20 and above	9	34.6
Grade Level	8-9	4	15.4
	10-12	8	30.8
	13-14	11	42.3
	15-16	3	11.5
No of practical examination experience	1-5	2	7.7
	6-10	12	46.2
	11-15	5	19.2
	16 and above	7	26.9
State of Origin	Anambra	1	3.8
	Cross river	1	3.8
	Kogi	1	3.8
	Ondo	9	34.6
	Osun	12	42.2
	Oyo	3	11.5
Ethnicity	Yoruba	24	92.3
	Igbo	2	7.7
Religion	Christianity	24	92.3
	Islam	2	7.7

4.4 Nursing Students' performance scores in OSCE and TPE

The results in the table 4.4 show that in S.O.N, Akure 16 students scored higher in TPE than OSCE, 27 students scored higher in OSCE than TPE while 2 had the same scores both in TPE and OSCE. In Department of Nursing, 8 students scored higher in TPE than OSCE while 16 students scored higher in OSCE than TPE University of Ibadan, In Wesley Guild School of Nursing, 7 students scored higher in TPE than OSCE while 40 students scored higher in OSCE than TPE while 4 had the same scores both in TPE and OSCE. In Ladoke Akintola University of Technology, 7 students scored higher in TPE than OSCE, 28 students scored higher in OSCE than TPE while 2 had the same score.

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In the four schools combined, 38 students scored higher in TPE than OSCE, 111 scored higher in OSCE than TPE while 8 students had the same scores both in TPE and OSCE.

Table 4.4 Nursing students' Performance in OSCE and TPE

Schools	No of students who scored higher in TPE than OSCE	No of students who scored higher in OSCE than TPE	No of students with equal scores in both	Total
SONAK	16	27	2	45
DEPT.U.I.	8	16		24
WESLEY	7	40	4	51
LAUTECH	7	28	2	37
TOTAL	**38**	**111**	**8**	**157**

4.5 Nursing students' Performance Scores in Pretest, TPE and OSCE in four Nursing Training Institutions.

The mean differences between TPE and OSCE were computed in 4 schools selected for the study. Table 4.5 shows that the mean of performance scores in pretest, TPE and OSCE in School of Nursing, Akure were: Pretest (53.0 ± 3.8), TPE (58.6±4.8) and OSCE (61.6 ± 5.7), the mean of performance scores in OSCE and TPE in Department of Nursing, U.I, Ibadan were: Pretest (52.6 ± 3.9), TPE (57.4 ± 4.2) and OSCE (62.1±11.0), the mean of performance scores in OSCE and TPE in for School of Nursing, Wesley Guild, Ilesa were: Pretest (54.2 ± 3.4), TPE (61.1 ± 5.3) and OSCE (67.4 ± 6.0) while the mean of performance scores in OSCE and TPE in Department of Nursing, LAUTECH, Osogbo were: Pretest (53.0 ± 3.8), TPE (57.9 ± 5.1) and OSCE (63.8 ± 7.8).

A paired sample statistics of performance scores in the four schools combined was computed. Table 4.6 shows the mean of performance scores in OSCE and TPE in the four schools combined with Pretest (53.8 ± 3.6), TPE (59.0 ± 6.2) and OSCE (64.6 ± 8.8), mode TPE (65) and OSCE (68), range is TPE 46-84 and OSCE is 40-84.

Table 4.5 Nursing students' Performance Scores in Pretest, TPE and OSCE in four Nursing Training Institutions

Schools		N	Mean	Std. Error of Mean	Mode	Std. Deviation	Range
SONAK	**PRETEST**	45	53.0	0.6	56.0	3.8	11.0
	TPE	45	58.6	0.7	60.0[a]	4.8	16.0
	OSCE	45	61.6	0.8	54.0	5.7	21.0
DEPT. U.I.	**PRETEST**	24	52.6	0.8	50.0	3.9	12.0
.	**TPE**	24	57.4	0.9	64.5	4.2	17.0
	OSCE	24	62.1	2.2	63.0	11.0	43.0
OAUTHC	**PRETEST**		54.2	0.5	57.0	3.4	12.0
	TPE	51	61.1	.7	57.0[a]	5.3	25.0
	OSCE	51	67.4	.9	68.0	6.0	36.0
DEPT. LAUTECH	**PRETEST**		53.0	0.6	50.0	3.8	9.0
	TPE	37	57.9	0.8	59.0	5.1	16.0
	OSCE	37	63.8	1.3	58.0	7.8	40.0
FOUR SCHOOLS COMBINED	**PRETEST**	157	53.8	0.5	50.0	3.6	16.0
	TPE	157	59.0	0.49	65.0	6.2	25.0
	OSCE	157	64.6	0.70	68.0	8.8	43.0

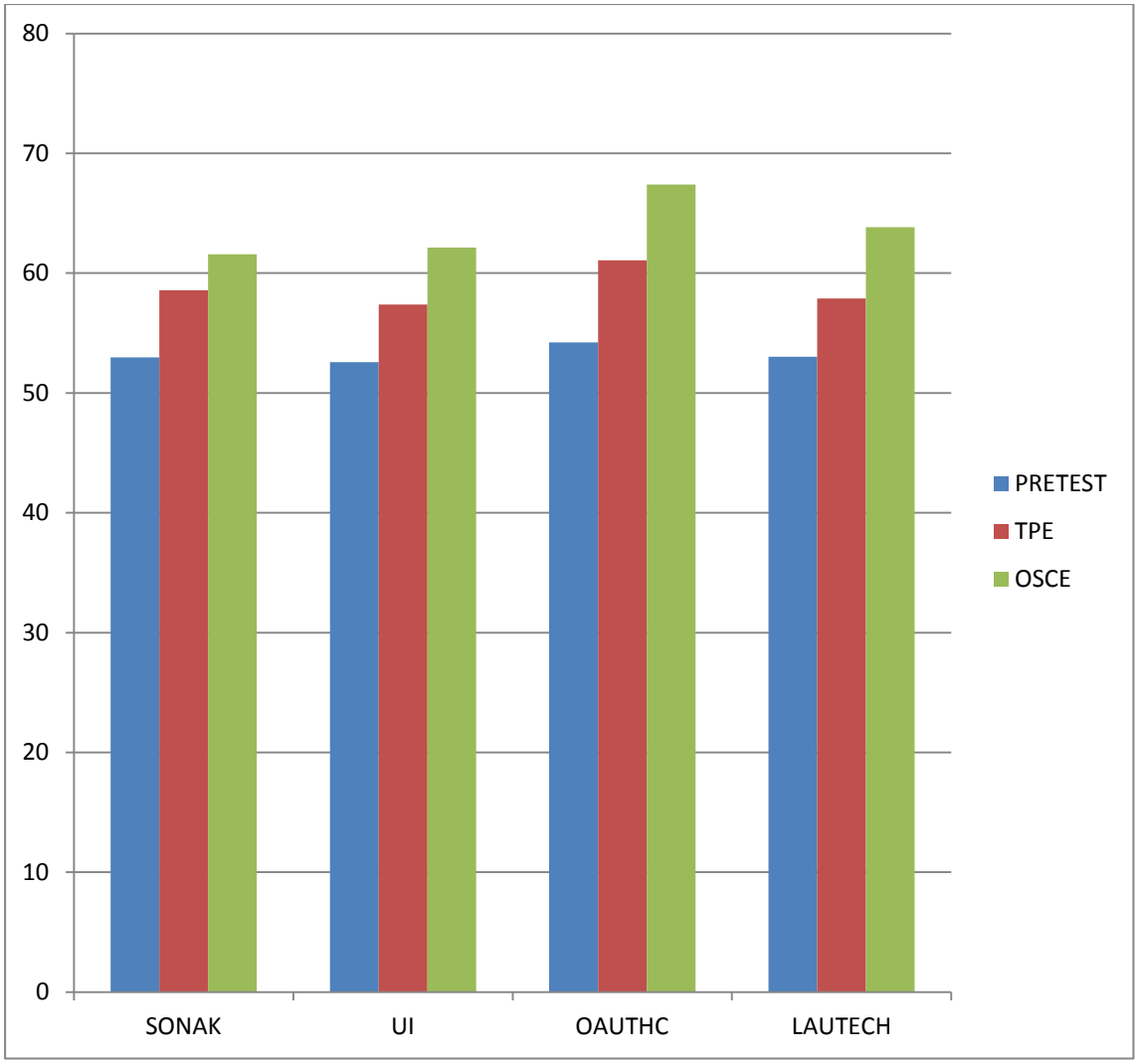

Fig.4.1 Means scores of Pretest, TPE and OSCE in four Training Institutions

Objective 1: To compare the Nursing students' performance in pretest and TPE (post–test 1)

Hypothesis 1: There will be no significant difference in the performance of Nursing students' in Pretest and TPE (post–test 1).

4.6 Comparison of Nursing Students' Performance in Pretest and TPE (Posttest 1)

In order to test this hypothesis a paired sample t-test was conducted to compare the performance in pretest and TPE at P=0.05 confidential interval. There was a significant difference in the scores obtained in pretest 53.3 ± 3.7 and TPE mean 59.0 ± 5.1, t= 11.2, P = 0.00. The null hypothesis is therefore rejected.

Table 4.6: Comparison of Nursing Students' Performance in Pretest and TPE (Posttest 1)

Paired Samples Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre--test	53.3	3.7	0.3	-6.7	-4.7	11.2	156	0.00
	Posttest1	59.0	5.1	0.4					

Objective 2: To compare the Nursing students' performance in pretest and OSCE (post–test 11)

Hypothesis 2: There will be no significant difference in the performance of Nursing students' in Pretest and OSCE (post–test 11).

4.7 Comparison of Nursing Students' Performance in Pretest and OSCE (Posttest 11)

In order to test this hypothesis a paired sample t-test was conducted to compare performance in pretest and OSCE at P=0.05 confidential interval. There was a significant difference in the scores obtained from pretest and OSCE. Pretest mean 53.3 ± 3.7, OSCE mean 64.6 ± 5.2, t= 16.9, P = 0.00. The null hypothesis is therefore rejected.

Table 4.7 Comparison of Nursing Students' Performance in Pretest and OSCE (Posttest 11)

		Paired Samples Test							
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest	53.3	3.7	0.3	12.0	9.5	16.9	156	0.00
	Posttest	64.6	7.7	0.6					

Objective 3: To compare the nursing students' performance scores in Traditional Practical Examination (Posttest I) and Objective Structured Clinical Examinations (Posttest II) in the selected Schools and Departments of Nursing in the study setting

Hypothesis 3: There will be no significant difference in the scores obtained in Traditional Practical Examination (Posttest I) and Objective Structured Clinical Examination (Posttest II).

4.8. Comparison of Nursing students' scores in OSCE and TPE

In order to test this hypothesis a paired sample t-test was conducted to compare the performance in OSCE and TPE at P = 0.05 confidential interval. There was a significant difference in the scores in OSCE and TPE. TPE mean 59.3 ± 2.9, OSCE mean 64.6 ± 5.2, t= 3.3, P = 0.00. The null hypothesis is therefore rejected.

Table 4.8 Comparison of Nursing students' scores in OSCE and TPE

Paired Samples Test									
		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	OSCE	64.6	5.2	0.7	3.7	5.6	3.3	157	.00
	TPE.	59.3	2.9						

Objective 4: To assess the difference in the ability of OSCE and TPE in testing clinical competencies of nursing students.

Hypothesis 4: There will be no significant difference in the ability of OSCE and TPE in testing clinical competencies of nursing students.

4.9. Clinical Competencies of Nursing students during OSCE and TPE.

In table 4.9, Chi-square test was conducted comparing the difference in the ability OSCE and TPE in testing clinical competencies of nursing students. There was a significant difference in the ability OSCE and TPE in testing clinical competency of nursing students at $P \leq 0.05[x^2 (1) = .38.0, 3.8, P=0.00]$. The x^2 calculated is greater than x^2 table and P is less than 0.05. The result suggested that OSCE is able to test clinical competencies of nursing students than TPE. Hypothesis is therefore rejected.

Table 4.9: Clinical Competencies of Nursing students in OSCE and TPE

	TESTS							
Competencies	TPE		OSCE					
	F	%	F	%	Df	X^2ca	X^2tab	P value
Fairly competent (50.0% - 59.9%)	82	54.3	30	19.9	1	38.0	3.8	0.00
Very competent (60.0% and above)	69	45.7	121	80.1				

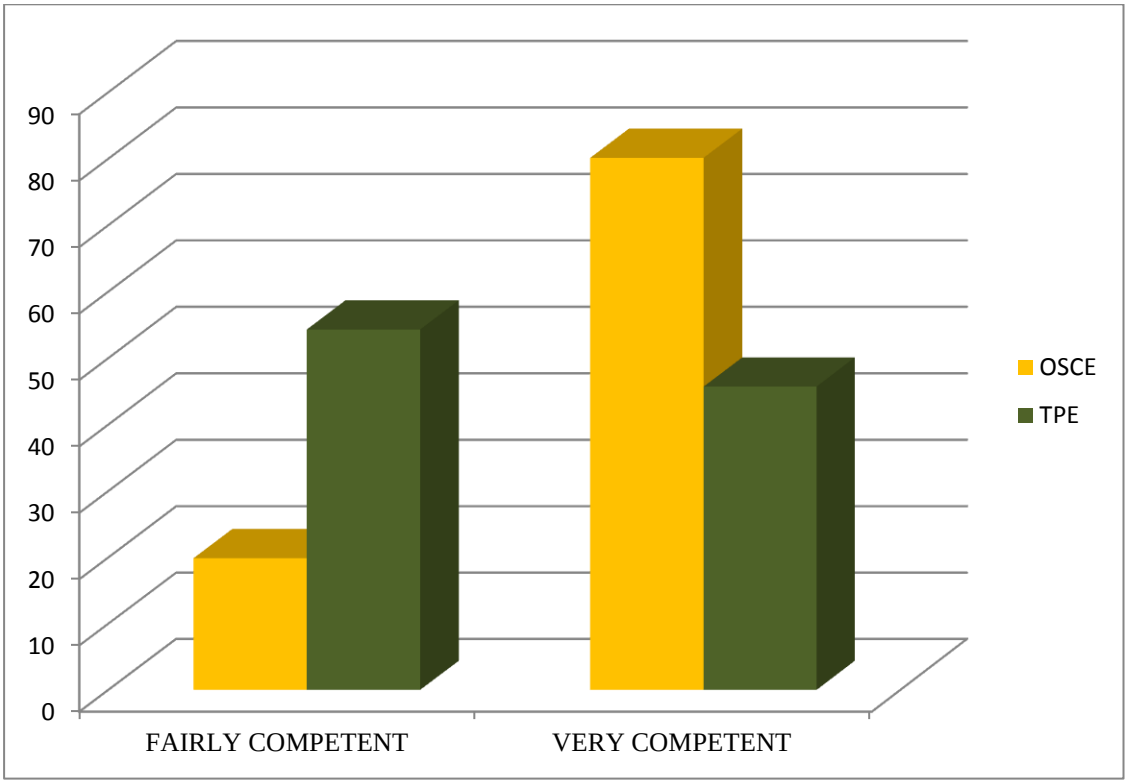

Fig. 4.2 Clinical Competencies of Nursing students in OSCE and TPE

Objective 5: To assess nurse educators' knowledge on OSCE process and its implementation before and after training

Hypothesis 5: There will be no significant difference in the knowledge of nurse educators on OSCE before and after the training.

4.10 Knowledge of Nurse Educators on OSCE before and after training

Nurse educators' knowledge of OSCE was assessed by the administration of pretest prior to their training on the OSCE process. Following the training the posttest was administered. The results of the two tests were collated and mean difference of the result computed. A paired sample t-test was conducted to compare difference in knowledge of nurse educators about OSCE before and after training at 0.05confidence interval. There was a significant difference in the knowledge of nurse educators before and after the training, mean 1.9 ± 7.6, 2.6 ± 6.4 before and after the training respectively, t = 9.5, P = 0.02. The results showed that nurse educators had better knowledge of OSCE after the training. The result is as shown in table 4.10. Hypothesis is therefore rejected.

Table 4.10: Knowledge of Nurse educators' before and after Training on OSCE

Paired Samples Test									
		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviat-ion	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before	1.9	7.6	1.3	5.6	7.8	9.5	32	.02
	After	2.6	6.4						

Objective 6: To assess the perception of nursing students towards OSCE and TPE

Hypothesis 6: There will be no significant difference in the perception of nursing students towards OSCE and TPE.

4.11. Perception of Nursing students about OSCE and TPE

The table 4.11.1 shows descriptive analysis of respondents' perception on the two examination formats based on six parameters. On time consumption, result shows that the respondents' perceived OSCE to be 53.0% and TPE 47.0% with OSCE perceived to consume less time than TPE. On which examination formats is objective, respondents were of the opinion that OSCE is more objective scoring 52.1% while TPE scored 47.9%. On the ability of the two examination formats to assess wide range of learning materials, OSCE scored 54.4% while TPE scored 45.6%. However, the perception on which of the examination formats demand more preparation shows that OSCE scored 46.8% while TPE scored 53.2% meaning that TPE demand more preparation than OSCE. On which of the methods is less destabilizing during practical session, the result shows OSCE scored 53.5% and TPE scored 46.5%. This shows that OSCE was perceived to be less destabilising during practical examination. Lastly, on which method is less stressful, the respondents' opinion shows that OSCE was perceived to be less stressful scoring 56.1% while TPE scored 44.0%.

The table 4.11.2 shows ANOVA analysis of difference in respondents' perception on the two examination formats based on six parameters. On time consumption, result shows a significant difference in the respondents' perception of OSCE and TPE with OSCE perceived to consume less time than TPE, $F = 4.8$**,** $p = 0.01$. On the objectivity, respondents were of the opinion that OSCE was significantly different from TPE with OSCE viewed to be more objective, $F= 13.3$, $p = 0.00$. On the ability of the methods to assess wide range of learning materials, results show difference in the respondents' opinion which is statistically significant OSCE perceived as assessing wider range of learned materials than TPE, $F = 8.2$, $p = 0.00$. However, the perception on which format demands more preparation showed that there was no significant difference on the respondents' opinion about OSCE and TPE, $F = 1.6$,
$p = 0.1$. On which of the methods is less destabilizing during practical session, the result shows significant difference between OSCE and TPE, $F= 7.8$, $p = 0.00$. OSCE was

perceived to be less destabilising during practical examination. Lastly, on which method is less stressful, the respondents' opinion showed that OSCE is significantly different from TPE, F= 6.4, p = 0.00. OSCE was perceived to be less stressful. Testing for the significance difference in the respondents' perception about the two examination formats with the 6 parameters combined, the result showed that there was significant difference in the perception of nursing students about the two examination formats F = 10.9, p = .04. OSCE was perceived to be better than TPE.

Table 4.11.1: Comparison of Perception of Nursing students about OSCE and TPE using descriptive analysis

VARIABLES	**OSPE**			**TPE**			**Scoring/Grading**		**OSCE %**	**TPE %**
	Very Good (3)	Good (2)	Fair (1)	Very Good (3)	Good (2)	Fair (1)	OSCE	TPE		
Less time consumption	68	49	30	52	52	34	332	294	53.0	47.0
More objective	62	66	19	48	76	14	337	310	52.1	47.9
Assess a wide range of learned material	71	39	37	90	47	1	328	275	54.4	45.6
Demand more preparation	68	61	18	105	31	2	334	379	46.8	53.2
Less destabilizing during practical examination	75	54	18	49	69	20	351	305	53.5	46.5
Less stressful	76	48	23	35	74	19	347	272	56.1	44.0
Total							4058	1835	68.9	31.1

Table 4.11.2: Comparison of Perception of Nursing students about OSCE and TPE using ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
LESS TIME CONSUMTION	Between Groups	5.5	2	2.7	4.8	.01
	Within Groups	82.7	144	.57		
	Total	88.2	146			
MORE OBJECTIVE	Between Groups	10.7	2	5.3	13.3	.00
	Within Groups	57.8	144	.4		
	Total	68.4	146			
ASSESS A WIDE RANGE	Between Groups	10.3	2	5.1	8.2	.00
OF LEARNED MATERIALS	Within Groups	89.9	144	.6		
	Total	100.1	146			
DEMANDS MORE	Between Groups	1.5	2	.8	1.6	.10
PREPARATION	Within Groups	67.5	144	.5		
	Total	69.0	146			
LESS DESTABILISING	Between Groups	7.0	2	3.5	7.8	.00
DURING PRACTICAL	Within Groups	63.9	144	.4		
EXAMS	Total	70.9	146			
LESS STRESSFUL	Between Groups	6.5	2	3.3	6.4	.00
	Within Groups	73.4	144	.5		
	Total	79.9	146			
STUDENTS' GENERAL PERCEPTION (OSCE against TPE)	Between Groups	1579.7	44	35.9	10.9	.04
	Within Groups	4404.0	113	39.0		
	Total	5983.7	157			

Objective 7: To assess the preference of nursing students towards OSCE and TPE

Hypothesis 7: There will be no significant difference in the preference of nursing students towards OSCE and TPE

4.12. Comparison of Nursing Students' Preference for OSCE and TPE.

The nursing students' preference for OSCE and TPE was computed using percentage and chi square test. Table 4.12 shows the distribution of preferences for the two practical examinations. The preference for OSCE and TPE among University-based (generic) and basic nursing students were: Generic [OSCE 46(79.3%), TPE 12(20.6%)] and Basic [OSCE 38(42.2%), TPE 52(57.7%)] respectively. The preference for OSCE is more pronounced among generic students than basic nursing students. Generally, 56.8% of nursing students accepted OSCE while 43.2% preferred TPE.

At 95% confidence interval, there was statistically significant difference in preference. Numerically 56.8% of all the students preferred OSCE compared to 43.2% TPE. Chi square value observed 38.2, df = 4, P = 0.00 (table 4.13).

The null hypothesis is therefore rejected.

Table 4.12: Nursing students' preference for OSCE and TPE

Training Institutions * Preference?			
Training Institutions	**OSCE**	**TPE**	**TOTAL**
University-based training	46(79.3%)	12(20.6%)	58
Hospital- based training	38(42.2%)	52(57.7%)	90
Total	84(56.8%)	64 (43.2%)	148

Table 4.13 Comparison of Nursing students' preference for the two formats of Practical Examination

Chi-Square Tests			
	Value	**Df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	38.2[a]	4	.00
Likelihood Ratio	16.6	4	.00
No of Valid Cases	148		

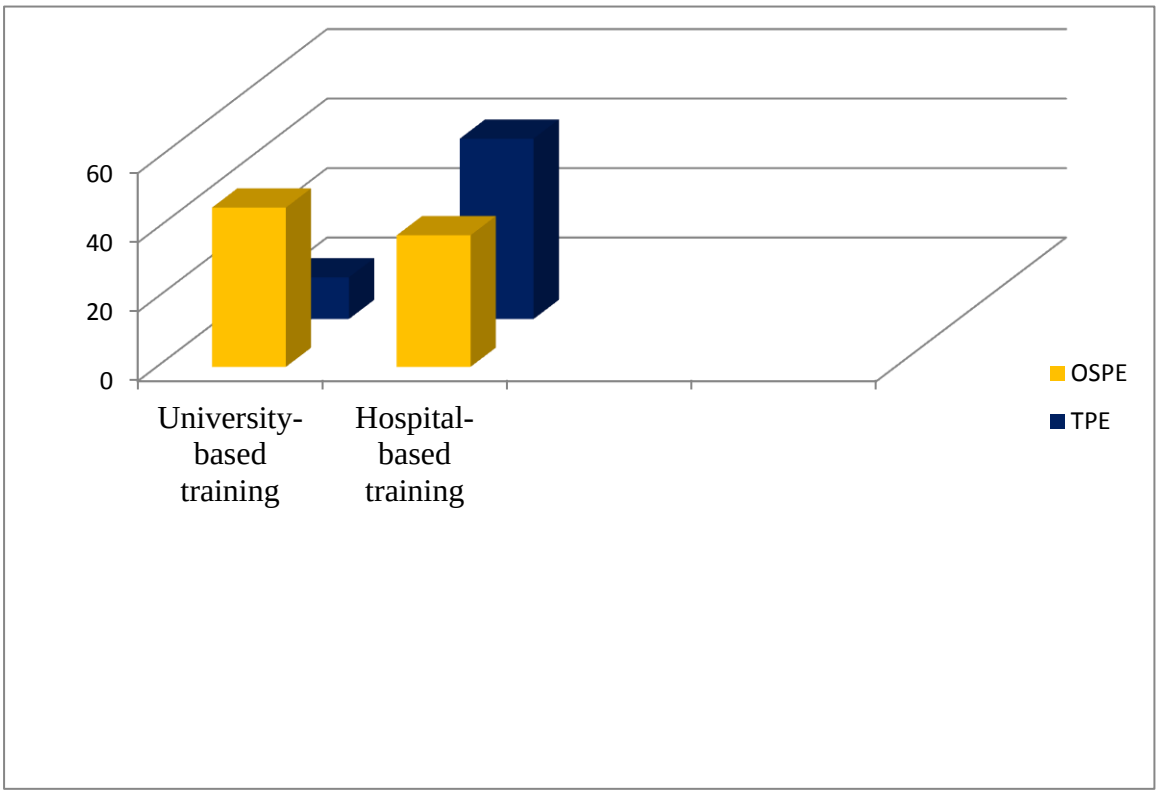

Fig. 4.3 Preference for OSCE and TPE among University Based and Hospital Based Nursing Students

4.13 Reasons for Preference of one Examination format by Nursing students

The reasons why nursing students preferred TPE to OSCE is as shown in table 4.14. Some of the reasons are that it allows communication with patients, gives room for correction, helps to understand better, and promotes skills and knowledge with exposure to real life situation having the highest, 16 students (25%)

The reasons why nursing students preferred OSCE to TPE is also shown in table 4.14. The table shows some of the reasons why nursing students prefer OSCE which ranges from: Saves time and easier (8.3%), scores correlate with knowledge (30.9%), wide coverage of skills (27.3%) and more realistic (22.6%).

Table 4.14 Reason for preference of one examination format to the other by Nursing Students

Reason for preferring TPE	Frequency	Percentage
Examiners communicate with examinee during examination	15	23.4
Exposure to real life situation	16	25
Gives room for correction	13	20.3
Helps to understand better	8	12.5
Promotes skills and knowledge	4	6.3
Helps to think critically	8	12.5
Total	**64**	**100**
Reason for preferring OSCE		
Saves time and easier	7	8.3
Scores correlate with knowledge	26	30.9
Wide coverage of skills	23	27.3
More realistic	19	22.6
Total	**84**	**100**

Objective 8: To assess the perception of nurse educators about OSCE and TPE.

Hypothesis 8: There will be no significant difference in perception of nurse educators about OSCE and TPE.

4.14 Perception of nurse educators towards OSCE and TPE

The table 4.15.1 shows descriptive analysis of respondents' perception on the two examination formats based on six parameters. On time consumption, result shows that the respondents' perception to be OSCE 64.3% and TPE 34.7% with OSCE perceived to consume less time than TPE. On which examination formats is objective, respondents were of the opinion that OSCE was more objective scoring 68.4% while TPE was accorded 31.6%. On the ability of the two examination formats to assess wide range of learning materials, OSCE was accorded 67.0% while TPE was scored 33.0%. However, the perception on demand more preparation shows that OSCE scored 51.0% while TPE scored 49.0%. On which of the methods is less destabilizing during practical session, the result shows that OSCE was scored 63.5% and TPE was scored 36.5%. This shows that OSCE was perceived to be less destabilising during practical examination. Lastly, on which method is less stressful, the respondents' opinion shows that OSCE was perceived to be less stressful scoring 63.6% while TPE was scored 36.5%.

The table 4.15.2 shows ANOVA analysis of difference of respondents' perception on the two methods of examination based on the six parameters. On time consumption result showed significant difference in respondents' perception of OSCE and TPE, $F = .7$, $p = 0.05$. On the objectivity of the two methods of examination, there was significant difference between OSCE and TPE, $F= 1.8$, $p = 0.03$. On the ability of the methods to assess wide range of learning materials, results shows significant difference in perception, $F = 2.1$, $p = 0.04$. OSCE was perceived as having ability to assess wider range of learned material than TPE. However, the perception on demand more preparation showed that there was no significant difference between OSCE scores and TPE, $F= 2.4$, $p = 0.12$. On which of the methods is less destabilizing during practical session, the result showed significant difference between OSCE and TPE, $F = 1.6$, $p = 0.03$. Lastly, on which method is less stressful, the study shows that there was no significant different in nurse educators' perception of the two examination formats, $F= 0.5$, $p = 0.63$. None of the examinations was perceived to be more stressful than the other.

Testing for the significant difference in the perception of the respondents about the two examinations with the 6 parameters combined, the result showed that there was significant difference in the perception of nurse educators about the two examinations $F = 12.9$, $p = 0.05$. Hence the hypothesis is rejected.

Table 4.15.1: Comparison of Perception of Nurse educators about OSCE and TPE using descriptive analysis

	OSPE			**TPE**			**Scoring/Grading**		**OSCE %**	**TPE %**
	Very Good (3)	Good (2)	Fair (1)	Very Good (3)	Good (2)	Fair (1)	OSCE	TPE		
Less time consumption	21	0	0	0	13	9	63	35	64.3	34.7
More objective	21	2	0	0	9	13	67	31	68.4	31.6
Assess a wide range of learned material	23	3	0	0	17	3	75	37	67.0	33.0
Demand more preparation	15	8	0	8	13	1	53	51	51.0	49.0
Less destabilizing during practical examination	19	4	0	0	13	9	61	35	63.5	36.5
Less stressful	22	1	0	1	15	6	68	39	63.6	36.5
Total							521	295	64.2	35.8

Table 4.15.2: Comparison of Perception of Nurse educators about OSCE and TPE using

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
LESS TIME CONSUMPTION	Between Groups	25.3	1	25.3	.8	.05
	Within Groups	1090.4	15	72.7		
	Total	1115.8	16			
MORE OBJECTIVE	Between Groups	.1	1	.1	1.8	.03
	Within Groups	3.2	21	.2		
	Total	3.3	22			
	Total	7.9	22			
ASSESS A WIDE RANGE OF LEARNED MATERIALS	Between Groups	1.1	1	.3	2.1	.04
	Within Groups	.2	21	.2		
	Total	.11	19			
DEMANDS MORE PREPARATION	Between Groups	1.1	2	.5	2.4	.12
	Within Groups	3.7	17	.2		
	Total	4.8	19			
LESS DESTABILISING DURING PRACTICAL EXAMS	Between Groups	3.2	2	1.6	1.6	.03
	Within Groups	.0	17	.0		
	Total	3.2	19			
LESS STRESSFUL	Between Groups	.2	2	.1	.472	.63
	Within Groups	3.6	17	.2		
	Total	3.8	19			
NURSE EDUCATORS GENERAL PERCEPTION	Between Groups	63.5	5	12.7	12.9	.05
	Within Groups	15.7	8	2.0		
	Total	79.2	13			

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter discusses the findings of this study. It provides insight into the explanation of the results presented in the previous chapters in relation to the findings of previous research. This is followed by the implications to nursing education and practice, recommendations, summary and limitations of the study.

5.1 Socio-demographic characteristics of Nursing Students under study

A total number of Nursing students who participated in the study took part in the two practical examinations, that is, OSCE and TPE. The respondents' characteristics of age range and mean age is consistent with Nursing and Midwifery Council of Nigeria age limit for would-be nursing students at any level of entry into the training program which stipulates that the nursing students must not be less than 17 years at the time of their indexing, usually six months after admission. The gross gender imbalance of female and male supports the general observation and believe that describe nursing as a predominantly female profession in Nigeria. All the respondents are either in their second year for basic students or 300 level for generic students meaning that the respondents were familiar with the use of TPE as a form of practical examination but had their first major experience with the OSCE in this study. It was also discovered that the students came from various States of the Federation and of various ethnic groups with majority being Yoruba. This may be because the study was carried out in the south western part of Nigeria which is predominantly Yoruba speaking area.

5.2 Socio - Demographic Characteristics of Nurse educators

The findings on the highest educational level of the respondents indicated that first and second degree holders were in the majority. This shows that the nurse educators were highly qualified academically to assess the nursing students' clinical skills. It also highlights the facts that academic qualification in Nursing has improved. Findings

further revealed that gender distribution of the respondents is highly skewed towards the female gender reflecting the general believe of the Nigeria public that describes nursing as a predominantly female profession. The results further revealed that the nurse educators had enough working experience and have assessed students in practical examination for at least six (6) consecutive times. This implied that the respondents have enough working experience to cope with the challenges of assessing the students during TPE and OSCE.

5.3 Comparison of Knowledge of Nursing Students on the Planned Clinical Educational Package (Pretest) with TPE (Posttest I) and OSCE (Posttest II)

Baseline findings revealed that majority of nursing students under the study had little knowledge of the planned clinical educational package designed to teach students before assessing them using TPE and OSCE. This lack of knowledge may be as a result of the fact that some of those clinical nursing procedures have not been taught before the time of commencement of the study. According to Abiola (2008) quoting Adamolekun (1994), it was opined that once an instruction has been painstakingly planned and delivered, learners would understand and acquire the content and skills under consideration.

Following the teaching of Planned Clinical Educational Package, there was a significant difference in the performance scores of Nursing Students' Pretest in comparison with Posttest I and Posttest II. However, the mean difference in Post- test I was higher than that of Pretest while the mean difference in Posttest II was much higher than that of Posttest I.

5.4 Comparison of Performance Scores of Nursing Students Obtained from OSCE (Intervention Practical Examination) and TPE (Control Practical Examination)

The results in the four schools revealed a higher mean score in OSCE than TPE. This could be a reflection of the highly structured nature of OSCE and its scoring method which was designed to erase any form of bias. It could also be a reflection of the fact that the students prepared very well for the OSCE being a new method of practical examination. This result is contrary to the findings of a similar study by Om Lata,

Bharti, Bharati, and Sabyasachi, (2014) where it was reported that the average scores obtained by the students in the two methods of practical examinations were nearly equal. Result is also contrary to the findings of Supriya et al (2013) who reported that OSCE and CPE are in agreement. Eman, Elsayeda, Amel, Mona, and Mastoura (2014) discovered in their study that there was a highly statistically significant difference between the mean of Traditional Clinical Examination (TCE) score and the mean of Objective Structured Clinical Examination (OSCE) score.

However, this finding is in support of Mohammad, Marzeih, Shahla, Ali, and Mehri,(2015), Shadia and Nagwa (2013) and Hassan et al (2009) they reported a higher mean score in OSCE when compared to TPE with a highly statistically significant differences.

5.5 Comparison of Clinical Competency of Nursing Students in OSCE and TPE.

Result shows that OSCE and TPE have different ability to test clinical competency of students. Findings show that OSCE was able to test clinical competency among nursing students better than TPE. This could be as a result of the highly structured nature of OSCE and its wider coverage of curriculum. OSCE was further shown to be more capable in discriminating between lower and higher achiever, that is, poor and very good students. Results show that more students were grouped as fairly competent in TPE than OSCE while more students were also grouped as very competent in OSCE than TPE. This result is contrary to the findings of a similar study conducted by Sandila et al (2001) who reported that OSCE splits the students into a large number of groups in terms of measured competence or discriminates between different levels of competence better than the traditional method of examination. This may be as a result of the fact that these two examination methods test the basic skills of nursing students but with different approaches, especially in the area of design and scoring, while OSCE scoring guide is structured and precise, TPE scoring most of the times is at the discretion of the examiner. Hassan, Malik, Hamad, Khab, and Bilal, (2009) however reported in support of this finding in a study that the correlation between OSCE and TPE was weak. This result is also contrary to the findings of Coovadia and Moosa (2009), who reported that there were some correlations between OSCE marks and results of TPE.

5.6 Knowledge of nurse educators on OSCE process and implementation before and after training

Baseline findings revealed that majority of nurse educators under the study had little or no knowledge of OSCE process and its implementation in relation to Nursing. This lack of knowledge may probably be as a result of the fact that since inception in Nursing from the basic training years of the nurse educators through to the University, respondents have only been exposed to TPE either as trainees or as trainers. Though, they claimed to have heard of OSCE in other health allied training programmes such as Midwifery, Medicine and Pharmacy, findings however showed that after the training, respondents had better understanding and knowledge of OSCE in relation to its implementation in basic and generic nursing programme. This is directly in line with the findings of Brosnan, et al (2006) who reported in a study conducted on implementing objective structured clinical skills evaluation (OSCE) a utilisation focused evaluation, that training on the OSCE process has positive impact on all stakeholders. It is also congruent with a report by Abiola (2008) quoting Adamolekun (1994) who opined that once an instruction has been painstakingly planned and delivered, learners would understand and acquire the content and skills under consideration.

5.7 Comparison of Perception of Nursing Students and Nurse educators about OSCE and TPE

The students' and nurse educators' perception about OSCE and TPE is discussed using six parameters: time consumption, objectivity, ability to assess wide range of learned materials, preparation for the examination, destabilisation and stress level during the practical examination session. The results are as shown in tables 4.11 and 4.15. The differences in perception were subjected to chi-square analysis.

5.7.1 Perception about Time Consumption

Findings revealed that both students and nurse educators perceived that OSCE is less time consuming in implementation than TPE. The opinion of both the student and educator respondents may be hinged on the fact that the time taken to get all students examined using OSCE was less than that for TPE. The findings of Supriya et al (2013) who reported in their study that the time for conducting OSCE was less compared to CPE,

(as perceived by majority of the students and faculty members) is directly in support of the findings of this study. El-Nemer and Kandeel (2009) reported on the contrary that the implementation of OSCE is more time consuming. The researcher however is of the opinion that OSCE consumes less time in terms of hours and days taken to conduct the examination. For instance, in OSCE it takes a day to examine every student while TPE takes two or three days to examine the same number of students.

5.7.2 Perception about Objectivity

Findings about objectivity of the two methods of examinations revealed that majority of the students and nurse educators perceived that OSCE is more objective than TPE. This could be as result of the fact that in OSCE, all the students performed the same procedures during the practical examination and are scored according to the checklist provided which was designed to eliminate bias, whereas TPE is subjective because the procedures given to the students and the scoring are most times at the discretion of the examiners. This is congruent with the feedback from pharmacology students which showed that OSCE is an objective tool for evaluating clinical skills and its format was perceived to be more fair and objective than the conventional examination in pharmacology. The feedback further views OSCE scores as a true measure for essential clinical skills being evaluated, standardized, and not affected by students' personality or social relation (El- Nemer and Kandel, 2009, Supriya et al 2013).

5.7.3 Perception about assessing wide range of Learned material

Majority of the respondents (nurse educators and students) were of the opinion that OSCE was capable of assessing wider range of learned material than TPE. This may be a direct consequence of the fact that in OSCE students perform more than three procedures within a given hour whereas in TPE a student may not perform more than two procedures within the same time. This result supports the finding of Supriya et al (2013) in a study where it was reported that majority of the students' respondents felt that OSCE provided optimum coverage of the course. This finding is further supported by Jafarzadeh, (2009) who reported that students may over linger on one procedure in an attempt to avoid being given other procedures during the course of the conventional practical examination. In OSCE each procedure to be performed is timed this prevent student from over lingering on one procedure as obtained in TPE. The OSCE is

carefully structured to include parts from all elements of the curriculum as well as a wide range of skills.

5.7.4 Perception about Preparation for the Examination

The study revealed that both student and educator respondents perceived that none of the two practical examination demand more preparation than the other. The researcher is of the opinion that OSCE may demand more preparation for students as they will have to read in-between lines, role play some of the procedures to ensure that they are able to keep to time as all the procedures are timed.

The researcher have a contrary opinion that OSCE demands more preparation for the faculty as there is need to plan for the skills to be assessed well ahead of the examination, site preparation, standardised patient preparation, script writing and preparation of equipment. This opinion is in support of the findings of El-Nemer and Kandeel (2009) which showed that the implementation of OSCE requires huge effort.

5.7.5 Perception about destabilising during practical session

Regarding the stability of students during practical examination, results show that both nurse educators and student respondents perceived OSCE to be less destabilising during practical session than TPE. This may be because there is less interference between the students and the examiners during OSCE as the examiners only observe what students are doing and are not obliged to correct any noticeable mistake made by the students. In TPE practical session however, examiners in some instances are forced to correct the students' mistakes to avoid possible harm to the patients which may lead to psychological destabilisation of the students. The examiner too may experience anxiety for the fact that the patient safety may be compromised. In OSCE, simulated patients were used instead of live patients hence no fear of harming the patient is entertained either by students or examiners giving the students and nurse educators a measure of composure. This finding is congruent with that of Jafarzadeh (2009) who reported that there is inverse relationship between anxiety and performance of procedure in practical examinations. This could be interpreted to mean that anxiety brings about destabilisation which invariably has negative impact on performance.

5.7.6 Perception about Stress Level during the Examination

The study revealed that both nurse educators and student respondents perceived OSCE to be less stressful. The students reported that they experience more stress preparing for TPE than when preparing for OSCE. This line of thinking by the nursing students may be because the students are directly involved in the preparation of their wards of practical examination in readiness for TPE. On the part of the nurse educators however, they sit down to examine the students during OSCE session. Similarly, during TPE, the examiners follow students about in the ward to see how students set for and carry out the procedures, hence their submission that OSCE is less stressful than TPE. Findings of a study by Smith, Price, and Houston (2012) revealed that students and examiners perceived OSCE to be fairer and less stressful than traditional clinical examinations. Wadde, et al (2013) reported students' disagreement that OSCE is a stressful examination in contrast to the opinion of the teachers. These findings are contrary to that of El-Nemer and Kandeel (2009) who reported that OSCE was perceived as a stressful experience. The researcher is however of the opinion that from the experience gathered during this study that OSCE is a bit more stressful either for the students or nurse educators than TPE on all considerations.

5.7.7 Perception of Students and Nurse educators about OSCE and TPE with the six Parameters Combined

The findings on testing the significance of the difference in perception of both student and educator respondents about the two examinations with the 6 parameters combined revealed a significant difference, with OSCE perceived to be a better method of practical examination. This result on students' perception is contrary to Ameh et al (2014) in a study where it was reported that there were no significant differences in perceptions of students about OSCE and TPE. Ameh et al (2014) however reported that both students and teachers perceived that OSCE is a better form of practical examination than the traditional practical examination. According to Shadia and Nagwa (2013) the students' opinion regarding advantages of OSCE compared with the traditional method of evolution revealed that the highest rate of satisfaction belonged to OSCE methods of evaluation. Wadde, Deshpande, Madole, and Pathan(2013) discovered that both students and teachers accepted that this type of examination is better than the traditional practical examination.

5.7.8 Preference of Students for OSCE and TPE

At baseline nursing students in Nigeria are not exposed to other forms of practical examination other than the TPE. At intervention however, finding shows that majority of generic nursing students preferred OSCE to TPE. On general consideration, majority of nursing students (basic and generic) preferred OSCE to TPE. This result is in support of Ameh et al (2014) finding of similar study where it was reported that students preferred OSCE as method of assessing clinical competence and considered it a more valid and reliable method of examination. Results revealed that preference for OSCE was based on the followings: it saves time and easier to understand; scores correlate with knowledge, wider coverage of curriculum and it is more realistic.

Findings further revealed that the nursing students in the study who prefer TPE against OSCE have the followings as the reasons for their preference: it allows communication with patients, easy to understand, exposure to real life situation, gives room for correction, help to understand better, helps promote skills and knowledge. The danger here however is that TPE allows the patients to be cared for by students with all the attendant risk of exposing the life of patients to danger during examination and it also gives room for examiners to correct students during examination session hence clinical examination may be turned to clinical teaching in order avoid exposing the lives of patients to danger. This situation is avoided in OSCE as the students are examined in a simulated environment with simulated or standardised patients. This is congruent to Nursing and Midwifery Council (NMC, 2007) report that patient safety health care is becoming increasingly litigious and the need to protect the patient and maintain patient safety is clearly paramount, and that it is more appropriate to allow the student time to learn the practice and be assessed in a simulated environment prior to experience with patients in a clinical area.

5.8 Implications of Results to Nursing Education

Results from this study revealed that OSCE is more effective in assessing nursing students' clinical competency in nursing training programmes. Nursing students actually performed significantly better in OSCE than TPE, the implication of this discovery is that Nursing and Midwifery Council of Nigeria and other relevant stakeholders in nursing education should critically review the continuous use of TPE

in Nursing training programmes with the aim of either replacing it outright with OSCE or remodelling it to correct the notable faults to reflect current realities in Nursing training and nursing education.

It has also been established by the findings that training on OSCE process and its implementation has a positive and significant effect on the nurse educators and the students. This implies that if OSCE is wholly or adopted in parts by the Nursing and Midwifery Council of Nigeria as a practical examination format, nurse educators/assessors can be successfully trained on its use and implementation.

OSCE is more effective in testing student clinical competencies than TPE. What this implies is that OSCE can successfully replace TPE without the fear of losing credibility, quality or standard of practical examination.

Findings on the perception and preference for the two methods of practical examination show that students and nurse educators significantly preferred OSCE to TPE indicating that if OSCE is introduced into the nursing curriculum, the move will be positively embraced by Nursing students, Nurse nurse educators and nursing can successfully join other health professions such as midwifery, medicine, pharmacy and physiotherapy that are already implementing OSCE as the mode of practical examination in their training programmes.

5.9. Contribution to knowledge

This study has made a significant contribution to knowledge in Nursing in the sense that the training package for both Nursing students and nurse educators on implementation of OSCE in general nursing is a major effort in this aspect of Nursing assessment in Nigeria using OSCE. The Nursing and Midwifery council of Nigeria can easily adopt the package to training of nurse educators who are stakeholders in Nursing students assessment.

5.10 Suggestion for further study

This study should be replicated in other Nursing training institutions in other parts of the country using schools' real examinations to validate the findings.

5.11 Recommendations

Objective structured practical examination is a new development in the assessment of clinical competency of nursing students. On the strength of the findings of this research, the followings are recommended:

- The Nursing and Midwifery Council of Nigeria, that is, the body that regulates nursing education and the nurse educator, who prepares students for professional practice, should adopt the OSCE for the general nursing practical examination. This will help in eliminating bias and subjectivity that is inherent in the current method of practical examination. The fact still subsist that the essence of nursing education is to produce nurses that are clinically competent to render quality care to patients and to achieve this lofty idea and goal, OSCE should be fully adopted at all levels of nursing training.
- It can be said with 95% confidence that result obtained from this study with regard to the positive effect of training of nurse educators in OSCE process is statistically precise and effective. Therefore, nurse educators, clinical assessors and nurse preceptors at all levels should be trained on the OSCE process so as to be able to design and use the OSCE instrument in the practical assessment of nursing students at all levels.
- Schools and departments of nursing demonstration laboratories in Nigeria should be equipped with necessary manikins and body parts so as to enhance the valuable learning and assessment opportunities inherent in the clinical education component of our nursing programs.
- There is a need to create competency-based curriculum for nursing education with OSCE process being inculcated into general/generic nursing program curriculums in Nigeria.

5.12 Summary and Conclusion

This study was carried out to compare Objective Structured Practical Examination and Traditional Practical Examination in assessing clinical competency of nursing students in selected nursing training institutions in Southwestern Nigeria. The study utilised quasi experimental design of equivalent material pretest-posttest design. TPE which is control and OSCE which is experimental are both forms of practical examination for

assessing nursing students in this study. Four schools (two departments of Nursing and two schools of Nursing) were randomly selected for the study. These schools were used as both control and experimental groups. A total of ten (10) OSCE stations were used viz: three (3) observed stations, two (2) skill description stations and five (5) question stations. A total of one hundred and fifty-seven (157) students and 26 nurse educators were trained and participated in the study.

Evidence from findings revealed that students performed significantly better in OSCE than TPE in the final analysis. Findings show that OSCE was able to test clinical competency among nursing students better than TPE. The study further revealed that majority of the students' and nurse educators were of the opinion that OSCE assess wide range of learned materials, consumes less time, was less destabilising during practical session, was less stressful and has a higher number of students preferring it to TPE. Information and experiences from other health programmes that practice OSCE such as midwifery, medicine, pharmacy and physiotherapy suggest that OSCE is more capable and its less biased in assessing and scoring students during practical session. It is therefore concluded from the results of this study that OSCE format of practical examination is more effective in assessing nursing students' clinical competency than TPE.

5.13 Limitations of the study

The study was carried out during the school programme when nursing students were preoccupied with school teaching learning activities. Some students were reluctant to participate as the study was not part of their normal school activities. Nurse educators who ordinarily would have loved to participate in the study could not do so due to their busy schedule.

The cronbach alpha test on Traditional Practical Examination Instrument show low reliability. However, there is need to use the instrument because it forms an important part of the study, it is adopted from Nursing and Midwifery Council of Nigeria and is the basis for comparison in this study.

There was limited literature available on Traditional Practical examination in Nursing.

The two practical examinations were conducted at two different times in the four study sessions. This made the study to be a bit stressful to all participants.

Securing enough material and manikins posed another daunting challenge on the study. It was tasking borrowing these materials from far and distant schools.

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APPENDIX I

Department of Nursing, College of Medicine

University of Ibadan

INFORMED CONSENT FORM FOR STUDENTS AND NURSE EDUCATORS

IRB Research approval number NHREC/05/01/2008a

Title of the Research:

COMPARISON OF OBJECTIVE STRUCTURED AND TRADITIONAL PRACTICAL EXAMINATION IN ASSESSMENT OF NURSING STUDENTS' CLINICAL COMPETENCIES IN SOUTHWESTERN NIGERIA

Name(s) and affiliation(s) of Researcher(s) of applicants:

This study being is conducted by Mrs Edward Mary Idowu (Ph.D) Student of the Department of Nursing University of Ibadan

Sponsor(s) of Research: Self

P**urpose(s) of Research**

The objective of the study is to make a comparative assessment of the acceptability of new Objective Structured Practical Examination (OSCE) and old traditional system of practical examination of nursing students in selected schools and Department of Nursing in Southwestern Nigeria.

Procedure of the research, what shall be required of each participants and approximate number of participants that would be involved in the research:

Random sampling was used to select two departments of nursing out of four (4) departments of nursing and two schools of Nursing out of sixteen (16) being established by government (State and Federal) in southwestern Nigeria. The research involves teaching students of some nursing procedures and on OSCE process, training the lecturers, nurse tutors and clinical preceptors on OSCE process and how to conduct practical examination using OSCE examination checklists. Also practical examination will be conducted by these lectures/tutors/clinical instructors for the students using both traditional and OSCE practical examination. Then the results of the two examinations will be compared to know which of the two is effective in terms of students' performance, acceptability by both students and assessors and cost of conducting the two examinations. The total number of participants expected is about 160 students and 60 lecturers/tutors/clinical instructors (nurse educators).

Expected Duration of the Research and of participant involvement:

The research duration will take about 12 weeks per school. The students will be expected to participate for the period of about four weeks while the lecturers/tutors/clinical instructors will be expected to participate for a period of about one week.

Risks:

This research will not expose the participants to any risk.

Cost to the Participants if any, of joining the research:

This research will not cost the participants any money except the time spared to participate in the research because it will be done during the normal school activities.

Benefits:

The results of the study will inform the participants, nursing institutions and Nursing and midwifery council about the most effective ways of conducting practical examination for basic and generic nursing students in terms of students' performance, acceptability by both students and assessors and cost of conducting the two examinations

Confidentiality:

All information collected in this study will be given code numbers and no name will be recorded. This cannot be linked to you in anyway and your name or any identifier will not be used in any publication or reports from this study.

Voluntariness:

Your participation in this study is entirely voluntary.

Alternative to participation

Your non-participation in this study will not affect you as student or staff of this school.

Due inducement(s):

Lecturers/tutors/clinical instructors will be compensated for cost of transport to and from the site of the training and venue of practical examinations.

Lecturers/tutors/clinical instructors will be given tea break and lunch during the training and practical sessions while students will be given only tea break during the practical examinations.

Consequences of participants' decision to withdraw from research and procedure for orderly termination of participation:

The participant is free to withdraw at any stage of the study. There will no negative consequence as a result of such decision made by participant.

Modality of providing treatments and action(s) to be taken in case of injury or adverse event(s)

This research is not invasive hence no injury or adverse reaction is envisaged during the study.

What happens to research participants and communities when the research is over:

When the research is over the report of the research will be communicated to the research participants, the Nursing and Midwifery Council of Nigeria and schools and departments of nursing at large.

Statement about sharing of benefits among researchers and whether this includes or excludes research participants:

The benefits of this research will be seen in the report of the research that will be communicated to the research participants, the Nursing and Midwifery Council of Nigeria and schools and departments of nursing at large. This will inform them about the most effective ways of assessing nursing students during practical examination.

Any apparent or potential conflict of interest:

The period of teaching the students will correspond with their normal class. All procedures to be taught will be part of what they need to know during their training therefore the research will not in any form cause any conflict of interest to the students.

Statement of person obtaining informed consent:

I have fully explained this research to ---------- and have given sufficient information, including risks and benefits to make an informed consent decision.

Date.....

Signature.....

Name.....

Statement of person giving informed consent:

I have read the description of the research or have had it translated into language I understand. I understand that my participation is voluntary. I have enough understanding about the purpose, methods, risks and benefits of the research study to judge that I want to

take part in it. I understand that I may freely stop being part of this at any time. I have received a copy of this consent form and additional information sheet to keep for myself.

Date.....Signature.....

Name.....

Witness'Signature.....

Witness'Name.....

Detail contact information including contact address, telephone, fax, e-mail and any other contact information of researcher(s), institutional HREC and Head of the institution:

Researcher's contact information

Contact address – Department of Nursing, University of Ibadan

Telephone 08060759421

e-mail address:edwardmaryidowu@yahoo.com

Institutional HREC contact information

Contact address – The Chairman, Ethics Committee of the University of Ibadan, Biode Building, Room T10, 2nd Floor, Institute for Advanced Medical research and Training, College of Medicine, University of Ibadan.

e-mail address – uiuchirc@yahoo.com

Head of the institution contact information

Name - Dr. F.A. Okanlawon

Contact address – Department of Nursing, University of Ibadan

Telephone 08055071838

e-mail address- funmilayookanlawon@yahoo.com

APPENDIX II

INSTRUMENTS

i. Dear Respondents

I am a postgraduate student in the Department of Nursing University of Ibadan, Ibadan, Oyo State Nigeria. I am carrying out a research study on "Comparison of Objective Structured Clinical Examination and Traditional Practical Examination in the assessment of nursing students' clinical competencies in South West Nigeria". This aims at comparing and identifying the most acceptable way of assessing nursing students during practical examination. The information is purely for academic and professional purpose and findings from the study may be used to identify the most acceptable way to assess nursing students during practical examination. Information supplied during the study will be held in confidence.

You are free therefore to participate in this study or not. You also have the right to withdraw from the study at any stage if you desire to. You do not need to put your name. You are to put your training identification number only. Thank you for taking your time to participate in this study.

....

Signature of participants/Date/Number Signature of Researcher/Date

Students Demographic and Perception Questionnaire (SDPQ)

Name of school.....

Year of Admission.....Sex.....

Age on admission..... Present Age.....

Present level in school.....Possible Year of Graduation.....

State of Origin..... Local government area.....

Religion.....

How many examinations have you done since your admission into this schools (both written and practical)?

Written.....Practical.....

What was your last scores in your last practical examination?.....

Students' OSCE Perception Questionnaire

Questions	Yes	No
It is a valid assessment for the nursing course		
It is a reliable assessment		
It can assess a wide range of learned materials		
It is an objective assessment		
It is less time consuming		
It can assess wide areas of learned materials		
It demands More Preparation		
It is less destabilising during practical session		
It is less stressful		
The time for each question is adequate		
The use of simulated patient is effective		
It can assess the student's ability on clinical decision making and problem making		
It can motivate the students for further learning		

Comparison of OSCE and TPE by nursing students

In your opinion how will you compare OSCE with TPE using the following criteria?

	OSCE			TPE		
Criteria	Very good (3)	Good (2)	Fair (1)	Very good (3)	Good (2)	Fair (1)
Less Time consumption						
More Reliable						
More Valid						
More Objective						
Assess a wide range of learned materials						
Demands More Preparation						
Less destabilising during practical session						
Less stressful						

Which of these examinations is able to assess psychomotor nursing skills/clinical competency of nursing students better?

1. Traditional oral/practical examination
2. Objective structured practical examination.

Which one do you find less stressful? .....

Why? Explain.....

Which one do you find less time consuming? .....

Why? Explain.....

Which one do you find more objective?

Why? Explain.....

Which one has ability to assess wide range of learned material?

Why? Explain.....

Which one of the two practical examinations destabilises the students during the examination?

Explain .....

Which one of the two practical examinations demands more preparation?

If given opportunity to make a choice between both TPE and OSCE, which one will you prefer?.....

Why?.....

ii. Dear Respondents

I am a postgraduate student in Department of Nursing University of Ibadan, Ibadan, Oyo State Nigeria. I am carrying a research study on "Comparison of Objective Structured Clinical Examination and Traditional Practical Examination in assessment of nursing students' clinical competencies in South West Nigeria". This aims at comparing and identifying the most acceptable way of assessing nursing students during practical examination. The information is purely for academic and professional purpose and findings from the study may be used to identify the most acceptable way to assess nursing students during practical examination. Information supplied during the study will be held in confidence.

You are free therefore to participate in this study or not. You also have the right to withdraw from the study at any stage if you desire to. You do not need to put your name. You are to put your training identification number only. Thank you for taking your time to participate in this study.

....

Signature of participants/Date/Number Signature of Researcher/Date

Nurse educators' Demographic and Perception Questionnaire (EDPQ)

Name of school.....

Year of qualification .....Length of service.....

Sex.....Present Grade level .....

State of Origin.....Local government area.....

Religion.....

How many practical examinations have you done since you have been working in the school?.....

Nurse educators' OSCE Perception Questionnaire

Questions	Yes	No
It is a valid assessment for the nursing course		
It is a reliable assessment		
It can assess a wide range of learned materials		
It is an objective assessment		
It is less time consuming		
It can assess wide areas of learned materials		
It demands More Preparation		
It is less destabilising during practical session		
It is less stressful		
The time for each question is adequate		
The use of simulated patient is effective		
It can assess the student's ability on clinical decision making and problem making		
It can motivate the students for further learning		

Comparison of OSCE with other forms of assessment of nursing students' clinical competency.

In your opinion/perception how will you compare OSCE with the traditional way of conducting oral/practical examination using the following criteria?

	OSCE			TRADITIONAL		
Criteria	Very good (3)	Good (2)	Fair (1)	Very good (3)	Good (2)	Fair (1)
Less Time consumption						
More Reliable						
More Valid						
More Objective						
Assess a wide range of learned materials						
Demands More Preparation						
Less destabilising during practical session						
Less stressful						

Which of these examinations is able to assess psychomotor nursing skills/clinical competency of nursing students better?

3. Traditional oral/practical examination
4. Objective structured practical examination.

Which one do you find less stressful? .....

Why? Explain.....

Which one do you find less time consuming? .....

Why? Explain.....

Which one do you find more objective?

Why? Explain.....

Which one has ability to assess wide range of learned material?

Why? Explain.....

Which one of the two practical examinations destabilises the students most during the examination?

Explain .....

Which one of the two practical examinations demands more preparation?

If given opportunity to make a choice among both traditional mode of practical examination and OSCE, which one will you prefer?.....

Why? .....

iii **PRETEST**

Student's Identification No.....

This questionnaire is designed to assess your knowledge about clinical educational contents packaged for this study.

Section A:

1. One of the aims of bed bath is the followings except:

a.) To promote blood circulation

b.) To cleanse patient

c.) **To smooth patient**

d.) To refresh patient **1mk**

2. The followings are methods of administration of injection except:

a.) Intramuscularly
b.) Intravenously
c.) Intradermally
d.) **extradermally** **1mk**

3. State 3 indications for catheterisation

i.....To obtain specimen for laboratory investigation.

ii.....To empty bladder during labour

iii..... Prior surgical interventions

v.....Incontinent patient. **4mks**

4. State 4 bed accessories of bed making:

i..... Bed cradle.

ii.....Bed elevator

iii.....Back rest

iv.....Bed block **4mks**

5. Cardiac bed is a special bed made for patient who is to have an operation done Yes or **No** **1mk**

6. The conversion formulae of body temperature from centigrade to Fahrenheit is (F-32) x 5/9 Yes or **No** **1mk**

7. Vital signs are…….....

…… **1mk**

Vital signs are: They are cardinal signs that help in assessing the state or condition of the vital organs in the body e.g. heart and lungs. It includes observation of temperature, pulse, respiration and blood pressure

8. List 2 Indications for vital signs:

   i..... To assess the condition of the patient

   ii.....Purposes of vital signs are:

9. List 3 Purposes of wound dressing includes:

   a.).....To bring the two edges of wound into close contact

   b.) .....To prevent infection

   c.).....To arrest bleeding (Haemorrhage)

   d.).....To promote drainage of wound **4mks**

10. Vital signs includes the followings except.

    a.) observation of temperature

    b.) observation of pulse

    c.) observation of respiration

    d.) observation of blood pressure **1mk**

11. Four sites for checking pulse rate are:

    i. .....Radial artery

    ii. ..... Brachial artery

    iii. ..... Temporal artery

    iv.....Dorsalis pedis artery **5mks**

    v.....Femoral artery

12. State two indications for taking blood pressure are:

    1. ..... To establish baseline in blood pressure

    2..... To monitor fluctuations in blood **2mks**

13. List 2 Aims of giving oral toileting:

    i.....To give the patient a fresh taste and breathe, and enhance the enjoyment of food.

    ii.....To prevent tooth decay, a coated tongue, cracked lips and sores.

    iii.....To prevent complications that may arise from spread of infections e.g. parotitis. **3mks**

14. Three (3) purposes of wound dressing includes:

i.....To bring the two edges of wound into close contact

ii.....To prevent infection

iii.....To arrest bleeding (Haemorrhage) 5**mks**

iv.....To promote drainage of wound

v..... promote healing

To protect the wound against further injury

15. Stages of wound healing are:

1..... Inflammatory phase

2..... Proliferative phase

3..... Maturation phase **3mks**

16. Before testing the urine what are the things to be observed

i. ..... Deposit

ii. .....Odour

iii. ..... Reaction

iv..... Colour

v. ..... Amount/quantity

vi. .....Specific gravity **6mk**

17.Mention 2 different abnormalities that can be discovered in urine during urine testing

i..... Sugar

ii..... Protein **2mks**

18. State the normal value for the followings:

i. Pulse between ..... **60 and 80b/m.**

ii. Blood pressure **120/80mmhg**

iii. Temperature. ..... **36.2^0 - 37.2^0**

iv. Respiration. **16-24c/m**

v. Specific gravity. **1,010-1,020** **5mks**

Section A total **50mks**

Section B

This section is designed to assess your knowledge about TPE and OSCE as formats of practical examination for nursing students

What is TPE? 5mks

What is OSCE?.....5mks

	ITEMS	YES	NO
1.	**OSCE is Objective because**		
	- All the candidates are presented on the same day		
	- All the candidates are presented at the same time		
	- All the candidates are presented with the same test		
	- All the candidates are presented with the same checklist		
	-All the candidates are presented with the same score		
2.	**OSCE is Structured because**		
	-The marking scheme for each station is structured		
	-Specific skill modalities are tested at each station		
3.	**OSCE is Clinical Examination because**		
	-It is test of performance of clinical skills: not a test of knowledge		
	-The candidates have to demonstrate their in nursing procedures		
4	**Why use OSCE in clinical assessment?**		
	- Improved reliability		
	- Fairer test of candidate's clinical abilities		
	- Careful specification of content		
	- Observation of wide sample of activities		
	- Structured interaction between examiner and student		
	- Structured marking schedule		
	- Every student performs the same tasks - Each students have the same scores		

5.	**Characteristics of OSCE as assessment instruments includes:**		
	- Objectivity		
	- Reliability		
	- Validity		
	- Acceptability		
	- Feasibility		
6.	**Reliability of a test/ measure**		
	- reproducibility of scores across raters, questions, cases, occasions		
	- capability of differentiating consistently between good and poor students		
	- capability in ensuring that the students score the same thing		
7	**Validity of a test/measure means**		
	- the test measures the characteristic (e.g knowledge, skills) that it is intended to measure		
	- the test added value to the scores		
8	**Feasibility of a test/measure means practicability in terms of:**		
	- Cost		
	- Examining Nursing procedures		
	- Human resource		
	- Physical resources		
9.	**Station can be classified into:**		
	- Written station		
	- Interactive station		
10.	**The role of students in OSCE**		
	- Prepare well ahead of time for the examination		
	- Role play the learnt procedures		
	- Get to examination venue on time		
	- Comport yourself during practical examination		
	- Read instructions for the procedures well before performing the procedures		
	- Be time conscious.		
	- Listening to the bell		
	Sub-total		**40mks**
	Section B total		**50mks**

v. PRETEST(PT1)

Nurse educators' Identification No.....

This section is designed to assess your knowledge about TPE and OSCE as formats of practical examination for nursing students

What is TPE? 5mks

What is OSCE?.....5mks

	ITEMS	YES	NO
1.	**OSCEis Objective because**		
	- All the candidates are presented on the same day		
	- All the candidates are presented at the same time		
	- All the candidates are presented with the same test		
	- All the candidates are presented with the same checklist		
	-All the candidates are presented with the same score		
2.	**OSCE is Structured because**		
	-The marking scheme for each station is structured		
	-Specific skill modalities are tested at each station		
3.	**OSCE is Clinical Examination because**		
	-It is test of performance of clinical skills: not a test of knowledge		
	-The candidates have to demonstrate their in nursing procedures		
4	**Why use OSCEin clinical assessment?**		
	- Improved reliability		
	- Fairer test of candidate's clinical abilities		
	- Careful specification of content		
	- Observation of wide sample of activities		
	- Structured interaction between examiner and student		
	- Structured marking schedule		
	- Every student perform the same tasks - Each students have the same scores		

5.	**Characteristics of OSCE as assessment instruments includes:**		
	- Objectivity		
	- Reliability		
	- Validity		
	- Acceptability		
	- Feasibility		
6.	**Reliability of a test/ measure**		
	- reproducibility of scores across raters, questions, cases, occasions		
	- capability of differentiating consistently between good and poor students		
	- capability in ensuring that the students score the same thing		
7	**Validity of a test/measure means**		
	- the test measures the characteristic (e.g knowledge, skills) that it is intended to measure		
	- the test added value to the scores		
8	**Feasibility of a test/measure means practicability in terms of:**		
	- Cost		
	- Examining Nursing procedures		
	- Human resource		
	- Physical resources		
9.	**Station can be classified into:**		
	- Written station		
	- Interactive station		
10.	**The role of examiners in OSCE**		
	- Use your clinical expertise to judge the candidate's performance		
	- Allocate a global judgement on the candidate's performance at that station		
	- Be objective in scoring the candidates		
	- Conduct viva voice		
	- Restructure the checklists		
	- Be time conscious.		
	- Listening to the bell		

vi. POSTTEST (PT_2)

Nurse educators' Identification No.....

This section is designed to assess your knowledge about TPE and OSCE as formats of practical examination for nursing students

What is TPE? 5mks

What is OSCE?.....5mks

	ITEMS	YES	NO
1.	**OSCEis Objective because**		
	- All the candidates are presented on the same day		
	- All the candidates are presented at the same time		
	- All the candidates are presented with the same test		
	- All the candidates are presented with the same checklist		
	-All the candidates are presented with the same score		
2.	**OSCE is Structured because**		
	-The marking scheme for each station is structured		
	-Specific skill modalities are tested at each station		
3.	**OSCE is Clinical Examination because**		
	-It is test of performance of clinical skills: not a test of knowledge		
	-The candidates have to demonstrate their ability in carrying out nursing procedures		
4	**Why use OSCEin clinical assessment?**		
	- Improved reliability		
	- Fairer test of candidate's clinical abilities		
	- Careful specification of content		
	- Observation of wide sample of activities		
	- Structured interaction between examiner and student		
	- Structured marking schedule		
	- Every student performs the same tasks - Every student has the same scores		

5.	**Characteristics of OSCE as assessment instruments includes:**		
	- Objectivity		
	- Reliability		
	- Validity		
	- Acceptability		
	- Feasibility		
6.	**Reliability of a test/ measure**		
	- reproducibility of scores across raters, questions, cases, occasions		
	- capability of differentiating consistently between good and poor students		
	- capability in ensuring that the students score the same thing		
7	**Validity of a test/measure means**		
	- the test measures the characteristic (eg knowledge, skills) that it is intended to measure		
	- the test added value to the scores		
8	**Feasibility of a test/measure means practicability in terms of:**		
	- Cost		
	- Examining Nursing procedures		
	- Human resource		
	- Physical resources		
9.	**Station can be classified into:**		
	- Written station		
	- Interactive station		
10.	**The role of examiners in OSCE**		
	- Use your clinical expertise to judge the candidate's performance		
	- Allocate a global judgement on the candidate's performance at that station		
	- Be objective in scoring the candidates		
	- Conduct viva voice		
	- Restructure the checklists		
	- Be time conscious.		
	- Listening to the bell		

OSCE STATIONS

- Station 1(Bed Bath - Observed),
- Station 2 (Questions),
- Station 3 (Catheterisation),
- Station 4 (Questions),
- Station 5 (Vital Signs - Observed),
- Station 6 (Questions),
- Station 7 (Urine Testing - Observed),
- Station 8 (Questions),
- Station 9 (Oral hygiene),
- Station 10 (Questions).

Observed Station

Station 1 (Bed Bath)

Instruction: Mr Obe a 45 years old transporter with fracture femur of both legs who had Plaster of Paris applied to the two limbs 24 hours ago need bed bath. You are to give bed bath to Mr Obe**.**

CHECKLIST FOR PROCEDURE STATION - BED BATH

CANDIDATE'S NO'……

		0	**¼**	**½**	**1**	**2**
1.	Inform patient about the procedure. ¼					
2	Provide privacy ½					
3	Close nearby windows and doors, Put off nearby fans½					
4	Wheel trolley to the bedside ½					
5	Place two chairs back to back at the foot of the bed ½					
6	Request for an assistance ½					
7	Mix the water at the 37 (cold water before hot water) ½					
8	Strip the bottom linen then remove the top sheet place on a chair leaving the patient covered with a bath sheet. ½					
9	Remove all clothes and place on a chair. ½					
10	Place bath sheet beneath the patient. ½					
11	Place bath towel under area to be washed ½					
12	Wash face, neck and ears carefully using a face flannel with soap, rinse and dry thoroughly ½					
13	Place the bath towel under the arm farther away from the nurse, wash arm and hand, clean and dry, treat pressure areas as required, stream hand in bowl of water ½					
14	Wash the other hand, clean and dry, treat pressure area, stream hand in bowl of water ½					
15	Expose the chest and abdomen, wash, rinse and dry ½					
16	Taking care of all folds of skin under the breast of a female ½					
17	Turn the patient to the side facing the assistance using the same flannels wash the back and treat pressure areas rinse and dry ½					
18	Change water if dirty and check the temperature ½					
19	Discard the face flannel. With the second face flannel. if patient is able he can wash the private part, but if not wash it for the patient ½					
20	Put on the pyjamas and make patient's comfortable ½					
21	Discard the trolley and used materials ¼					
	Total 10mks					

EXAMINER'S REMARK **Signature:.....**

Question Station

Station 2

1. List 6 requirements for bed baths $^1/_2$ mark each 3marks
2. State two aims of bed bath 1 mark each
3. Arrange the following order of bed bath by putting no 1-10:

Order of washing

- the hair { }
- chest/abdomen and groins { }
- arm and hand farthest { }
- the face, ears and neck { }
- leg and foot nearest { }
- the back. { }
- Arm and hand nearest { }
- the perinea area. { }
- leg and foot farthest { }
- feet, the toe nail { } 5 marks

Total **10mks**

Skill Description Station

Station 3 (Catheterisation)

Instruction: Mrs Adekola a 65 years woman was booked for an elective haemorrhoidectomy. In preparation for the surgery, she needs an indwelling catheter. Write out how you will perform the procedure step by step.

CHECKLIST FOR PROCEDURE STATION

CANDIDATE'S NO……

CATHETERISATION (FEMALE)

		0	**¼**	1/2	**1**	**2**
1.	Inform patient about the procedure. ½					
2	Provide privacy ½					
3	Assist the patient to get into bed allow patient to assume dorsal position with her kneel flexed and abducted to facilitate easy access to urethra. 1					
4	Wash hand thoroughly, dry and put on gloves 1					
5	Ask assistant help to open bowl containing dressing mackintosh and towel ½					
6	With gloved hand, place dressing mackintosh and towel under the buttock, the second dressing towel is placed over the abdomen. 1					
7	Clean the area thoroughly using as many swabs as necessary. Pick up the swab and pass it to the left hand and swab the labia majora, minora and the center. 1					
8	Position receiver in between the highs. ½					
9	Lubricate the catheter, separate the labia minora by using the thumb and one finger to locate the urethra orifice.1					
10	Pick up the lubricated catheter at 7.5cm from the tip with the glove hand, introduce it gently, letting the end rest in the receiver that is between the thighs continue introducing until urine is obtained. 1					
11	Inflate with specific amount of water and connect to urine bag and hang to the side of the bed. 1					
12	Remove requirements and make patient comfortable. **1**					
	Total 10mks					

EXAMINER'S REMARK **SIGNATURE:.....**

Question Station

Station 4

1. What is catheterisation? 1mk
2. State 4 indications for catheterisation

   ……

   ……..

   ……..

   ..... ½ mk each

3. State **Yes** or **No**

   Catheterisation is a

   i) dirty procedure

   ii) clean procedure

   iii) sterile procedure

   iv) aseptic procedure

   v) trolley procedure

   vi) tray procedure ½ mk each

4. List six (6) requirements for catheterisation $^{1}/_{2}$ mk each

5.Write out two nurses' roles for patients on catheter ½ mk each

Total 10mk

Observed Station

Station 5 (Vital Signs)

INSTRUCTION: As part of nurses' routine duty you are to check the vital signs of this patient

CANDIDATE'S NO'…….

VITAL SIGNS

	TEMPERATURE	0	¼	½	1	2
1.	Inform patient about the procedure ½					
2	Wash hands. ½					
3	Put patient in a comfortable position ½					
4	Remove thermometer from container ¼					
5	Using a wet swab, wipe thermometer from top to the bulb end. ¼					
6	Shake thermometer mercury down to below 35^0C ¼					
7	Clean site with dry swab before placing thermometer to ensure that site is dry. ¼					
8	Ensure thermometer is completely surrounded by skin surface placing patient's arm over his chest or flexing upper leg on the abdomen. ¼					
9	Leave thermometer in position for 2-3minutes. ¼					
10	Remove thermometer, wipe with dry swabs from fingers to the bulb. ¼					
11	Hold thermometer horizontally at eye level and read mercury level along the stem. ¼					
12	Shake down mercury, wipe with a dry swab, wipe again with a wet swab, return into container and discard used swabs. ¼					
13	Record in book or chart. ¼					
	Total 4mks					
	PULSE					
	While thermometer is in position check the patient's pulse in the following manner:					
14	Place patient's arm comfortably across his chest or beside him on the bed with palm facing downward. ¼					
15	Place the first 3 fingers along patient's radial artery and the thumb on the back of patient's wrist. ¼					
16	Apply sufficient pressure, get used to the feel of the pulse before counting. ½					

17	Count the number of pulsation for one minute or for ½ a minute and multiply by two to get the pulse rate per minute. ½					
18	If any abnormality is noted, repeat the counting until satisfy with relevant details. ½					
	Total 2mks					
	RESPIRATION					
19	With the hand still on the patient's wrist, note the patient's respiration by observing the rise and fall of patient's chest walls. ¼					
20	Count for one full minute or for ½ a minute and multiply by two and record the beats in circles per minute. ½					
21	Repeat the count for one minute if in doubt of accuracy or if any abnormalities are noted. ¼					
	Total 1mks					
	BLOOD PRESSURE					
22	Place patient in comfortable position with arm supported, elbow extends and palm facing upward ¼					
23	Nurse places herself in a convenient position so that she can read mercury at eye level. ¼					
24	Wrap cuff of sphygmomanometer smoothly around patient's arm above the bend of the elbow. ¼					
25	With fingertips feel strong pulsation at the elbow bend/cubital fossa ¼					
26	Inflate the cuff until the pulsation is no more felt, inflate about 20mmmHg above this level. ½					
27	Place stethoscope on the brachial artery. ¼					
28	Deflate cuff gradually noting on the manometer the point at which the first sound is heard, this is systolic pressure. ¼					
29	Continue deflating until the last distinct loud sound is heard-this is diastolic pressure. ¼					
30	Release the remaining air. ¼					
31	Remove cuff and make patient comfortable. ¼					
32	Record readings (in book or chart) and report any abnormality to the ward sister. ¼					
	Total 3mks					
	Total 10mks					

EXAMINER'S REMARK**:** **Signature:.....**

Question Station

Station 6

1. Define Vital signs? …….....

   …… 1mk

2. State the normal value for the followings:

   Pulse.....
   Blood pressure.....
   Temperature.....
   Respiration..... ½ mk each

3. Four sites for checking pulse rate are:

   …….....

   .…….

   …….....

   ..……. ½ mk each

4. The conversion formulae of body temperature from:

   Fahrenheit to centigrade is ……..

   Centigrade to Fahrenheit is ….....…….. ½ mk each

5. Convert the following temperature from:

   Centigrade to Fahrenheit 37.5^{o}

   Fahrenheit to Centigrade 102.8^{f} (show your workings) 1mk each

6. State two indications for taking blood pressure are:

   ……

   …… 1mk each

Total 10mks

Observed Station

Station 7 (Urine Testing)

INSTRUCTION: You are to perform hot test for glucose on this specimen of the urine provided. You are to report your findings along as you perform the procedure.

CHECKLIST FOR PROCEDURE STATION

CANDIDATE'S NO…….

URINE TESTING

			0	**¼**	**½**	**1**
	Wash hands and put on gloves	1				
	Observe urine for the followings:					
1	Deposit (this varies)	½				
2	Odour (has an aromatic or slightly ammonia smell)	½				
3	Reaction of urine to litmus paper (usually slightly acidic)	½				
4	Colour of urine (amber in colour)	½				
5	Amount /quantity/output (1200mls and 1500ml)	½				
6	Specific gravity (normal is between 1,010-1,020)	½				
	HOT TEST FOR SUGAR- BENEDICT'S TEST					
7	Place 5ml of Benedict's reagent into a test tube.	1				
8	Add ten drops of urine	1				
9	Boil the mixture vigorously for two minutes	1				
	Explain that the change in colour is from green to brick-red indicating that sugar is present.	1				
10	Reporting the procedure along	1				
	Document the findings	1				
	Total	10mks				

EXAMINER'S REMARK

Signature:.....

Station 8

1. Before testing the urine list 6 things to be observed

   .....

   .....

   .....

   .....

   .....

   ..... ½ mk each

2. Mention 2 different abnormalities that can be discovered in urine during urine testing.

   .....

   ..... ½ mk each

3. Enumerate two hot tests for protein.

   .....

   ..... ½ mk each

4. Enumerate two cold tests for sugar

   .....

   ..... ½ mk each

5. The instrument to measure specific gravity as known as ,,,,,,,,,,,,,,,,,,,,,,,,,,.... ½ mk

6. State the range of normal specific gravity ..... ½ mk

7. List two conditions by which a patient can have the followings:

   i. Oliguria ....

   ii. Polyuria ....

   iii. Protein in urine ....

   ½ mk each

Total 10mks

Skill Description Station

Station 9 (**Oral hygiene**)

Instruction: Mr Green a retired soldier admitted into your ward with diagnosis of intestinal obstruction. He had exploratory laparatomy done - first day post op. **He needs an oral hygiene**. Write out in an orderly manner how you will perform this procedure.

CHECKLIST FOR PROCEDURE STATION

CANDIDATE'S NO'…….

Oral hygiene

		0	**¼**	**½**	**1**
1.	Inform patient about the procedure ½				
2	Provide privacy by screening ½				
3	Make patient comfortable in erect sitting position if allowed. ½				
4	With dissecting forceps put a gauze swab in a galipot of sodium bicarbonate solution, pass into the Spencer wells' artery forceps. Gently squeeze the gauze and clean the tongue, roof, floor and sides of the mouth 1				
5	The gums are treated in the same manner and the teeth, in up and down movement/fashion. 1				
6	Drop all used swabs in the receiver for used swabs. ½				
7	Assist patient with mouth wash if necessary e.g Glycerine of thymol (1 In 4 sol.) 1				
8	Rinse the mouth with water ½				
9	Wipe the tongue, if found coated, with gauze swab containing glycerine 1				
10	Treat the lips with lubricant. 1				
11	Leave patient comfortable. ½				
12	Wash all equipments, dry thoroughly and replace in proper places. 1				
13	Note condition of mouth, tongue and lips and report abnormalities. 1				
	Total 10mks				

EXAMINER'S REMARK

SIGNATURE:.....

Question Station

Station 10

1. What is oral hygiene? 1mk
2. State 4 reasons for providing oral hygiene?
   ....
   ....
   ....
   .... 2mks
3. List 4 conditions in which a patient will be in need of oral hygiene?
   ....
   ....
   ,,,
   .... 2mks
4. List 4 solution that can be used for oral hygiene
   ....
   ....
   ....
   .... 2mks
5. List 6 requirements for oral hygiene of a very illed patient.
   ....
   ....
   ....
   ....
   ....
   .... 3mk

Marking scheme

Station 2

1.

- One large washing bowl
- 2 jugs of cold and hot water
- One bath thermometer
- 2 face towels
- Soap in a soap dish
- One beaker of mouth wash in a bowl
- A tray containing:
- Comb and brush
- Nail scissors and nail brush
- Kidney dish and piece of gauze
- Powder and barrier cream for pressure areas.
- 2 large bath sheets
- One bath towel
- One gown or a pair of pyjamas
- Clean linens are required
- Bucket
- Dirty linen bin
- Bed stripper or two chairs ½ mk each (4mks for any eight points)

2. Aims of bed bath

- To cleanse patient
- To refresh patient 1mk each

Order of washing

- the hair {2}
- chest/abdomen and groins {5}
- arm and hand farthest {3}
- the face, ears and neck {1}
- leg and foot nearest {7}

- the back. {9}
- Arm and hand nearest {4}
- the perinea area. {10}
- leg and foot farthest {6}

  feet, the toe nail {8}

5 marks

Marking scheme

Station 4

1. **Definition**: introduction of urinary catheter into the urinary bladder to empty the urine 1mk
2. Four (4) indications for catheterisation are:
   - To obtain specimen for laboratory investigation.
   - To empty bladder during labour.
   - Prior surgical interventions
   - Incontinent patient. ½ mk each

3. State **Yes** or **No**

   Catheterisation is a

   i) dirty procedure no
   ii) clean procedure no
   iii) sterile procedure yes
   iv) aseptic procedure yes
   v) trolley procedure no
   vi) tray procedure yes ½ mk each

4. List six (6) requirements for catheterisation $^1/_2$ mk each
   - swabs
   - receiver
   - forceps
   - specimen bottle
   - urine bag
   - catheter
   - spigot.
   - laboratory form.

5. Write 2 out the nurses' responsibility to patients on catheter ½ mk each

   i. ensure that you empty the urobag at regular interval

   ii. maintain optimum hygiene during catheterisation to prevent upward transmission of infection.

Total **10mks**

Marking scheme

Station 6

1. Vital signs are: They are cardinal signs that help in assessing the state or condition of the vital organs in the body e.g. heart and lungs. It includes observation of temperature, pulse, respiration and blood pressure 1mk

2. State the normal value for the followings:

- Pulse between **60 and 80b/m.**
- Blood pressure **120/80mmhg**
- Temperature**.** **36.2^0 - 37.2^0**
- Respiration. **16-24c/m** ½ mk each

4. Four sites for checking pulse rate are:

Radial artery, Brachial artery, Temporal artery, Dorsalis pedis artery, Femoral artery ½ mk each

5.The conversion formulae of body temperature from:

Fahrenheit to centigrade is (F-32) x 5/9

Centigrade to Fahrenheit (c x 9/5) + 32 ½ mk each

6. Convert the following temperature from

i. Centigrade to Fahrenheit 37.5^{o} (show your workings) 1mk each

(C x9/5)+32

$\frac{37.5 \times 9}{5}$ $=67.5 + 32 = 99.5^0$ F

ii. Fahrenheit to Centigrade 102.8^{f} (show your workings)

(F-32) x 5/9

$70.8x5/9 = 39.3^0$ 1mk each

6. State two indications for taking blood pressure are:

- To established baseline in blood pressure
- To monitor fluctuations in blood pressure 1 mk each

Marking scheme

Station 8

1. Before testing the urine list 6 things to be observed
   - Deposit
   - Odour
   - Reaction
   - Colour
   - Amount/quantity
   - Specific gravity ½ mk each
2. Mention 2 different abnormalities that can be discovered in urine during urine testing.
   - Sugar
   - Protein ½ mk each

3.Enumerate two hot tests for protein.

- **Hot test for protein**

1. **Acetic acid test**
2. **Esbach's quantitative test** ½ mk each

4**.** Enumerate two cold tests for sugar

- **Cold test**

1. **Clinistix strips test**
3. **Clinitest tablet test** ½ mk each

5. The instrument to measure specific gravity as known as **urinometer** ½ mk

6. State the range of normal specific gravity **1,010-1,020** ½ mk

7. List two conditions by which a patient can have the followings:

   i. Oliguria ---- **renal failure, dehydration**

   ii. Polyuria **----** **Diabetes mellitus, Diabetis insipidus**

   iii. Protein in urine -----**Nephrotic syndrome, Pregnancy** ½ mk each

Total 10mks

Marking scheme

Station 10

1. What is oral hygiene?
   Oral toilet is the process of cleansing and refreshing the mouth, teeth and gum with a cleansing agent 1mk
2. State 4 reasons for providing oral hygiene care?
   - To cleanse the mouth
   - To promote normal flow of saliva when patients is having the following:

   i) nil per oral

   ii) has disease of tongue or mouth

   iii) is on a milk diet

   iv) is unconscious or unable to wash mouth

   v) has dryness of mouth with high temperature

   - To increase appetite
   - To prevent tooth decay 2mks
3. List 4 conditions in which a patient will be in need of oral hygiene?
   - Dysphagia (somebody with difficulty in swallowing)
   - Febrile conditions (High temperature with dryness of the mouth)
   - Unconscious patients
   - Patient on special diet e.g. milk diet
   - If a patient is to be fed by artificial meals
   - Dehydration (insufficiency fluid in the body)
   - Person with disease of tongue or mouth 2mks
4. List 4 solution that can be used for oral hygiene
   - Sodium bicarbonate
   - Hydrogen Peroxide
   - Glycothymolin or Glycerine of Thymol
   - Oraldene
   - Normal saline 2mks
5. List 6 requirements for oral hygiene of a very illed patient.

A tray with cover containing:

- A receiver containing:

- 1 Spenser well artery forceps
- 1 pair of dissecting forceps

- 1 small bowl for gauze swab
- 3 receivers for the following:
  - Used instruments
  - Returned mouth wash
- 3 gallipots containing the following:
  - Solution of sodium bicarbonate 1:160
  - Solution of glycothymoline 1:10
  - Glycerine of Borax or liquid paraffin
- Cape
- Small towel
- Galipot containing clear water for dentures (if necessary) 3mks

TRADITIONAL PRACTICAL EXAMINATION INSTRUMENT (TPEI)

CANDIDATE'S EXAMINATION NO:,,,

NURSING PROCEDURES **PATIENT'S DIAGNOSIS**

1 **1.**

2 **2**

EXAMINER'S SIGNATURE

	AREAS	**MARKS OBTAINABLE**	**MARKS OBTAINED**	**REMARKS**
1.	**COMPORTMENT &APPEARANCE** Appears neat Adequately composed Cheerful Smart with sense of purpose	(5) 2 1 1 1		
2.	**APPROACH TO PATIENTS** Greet patients by name Establishes rapport with patient Informs patient about procedure Assess readiness of patient for procedure	(4) 1 1 1 1		
3.	**PREPARATION** Assemblies/improvises necessary equipment Adapts environment for patient's welfare & safety Respect and provides privacy Provides for comfort and safety of patient	(8) 5 1 1 1		
4.	**PROCEDURE** Explain procedure to patient Check patients relevant charts, label etc as necessary Uses appropriate equipment for procedure Perform procedure in correct/logical order Involves patient in care Adapts procedure to suit patient's condition/situation Handles patient gently and skilfully Exposes patient minimally during procedure Maintains patient's comfort during procedure Skilfully overcome difficulty (if any) Record procedure and relevant observation	22 2 1 3 5 1 1 2 2 2 1 2		

	AREAS	MARKS OBTAINABLE	MARKS OBTAINED	REMARKS
5.	**SPEED ACCURACY** Procedure complete within able time limit Performs procedure with confidence Take prompt and immediate action in emergency	(6) 3 2 1		
6.	**FINISHING** Ensure patient's comfort after procedure Patient's environment left neat and tidy Discard used equipment safely and properly Report relevant information/findings	(5) 1 1 2 1		
7.	**UNDERSTANDING OF PURPOSE** Explain rationale for procedure Convinces patients and family on procedure Demonstrate understanding of underlying principles for procedure Reports/seek counsel as necessary	(6) 2 1 2 1		
8.	**AWARENESS(ALERTNESS) OF TOTAL SITUATION** **(A) ON THE WARD** Aware of equipment/general ward layout Recognises patients on ward by names **(B) AROUND THE PATIENT** Notices change in patient's condition Demonstrate awareness of change in patient's regimen Recognises change in patient's expression	 (2) 1 1 (3) 1 1 1		
9.	**APPROACH TO PEOPLE** Polite to colleagues Accepts suggestion and criticisms Cooperate with co-workers Sensitive to needs of others	(4) 1 1 1 1		
10.	**TEACHING ABILITY** Recognises need for teaching junior Adapt teaching to patient's understanding Instruct patient clearly as necessary Involves patient family in health teaching Check of understanding of instruction	(5) 1 1 1 1 1		

PRACTICAL = 70

To be converted to 100%

APPENDIX III

TRAINING MODULE FOR NURSE EDUCATORS ON IMPLEMENTATION OF OBJECTIVE STRUCTURED CLINICAL EXAMINATION IN SELECTED NURSING TRAINING PROGAMMES IN SOUTHWESTERN NIGERIA

MODULE ONE

INTRODUCTION TO OSCE PROCESS

This training module will have the following highlights of topics incorporated into it:

- Introduction to OSCE process
- Modifications of OSCE
- What is OSCE?
- Characteristics of the OSCE
- OSCE process
- The criteria for becoming an OSCE examiner.
- Examiner preparation for OSCE
- Student preparation for the OSCE
- Why use OSCE in clinical assessment?
- Characteristics of assessment instruments
- Advantages of OSCE
- Disadvantages of the OSCE
- OSCE design

At the end of this lecture the nurse educators/assessors should be able to:

- Explain the concept of OSCE.
- Describe OSCE process.
- Explain OSCE design.
- Discuss the benefits of OSCE

Introduction

Objective structured clinical examination is clinical examination that usually involves undertaking formal clinical examinations related to clinical skills outside of the clinical practice area. These examinations are referred to in a number of ways including OSCEs, university clinical assessments and clinical assessments. The key element common to all these assessments is that they use simulation in a non-clinical environment. That is to say

the assessment occurs outside of a clinical environment usually in a clinical skills room at your university or demonstration room in schools of nursing as the case may be.

Modifications of OSCE

OSLER: Objective Structured Long Examination Record

OSPE: Objective Structured Practical Examination

OSVE: Objective Structured Video Examination

OSTE: Objective Structured Teaching Evaluation

OSPRE: Objective Structured Performance-Related Examination

OSSE: Objective Structured Selection Examination.

What is OSCE?

Objective Structured Practical Examination is a clinical examination is a simulated examination or simulated assessment in which a simulated patient and/or a simulated situation are used. Assessors are provided with objective marking criteria and these criteria are used to judge the student's performance. Students are normally allocated a set amount of time to complete the assessment and they are provided with feedback in relation to their assessment. This is referred to as an OSCE (Objective Structured Clinical Examination) in several universities, although other terms may be used. Whilst there are considerable variations, in the use of simulated examinations in health care it is important to acknowledge that common features exist.

These common features include:

- Examinations which are held in a simulated environment usually in a demonstration room or simulation area.
- Examinations which use actors or other students in the place of real patients.
- Assessors are usually tutors in school of nursing and clinical instructors or expert practitioners may be involved.
- Students are examined based on the same skills and are required to 'rotate' around a number of clinical assessment 'stations'.

This allows the assessment of several skills during one examination.

Characteristics of the OSCE

- It is an assessment approach primarily used to measure clinical competence
- Should be planned or structured (predetermined clinical competences)
- Examination format or framework
- Different types of test method can be incorporated into it
- Scored as they carry out the task write notes or answer question

OSCE Process

An Objective Structured Clinical Examination is a modern type of examination often used in health sciences e.g midwifery, orthoptics, optometry, medicine etc. It is designed to test clinical skill performance and competence in skills such as communication, clinical examination, nursing, medical procedures/prescription, exercise prescription, joint mobilization/manipulation technique, radiographic positioning, radiographic image evaluation and interpretation of results.

OSCE

- **O**bjective
- **S**tructured
- Clinical
- **E**xamination

As the name suggest, OSCE is designed to be:

- Objective
- Structured

Objective

All candidates are assessed using exactly the same stations (although if real patients are used their signs may vary slightly) with same marking scheme. In an OSCE candidates get mark for each step on the marking scheme that they perform correctly which therefore make the assessment of clinical skill more objective rather than subjective.

Structured

Stations in OSCE have a very specific task. Where simulated patients are used, detail script is provided to ensure that the information provided are the same to all candidates, including the emotion that the patient should use during consultation. Instructions are carefully written to ensure that the candidate is given specific task to complete. The OSCE is carefully structured to include part from all element of curriculum as well as wide range of skills.

Clinical Examination

The OSCE is designed to apply clinical and theoretical knowledge. For example answering question from the examiners at all the stations, 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 mark for them.

Scoring the OSCE

Marking in OSCE is done by the examiners**.** Occasionally written stations, for example, writing a charting medication or vital signs, 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 detail marking scheme and standard set of questions. For example, a station concerning the demonstration to a simulated patient on how to give oxygen would award point for specific actions which are performed safely and accurately. The examiner often has a small no of marks that they can use to weight the station depending on performance and if a simulated patient is used. Marks are awarded for each step in the method.

Examiner Preparation for OSCE

Preparing for OSCE is different from preparing for a theoretical examination. 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 method whilst simultaneously developing an understanding of the underlying theory behind the method used. 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 learn to perform the steps in the

sequence. For example, when performing a bed bath, a student is instructed to first gain patient consent, and bath farther limbs before nearer limbs.

Student preparation for the OSCE

Most universities have clinical skills laboratories or demonstration room where students have opportunity to practice clinical skills such as taking vital signs or mobilizing patient in a save and controlled environment. It is often very helpful to practice in small group with colleagues setting a typical OSCE scenario and timing it with one person role playing a patient. One person does the task and if possible, one person either observing or commenting on technique or even role playing the examiner using a sample mark sheet. Many OSCE textbook have sample station and mark sheet when studying in the manner. In doing this a candidate is able to get a feel of working to time and working under pressure.

Why use OSCEs in clinical assessment?

- Improved reliability
- Fairer test of candidate's clinical abilities
- Careful specification of content
- Observation of wide sample of activities
- Structured interaction between examiner and student
- Structured marking schedule
- Each student has to perform the same tasks

Characteristics of assessment instruments

- Reliability
- Validity
- Educational impact
- Acceptability
- Feasibility

Reliability of a test/ measure

- reproducibility of scores across raters, questions, cases, occasions
- capability of differentiating consistently between good and poor students
- broad sampling is required to obtain adequate reliability

Validity of a test/measure

- the test measures the characteristic (e.g knowledge, skills) that it is intended to measure

Educational impact

- the test is able to extract all what students have learnt in the course of their training as many psychomotor skills are tested in the procedure stations and knowledge are tested in thee question station.

Feasibility

- cost
- human resource
- physical resource

Advantages of OSCE

- Valid examination
- Used as summative as well formative
- Can be used with larger number of students
- Reproducible
- The variable of the examiner and the patient are to a large extent removed
- Fun activity within the department or college, which promotes team work

Disadvantages of the OSCE

- Knowledge and skills are tested in compartments
- The OSCE may be demanding for both examiners and patients
- More time in setting it up
- Shortage of examiners
- Might be quite distressing to the student

OSCE design

OSCE usually comprises of short (the usual is 5-10minutes, although some spend up to 15-20 minutes) stations, in which each candidate is examined on a one to one basis with two or more impartial examiner(s) and either real or simulated patient (actors or electronic). Each station has a different examiner as opposed to the traditional method of clinical examination where a candidate can be assigned an examiner for entire examination. Candidates rotate through the stations, completing all the stations of their circuit. In this way all candidates take the same station. It is considered to be an improvement over

traditional examination method because the station can be standardized enabling fairer pair comparison and the complex procedures can be assessed without endangering patient health.

OSCE test design

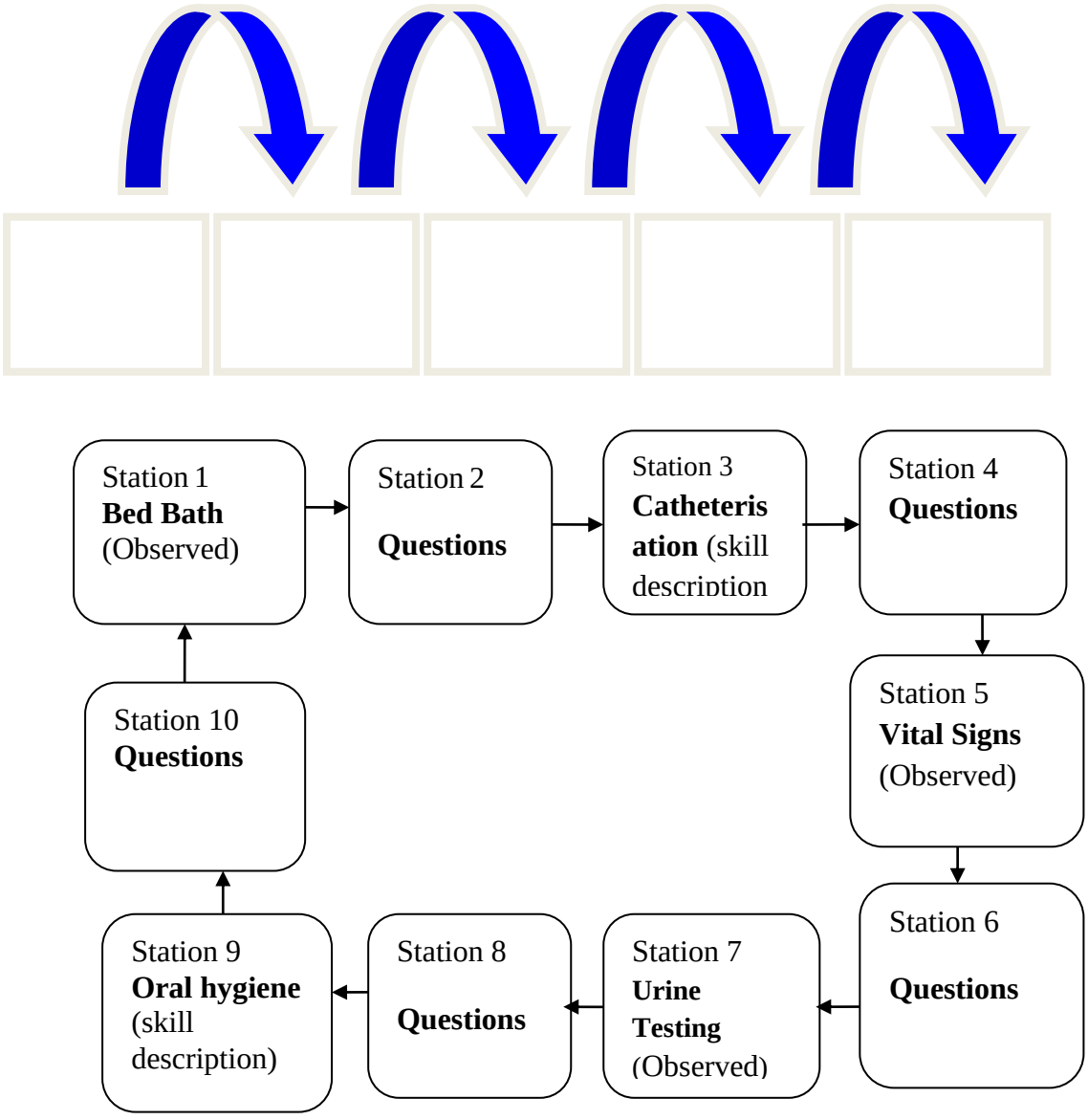

Figure 3.2 Students rotation through ten stations during OSCE examination.

MODULE TWO

The role of OSCE/practical assessors during examination

Content:

- Oral/practical method/ examination
- Objective Structured, Clinical Examination (OSCE)
- Objective Structured Practical Examination (OSCE).
- The criteria for becoming an OSCE examiner
- The role of OSCE/practical assessors during examination
- The examiner's role in standard setting
- Scoring the OSCE

Objectives

At the end of this lecture the participants should be able to:

- Differentiate between traditional and objective structured practical examinations.
- Explain the roles of assessors during the traditional and objective structured practical examinations.

Features of the traditional and OSCE examinations

The followings are features of clinical evaluation methods use currently in Nigeria.

- Oral/practical examinations use by Schools of Nursing and Psychiatry Nursing
- Objectively, Structured, Clinical Examination (OSCE) is common with midwifery practice.

Oral/practical method/ examination

- Two examiners are involved.
- A number of students are examined in different clinical areas of practice.
- Common checklist
- Question asked usually are not consistent
- Each student is examined for a period of 1 hour going through two examiners, that is, 30mins per examiner per student.
- During the period with each examiner. The student carries out a procedure or more as deemed fit at the spore of the moment by the examiner.

- Used to assess clinical skills.
- The traditional method gives the examiner freedom to vary the question from one student to another.
- This approach has been shown to have many deficiencies

There has been a search for new approaches to student assessment, particularly for clinical and practical skills where traditional approaches have been found to be deficient. The structured clinical examination and the structured practical examination have been found useful in assessing students' performance in clinical and practical areas. These methods are briefly discussed below

Objective Structure Clinical Examination (OSCE)

- OSCE uses a simulated and standardized format to measure synthesis of knowledge and clinical skills.
- OSCE assesses students' clinical competencies.
- Examiners plan carefully the areas to be examined.
- The clinical competencies are broken down into various components e.g. taking history giving a health talk, checking vital signs e.t.c. and making conclusions on the basis of their findings
- The students normally rotate a number of stations and they spend a specified time at each station. On a signal, by the ring of a bell, the students move on to the next station.
- The time allowed is the same for all the stations and the stations must be designed with this in mind. About 5mins is an appropriate time for each station.
- A further 30 seconds should be allowed for students to move from one station to another to complete any final comment.
- At a procedure station an examiner is present.
- The examiner uses a checklist to record the performance of students as they pass through the stations.
- At question stations, the student may be asked to answer short questions, multiple choice questions or identify labelled exhibitions, recall their findings or interpret what was done in the previous station
- The OSCE is potentially a more reliable method of assessment because:
    - Large sample of students clinical abilities can be assessed

- The use of checklist encourages a more objective assessment.
- Each student is examined by the same set of examiners
- All students have the same, nearly identical patients
- Appropriate for assessing clinical skills in health professions.
- Found to be quite appropriate in final qualifying examination and also in giving feedback to students and teachers during course assessment (Ngatia & Mutema, 2006)

Criteria for becoming OSCE examiners

Potential OSCE examiners should:

- have graduated from the nursing program the OSCE seeks to assess (this requirement implies that the potential examiner would have had experience of being an OSCE student)
- be experienced nurses working within a relevant area of clinical practice, so that they that have the appropriate experience in the clinical area that they are required to examine
- have attended an OSCE examiners' workshop
- be able and willing to commit themselves to examining students

Advantages of OSCE examination

- Valid examination
- The examiners can control the complexities of the examination
- Used as summative as well formative
- Can be used with larger number of students
- Reproducible
- The variable of the examiner and the patient are to a large extent removed
- Fun activity within the department or college, which promotes team work

Disadvantages of OSCE examination

- Knowledge and skills are tested in compartments
- The OSCE may be demanding for both examiners and patients
- More time in setting it up
- Shortage of examiners
- Might be quite distressing to the student

The role of OSCE/practical assessors during examination

Assessment of clinical competence is a principal task which allows decision on whether student can progress to higher level of study. The emphasis is placed on objectively assessing students. Potentially patient could be placed at risk if a candidate is considered to be competent but actually have not met the satisfaction standard of practice. Therefore, examiner plays a vital role in this process in delivering a reliable and fair assessment process. In general, the role of an OSCE examiner includes:

- General
- Standard setting
- Practice at marking

General Roles

- Turn up in good time for the OSCE
- Contribution to the overall good conduct of the examination.
- Awareness of the examination process
- Attendance of training for their role as an examiner
- Be attentive to candidates as soon as they enter the stations
- Careful observation of the candidate's performance
- Only prompt the students as required and indicated on their marking schedule or examiner's instructions
- Prevention of students' encroachment on other student time
- Mobile phone should be switched off or on silent mode during examination
- Upholding the confidentiality of the OSCE mark sheet content
- Restriction of necessary noise
- Refraining from commenting about the candidates' performance to simulated patient or other examiners.
- OSCE is a long hour activity – so take regular refreshment breaks throughout the day.
- If you have any concerns or uncertainties, please speak to the faculty staff who will be present throughout the OSCE.

It is NOT to:

- Conduct a viva voce
- Re-write the station
- Interfere with the simulated patient's role
- Design their own marking scheme
- Teach the student during the examination. They assess only students' current knowledge and application of clinical skills.

The examiner's role in standard setting

- Use your clinical expertise to judge the candidate's performance
- Allocate a global judgement on the candidate's performance at that station
- Be objective in scoring the candidates

Scoring the OSCE

- Observe the performance of the student at a particular task
- Score according to the marking schedule provided
- Score the student performance according to the marking criteria
- Ensure that the mark sheet is completed and has been checked for consistency, and that each criterion is complete.

APPENDIX IV

TRAINING MODULE FOR STUDENTS ON IMPLEMENTATION OF OBJECTIVE STRUCTURED CLINICAL EXAMINATION IN SELECTED SCHOOLS AND DEPARTMENTS OF NURSING IN SOUTHWESTERN NIGERIA

Objectives

At the end of this lecture the participants should be able to:

- Differentiate between traditional and objective structured practical examinations.
- Explain the roles of students in preparation for both the traditional and objective structured practical examinations.
- Demonstrate clinical competency in the performance of different nursing procedures

Features of the traditional and OSCE examinations

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useful in assessing students' performance in clinical and practical areas. These methods are briefly discussed below.

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Students' preparation for the OSCE

The OSCE as an examination

For success in OSCEs you need to recognise that the OSCE is an actual examination. This means that you must actually learn and revise the relevant information to employ in your OSCE, exactly as you do in a traditional written examination. You need to actively take in this information by learning and committing to your mind summary sequences for history taking and physical examination. It is only when you have learned these summary sequences that you will be able to demonstrate confidence during an actual OSCE.

As the OSCE is a practical skill you must also be sure to practise the requisite skills in your practice setting both with and without supervision from your facilitator or mentor. In addition to learning in your clinical setting it can also help to practise OSCE skills informally in small groups with your student peers. This type of small group learning can be undertaken in a more relaxed style and allows you to discuss and develop your skills with others who are preparing for the same assessment.

The OSCE as role-play

A further step for success in OSCEs is that you need to realise that they require a certain amount of role-play on the parts of examiners, patients and students. You should therefore, as far as possible, present yourself professionally as you would do in your normal day-to-day clinical practice. By this we are not referring to your demonstration of calm, confident and courteous professional interactions. So you should interact with the examiner and patient as much as possible as you would do when working in practice, which also emphasises the importance of practising OSCE skills in your clinical setting. It is often very easy for examiners to spot students who appear uncertain in their interactions, which can affect their overall assessment of an OSCE performance. Remember that part of the skills required of the advanced practitioner is being able to demonstrate the impression of confident practice, even when faced with clinical uncertainty.

Practicalities of the OSCE process

Individual OSCEs are most often presented as time-limited stations. This time can range from 5 minutes to one hour or more. You will normally be given a time indicator (such as an alarm or a verbal warning) before the end of an OSCE station. This helps you to know

whether you need to speed up or if you are on track for successfully completing a station. Most OSCE stations will normally comprise three people: you, the examiner and the patient. During a station you should address, as required, both the examiner and the patient. Examiner roles are normally undertaken by course lecturers, qualified nurse practitioners.

Patient roles can also be undertaken by course lecturers or qualified clinicians, but actors are sometimes also used to play the role of patients. As regards performing in an OSCE station, remember that in physical examination stations you will actually be required to examine the person playing the role of the patient. This means that this person will need to selectively undress, as required for an examination. However, the patients will not do this by themselves; they will wait for you to ask them to get undressed. You will also need to make appropriate use of the diagnostic equipment placed at your station, so you should make yourself familiar, before an OSCE, with equipment such as stethoscopes and otoscopes. It is possible that the person playing the role of patient may have underlying medical pathologies which may or may not be related to their OSCE station. If, on examination, you note a possible pathological abnormality you should report this to the examiner for your station.

Formative OSCEs

You may find out that you are given OSCE preparation throughout the advanced nursing programme you are studying on; for example, you may have a mock OSCE as a formative assessment. Here the feedback from your OSCE should be constructive and should be given to you as soon as possible after you have undertaken the mock OSCE, while it is still fresh in your mind, so as to inform your future clinical skills development. Listen to what the examiner has to tell you. The feedback should be around your communication skills as well as your knowledge base. The 'patient' may want to give you feedback about how they felt as the patient, for example, did you make them feel comfortable? Were you listening to what they were saying or were you just asking rote learned questions? Did you give them time to ask you questions? The formative OSCE gives you the opportunity to understand the OSCE process under exam conditions and to grasp the structure of the OSCE paper, so that when you come to do the real OSCE exam you will know exactly what to do from a practical perspective.

Some tips for OSCE preparation

Preparatory tips

Consider what clinical scenarios may come up. Listen carefully to your lecturers: they may (inadvertently) give you a hint! Consider the necessary knowledge and skills that you need to have to complete the OSCE.

History taking tips

Memorise the key points involved in taking an effective (structured and systematic) history. Consider using an aide mémoire such as a mnemonic device when practising taking a history to ensure that you do not omit any key points. Practise taking a history in the time allowed for you. For example, if you have 10-minute history-taking station, practise taking the history in 10 minutes. Use a clock or a timer so that you have a good sense of how long or short 10 minutes can be, and what you can realistically achieve in a limited time period. Practise on family and friends, as well as patients, until you feel confident in taking a history in a systematic structured manner, while at the same time demonstrating good communication skills with your patient.

Physical examination tips

Consider which physical examinations you may be expected to perform in the OSCE. Memorise the normal physical examination sequence expected for each physical examination system. Practise the physical examination of each system in the time allowed, for example, 10 minutes. Use a clock or a timer as a guide for your timing. Some physical examinations may only take you a few minutes to perform, so ensure these are done thoroughly and systematically. Practise explaining what you are doing, what you are feeling/listening for and thinking as you perform the physical examination. You should be prepared to explain what abnormal findings could be elicited from your physical examination.

OSCE communication skill tips.

Revise the key principles of effective communication, health education, explaining a result, decision making and prioritising, If there are areas of clinical communication in which you do not feel confident, or are not common situations within your area of clinical practice,

you should practise these communication skills with colleagues, friends, or family until you feel more confident.

Tips for practising OSCE stations

Remember that you can practise stations by role-playing and discussing possible scenarios with your peers, facilitator or colleagues at work. Do not decide not to practise for a station because you are not familiar with its content; it could come up in an OSCE. It is not acceptable to say in an OSCPE 'this is not my area of practice; I will refer this patient on'. If the subject area has been taught during your course, then it could be included as an OSCE station. Sometimes, there is a tendency to rush things, especially when you are anxious or nervous. Ten minutes can seem a long time when you are practising, but it will go very quickly when you are in the actual exam.

On the day of the OSCE: guidance and tips

The OSCE is your opportunity to demonstrate the clinical skills and knowledge that you have learnt while undertaking the programme you are on. You will be nervous do everything possible to relax your nerves. Be well prepared and know exactly where you have to be and at what time. There is nothing worse than getting even more flustered because you are late. Arrive on time and let the OSCE co-ordinator know that you are here. The OSCE co-ordinator may wish to have an OSCE briefing with you and your student colleagues before you start your OSCE.

Listen carefully to what they say. The instructions that you are given will be important and may include: station arrangements, alarms, toilets, and rules on entering and leaving a station, your initial start station, the order in which the OSCE is run, the time of each individual station, the type of stations, what to do if you finish before the allotted time, why it is important not to discuss station content with your colleagues, what to do if you get upset during the OSCE and how the station timing is indicated to you. For example, if the stations are 10 minutes long, the OSCE co-ordinator may let you know when eight minutes have passed and that you have two minutes left to complete the station what to do if you leave the station before the time for the OSCE station is up. Try and remain at a station until the end of the allotted time, as you may suddenly remember any omissions in your

performance that you may wish to rectify with the examiner. Three essential summary tips for OSCE revision

- Ensure you are aware of the assessment regulations and requirements for your OSCEs, including the range and breadth of the OSCEs you will need to complete.
- Learn and revise (i.e., commit to memory) potential OSCE station sequences.
- Practise OSCE station sequences in your clinical setting, with student peer group colleagues.

In summary, it is often very helpful to practice in small group with colleagues setting a typical OSCE scenario and timing it with one person role playing a patient, one person does the task and if possible, one person either observing or commenting on technique or even role playing the examiner using a sample mark sheet. In doing this a candidate is able to get a feel of working to time and working under pressure.

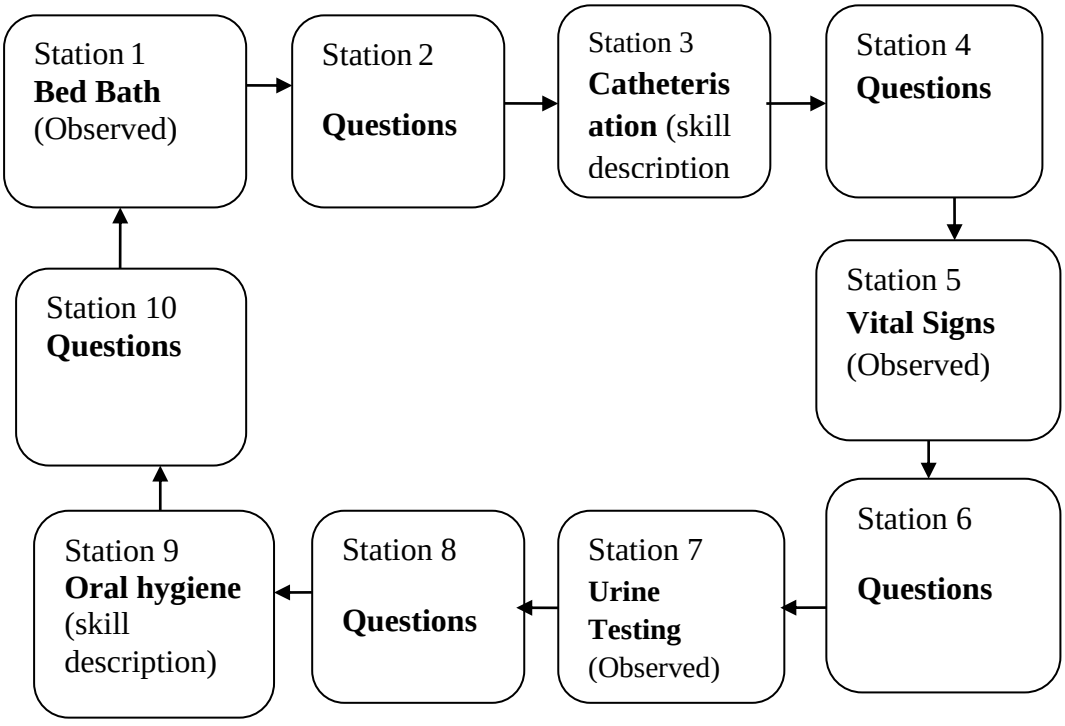

Figure 3.2 Students rotation through ten stations during OSCE examination

Procedures taught the students include:

- Bed making
- Bed bath
- Oral hygiene
- Tepid sponging
- Vital signs
- Wound dressing
- Administration of oral medication
- Catheterization
- Urine testing
- Oxygen Administration

Bed Making

- Divided/amputation bed -above knee and below knee

Bed Making

Aims

1. To enhance the patients comfort.
2. To ensure good body alignment
3. To observe condition of patients

Principles of Bed making

- Assemble all articles needed at hand at the end side.
- Two nurses are required and they should work in harmony avoiding jerky movement.
- Patients must not be exposed unnecessarily
- Keep patient in position required for his treatment throughout.
- Support the patient when necessary, one nurse may do this while the other nurse makes her side of the bed.
- Call for help when necessary to move very ill and heavy patients.
- Strip bed neatly, clothes must not touch the floor, handle bed-clothes carefully, avoid flapping to minimize the risk of cross infection by spreading dust.
- Have two chairs placed back to back or bed strippers near the foot of the bed for pillows and other accessories.

- Pull mattress well to bed head.
- Shake pillow by turning away from patients face, tuck in the flaps of pillow cases firmly and place on the bed with the flaps away from the main doors.
  Arrange the pillows to support the patients comfortably.
- Allows room for patient's feet when replacing top bed clothes because tight top bed clothes causes foot drop.
- Any conversation during bed making should include the patient and should not be on personal matters between the nurses.

PROCEDURE 1

BED MAKING

I. Simple Hospital Bed (Unoccupied)

Requirements on a trolley

Top shelf

- 2 bed sheets
- 1 pillow slip
- 1 draw sheet
- 1 counterpane

Bottom Shelf

- 1 long mackintosh
- 1 draw mackintosh
- Pillow
- 1 spring cover

Procedure

- Wheel trolley to bedside
- Move bed-side locker and chairs away from bed to make enough room for nurses' movement.
- Ensure that the spring of the bed is covered with a spring cover.
- Cover the mattress with a spring cover.
- Ensure that mattress touches upper frame of bed.
- Place bottom sheet on bed ensuring that the middle of the sheet is at the centre of the bed, with the right side of sheet uppermost.
- Unfold sheet from foot of the bed to head of mattress.
- Tuck in at the top, make a mitred or envelope corner.
- Do the same to the bottom and then tuck in the sides.
- Place the draw mackintosh across the bed.
- Cover mackintosh completely a draw.
- Cover the pillow with the pillow slip and place it on the top of the bed with the open end away from the door.
- Place top sheep on the bed with wrong side up and the large hem even with head of mattress having the middle at the centre of bed.

- Fold top sheet about 45cm over at the top (fanfold) and tuck in at the bottom, make mitred corner and tuck in at sides after pulling taut.
- Cover top sheet with counterpane spreading it over the pillow and folding in at the bottom making mitred corner as usual and tuck in at sides.
- When the bed had been made, the nurse see that the locker has been returned to its position at the bed side.
- Return trolley and other articles to their appropriate places.

Changing of bottom sheet of an occupied bed

1. **Moving patient from side to side**

   Indication for changes bottom sheet from side to side

   - Bed ridden patients i.e. patient who may collapse
   - Helpless patients, unconscious and restless.
   - Post-operative cases in the early stage

Requirements

- Stripper or 2 chairs placed back to back at the foot of the bed
- Clean sheets and any other clean requirements placed on the trolley.
- Dirty linen bin
- Screen

Method

- Inform patient about the procedure
- Provide privacy by screening
- Arrange stripper or chairs at the foot of bed.
- Loosen sides and bottom
- Remove all pillows but one
- Fold counterpane into three and place over stripper
- Stripe the top of the bed in the usual manner leaving the patient covered with the top sheet.
- Fan fold clean bottom sheet and place on stripper.
- Gently roll patient to one side arranging the limbs and head carefully.
- Place pillow over the side to which patient is rolled.
- Allow second nurse to loosen the draw sheet and mackintosh from her side.

- She will lift the clean bottom sheet from the stripper and arrange it on the bed with the centre crease in the middle and correct amount at top and bottom and roll the sheet against the patient's back then tuck in at the top, bottom and side.
- Arrange the draw mackintosh and draw sheet as before tuck them in if there are creases of crumbs remove with the palm of your hand.
- Gently lift patient's head up and bring the pillow to the opposite side that is already made.
- Gently roll the patient to the other side of bed.
- The nurse who is now free will tuck out the bottom sheet down from head to bottom and remove carefully, gathering it up neatly and placing it inside the dirty linen bin.
- She will pull the bottom sheet through and tuck in as usual. Arrange the draw-mackintosh and sheet as before.
- The patient is then rolled and lifted back.
- The pillows are shaken well and arranged under patient's head.
- The top sheets are made up as usual.
- Patient is then made comfortable in bed.

2. Moving patient from top to bottom of bed. (Patients that can sit up in bed).

Indications for changing bottom sheet from top to bottom

- Cardiac cases
- All cases of dyspnea, orthopnoea or distress e.g. ascites.
- Patient on traction of lower limbs.

Requirements are as above

Method

- Inform patient about the procedure
- Provide privacy by screening
- Remove pillows
- Arrange clean sheets on chairs or stripper as before.
- Strip the top of the bed in the usual manner, the patient is covered with the top sheet.
- Move patient towards the foot of the bed
- Tuck out the bottom sheet and roll down pull mattress cover straight.
- Unfold the clean sheet and tuck in at the top, loosely roll the lower end and pull down to reach the patient's buttocks.

- Arrange mackintosh and draw sheet next.
- Arrange the pillows back.
- Move patient to the top of the bed to sit on the clean sheet already placed there.
- Tuck out bottom sheet at the bottom of bed, remove and place in the dirty linen bin.
- Pull mattress cover straight, pull the clean sheet and tuck in at the bottom, then pull and tuck in at the middle.
- Make up the top of the bed in the usual manner.

3. Occupied bed for an incontinent patient

Requirements

Same as for simple hospital bed plus the following:

- Clean bed lines as required
- Draw sheet
- Pillow cases
- Dirty linen bin
- Screen
- Tray for treatment of pressure areas
- Towels
- Stripper or two chairs

Method

- Inform the patient that you want to make his/her bed.
- Screen the bed for privacy
- Bring equipment to bedside
- Loosen sides of bed clothes
- Remove pillow except one
- Fold up counterpane and sheets and arrange in order of use on stripper.
- Leave patient covered with one sheet.
- Roll other materials on bed i.e. the draw sheet, mackintosh and bottom sheet to the middle of bed.
- Straighten mattress cover and clean if necessary
- Arrange clean linen on the bed as usual and tuck in as well.
- Place the towel over draw sheet and treat pressure areas.

- Gently roll patient to the other side.
- Remove dirty linens and put in dirty linen bin.
- Straighten mattress cover
- Unroll bottom sheet, draw mackintosh and sheet, tuck side in, spread the towel and treat pressure areas.
- Change patient's gown to clean one
- Roll patient back in position.
- Tidy unit and clear all things used.

Special Beds

- Admission bed
- Post-operative bed
- Cardiac bed
- Bed fracture bed or orthopaedic
- Divided bed

a. Admission Bed

Requirements

Same as for simple hospital bed plus the following

1 clean night dress or pyjamas

Procedure

- Make up bed to the level of the draw sheet as for the simple hospital bed (foundation).
- Spread on the bed the top sheets, make as usual and cover with counterpane.
- Fold the bed cloth at the side of the bed nearest to the door leaving this side open to facilitate quick admittance.
- Place the night dress or pyjamas on the bed.

b. Post-operative bed

Purposes

- To have a warm bed to receive patient on return from operating theatre.
- To get patient into bed as quickly and safely as possible.
- To prevent shock
- To protect bed linen from vomitus and saliva.
- To clear the mouth of post anaesthetic secretions thereby maintaining patient air way.
- To ensure that the nurse has all that is required at the bed side of patient so that less time is wasted in emergency.

Requirements

Same as for simple hospital bed plus the following:

- Dressing mackintosh and towel
- Inside flannel sheet
- Two hot water bottles, filled and covered
- Bed blocks or elevator
- Bed cradle
- Intravenous/infusion stand
- Oxygen apparatus
- Bed side tray containing:
    a. Sponge holding forceps
    b. Dissecting forceps
    c. A pair of tongue holding forceps
    d. Tongue depressor
    e. Mouth gag
    f. Cold water in a galipot
    g. Sterile gauze in a bowl with cover
    h. Vomit bowl or receiver
    i. Receiver for used swabs
    j. Receiver for returned mouth wash
    k. Water in a feeding cup.

Procedure

- Assemble requirement
- Make foundation of bed in usual manner
- Place top linen on bed as usual manner omit tucking in at foot of bed
- Fold top clothes into three, then folds in the edges in an envelope manner to one side of the bed.
- Place dressing mackintosh and towel to replace the pillow at the patient's head.
- Provide and place appropriately any other bed protector according to the type of operation being performed.
- Place chair on the side of the bed where linen has been folded.
- Place bed table, bed side locker away from bed to allow stretcher near the bed.
- Place prepare post-anaesthetic tray on bedside locker.

c. Cardiac Bed

This is a special bed made for patients who have heart failure or respiratory diseases, where breathing is difficult e.g. cases of dyspnoea, ascites, orthopnoea and distress. The patient finds it easier to breath nursed in an upright or a modified fowler's position. Cardiac beds which are specially adjustable are often used for these patients these days.

Requirements

Same as for simple hospital bed plus the followings:

- Back rest where it is not attached to bed.
- Five pillows or more as required by the patient
- Bed table and soft pillow.
- Air ring
- Bed cradle (where there is pedal oedema or ascities)
- Sand bags to rest the feet
- Oxygen cylinder (functioning)
- Sputum mug
- Bell (hand bell)
- Paper and biro
- Cup and graduated jug of water

Method

- Make up the bed until the draw sheet is in position
- Place back rest at the top of the bed and place pillows on the back rest in an arm chair fashion.
- Place the air ring in the middle of the draw sheet
- Place the sand bags at the foot of the bed.
- Place the bed cradle on the bottom part of the bed.
- Cover it with top bed clothes
- Place the bed table with soft pillow in front of the patient
- Place the sputum mug, hand bell, biro and paper, the graduated jug of water and cup on the table.
- Place the oxygen cylinder near the top of the bed in case the patient needs it.
- Tidy patient unit.

d. Fracture bed or orthopaedic bed

This bed is specially designed for patients with fractured spine, fracture of pelvis or lower limbs.

The aim is to have firm base to provide support for fractures and maintain normal spine curves.

Requirements

- As for simple hospital bed plus
- Bed cradle
- Bed blocks
- Fracture boards
- An extra draw sheet and mackintosh
- Sand bags to act as temporary support
- Roller towel
- Extra large sheet
- Extra pillow if necessary

Procedure

- Arrange fracture boards under mattress to prevent sagging to the mattress and movements of the affected part.
- Make foundation of bed as for admission bed.

- Place one or two pillows
- Place roller towel over fractured part and support with two sand bags.
- Cover patient with extra-large sheet
- Place bed cradle
- Make top of bed as usual making sure sides are well tucked in
- Tidy unit.

e. Divided Bed

Indications

- For examination of the lower part of the abdomen or pelvis
- Treatment or dressing of the lower part of the abdomen or pelvis thereby preventing undue exposure.
- Amputation of the lower limb above the knee to ensure stump is visible in case of haemorrhage and to avoid weight of bed clothes on the affected area.
- Burns of the lower parts of the body.

f. For above the knee amputation

Requirements

As for simple hospital bed (foundation) plus

- 2 bed linens, extra sheet
- Dressing mackintosh and towel
- 2 covered sand bags and roller towel
- Bed cradle
- Bed elevator(s)
- 2 counterpanes

Procedure

- Make bed up to foundation i.e. draw sheet
- Arrange dressing mackintosh and towel under stump or where extra protection is needed.
- Arrange roller towel over stump.
- Support sides with the two covered sand bags.
- Use extra sheet to cover patient inside the cradle

- Place bed cradle in position.
- Top bed clothes are made into packs.
- The top pack must overlap the lower pack by about 20cm to allow for tucking.
- The lower pack is tucked in at the front of the bed.
- The two sets of top clothes are tucked in at the side of the unaffected leg.
- Open the affected side slightly for easy viewing.
- Place bed elevator ready near bed.

g. For Below-Knee Leg Amputation

As for simple hospital bed plus

- Dressing mackintosh and towel
- 2 covered sand bags
- Bed cradle
- Roller towel
- Inside blanket or flannel or extra sheet
- Bed elevator

Method

- Make foundation bed
- Place pillows as required
- Place dressing mackintosh and towel on bed where stump will be
- Arrange roller over stump and fix it in position with two covered sand bags.
- Place the extra sheet over the patient's chest, trunk and good leg.
- Place bed cradle over stump.
- Spread top clothes length-wise over bed and cradle.
- Fold back on the cradle to allow for easy observation of stump
- Tuck in sides of top bed clothes
- Place bed elevator near the bed.

PROCEDURE 2

Bed Bath

Aim:

- To cleanse patient
- To refresh patient

Requirements

A. Top Trolley

- One large washing bowl
- 2 jugs of cold and hot water
- One bath thermometer
- 2 face towels
- Soap in a soap dish
- One beaker of mouth wash in a bowl
- A tray containing:
- Comb and brush
- Nail scissors and nail brush
- Kidney dish and piece of gauze
- Powder and barrier cream for pressure areas.

B. Bottom Trolley

- 2 large bath sheets
- One bath towel
- One gown or a pair of pyjamas
- Clean linens are required
- Bucket
- Dirty linen bin
- Bed stripper or two chairs

Procedure

- Explain the procedure to the patient
- Offer bed-pan if required before the bath begins.
- Ensure that patient is not unduly exposed
- Ensure warm environment by closing nearby windows and putting off fan.
- Change the bath water as often a necessary.

- Observe any unusual symptoms, abrasions and early signs of pressure sores during the bath.
- Treat pressure areas along the bath
- Trim the nails if necessary after bath
- Wheel trolley to the bedside; ensure privacy by screening the bed.
- Take off top covers remove any bed appliances and as many pillows as possible depending on patient's condition and leave patient in a semi-recumbent position if comfortable.
- Remove gown, encourage patient to participate if she is able.
- Place patient between the large bath sheet and expose only the part being washed.
- Place water in the bowl at a temperature of $37.8^0C - 43^0C$
- Test with bath thermometer or elbow.

Order of washing

- Wash and dry the face, ears and neck first with a face towel and dry with the bath towel
- Water the hair with wet bath cloth, brush and comb, if hair is short.
- Wash arm and hand farthest from nurse washing patient and dry.
- Arm and hand nearest nurse washing patient and dry.
- Wash chest/abdomen and groins change water if dirty.
- Wash leg and foot nearest nurse washing patient.
- Wash both feet in the bowl of water while brush is used to remove dirt from the toe nail and dry.
- Change water if necessary
- Turn patient to the side and wash from the shoulders to the back and treat pressure areas where required.
- Change face towel and wash the perinea area. Allow patient to do so if able, otherwise, the nurse does it.
- Put on pyjamas or wrapper
- If patient is helpless ensure that she is placed in a comfortable position while the bed is made up with clean linens as necessary.
- Give a mouth wash after the bath.

- Tidy unit and ensure that her locker is within reach and anything she may require from it.
- Open closed doors/widows remove screen
- Clean and put away equipment, return dirty linen bin, and chairs to their appropriate places.
- Document any abnormalities observed and report to superior officer.

PROCEDURE 3

Vital Signs

Definition: They are cardinal signs that help in assessing the state or condition of the vital organs in the body e.g. heart and lungs. It includes observation of temperature, pulse, respiratory and blood pressure

I**ndications**

- To assess the condition of the patient.
- To assist in determining the diagnosis of the patient.

Requirements (A clean trolley procedure)

- Thermometers in jar tubes or its case
- 3 gallipots for (swab, antiseptic solution, water)
- Lubricant for rectal thermometer e.g. liquid paraffin or Vaseline
- Watch with seconds hand or pulsometer
- Sphygmomanometer and stethoscope
- Register for recording and biro
- T.P.R. chart
- Receiver for used swabs

Temperature

Definition: Body temperature represents the balance between heat gain and heat loss as measured by a thermometer.

Oral Route

Procedure

- Wheel trolley to the ward
- Explain the procedure to the patients
- Wash hands.
- Put patient in a comfortable position
- Remove thermometer from container
- Using a wet swab, wipe thermometer from top to the bulb end.
- Shake thermometer mercury down to below 35^0C
- Ask patient to open mouth and lift tongue up while the bulb end of the thermometer is placed under the patient's tongue.

- Instruct patient to close lips and not teeth around the thermometer and breath through the nose.
- Leave thermometer in place for 2 minutes.

Groin or Axilla

- Inform patient
- Clean site with dry swab before placing thermometer to ensure that site is dry.
- Ensure thermometer is completely surrounded by skin surface placing patient's arm over his chest or flexing upper leg on the abdomen.
- Leave thermometer in position for 5-7 minutes.
- Remove thermometer, read, shake down mercury.
- Wipe with a dry swab, wipe again with a wet swab and replace.
- Record in book or chart.

Rectal temperature

- Inform patient
- Expose anus and clean around it with moist and dry swabs
- Lubricate bulb end of rectal thermometer lightly
- Insert thermometer for about 3-4cm into the rectum.
- Let buttocks fall in place and hold the thermometer in place for 2minutes
- Remove thermometer and wipe it with dry swab using firm twisting movement.
- Read thermometer, shake down mercury, wipe with a moist swab and put back into container.
- Record in book or chart.

Pulse

- While thermometer is in position check the patient's pulse in the following manner.
- Place patient's arm comfortably across his chest or beside him on the bed with palm facing downward.
- Place the first 3 fingers along patient's radial artery and the thumb on the back of patient's wrist.
- Apply sufficient pressure, get used to the feel of the pulse before counting.
- Count the number of pulsation for one minute or for ½ a minute and multiply by two to get the pulse rate per minute.

- If any abnormality is noted, repeat the counting until satisfy with relevant details. Alternate sites for checking pulse rate
- Facial artery
- Temporal artery
- Dorsalis pedis artery
- Femoral artery

Respiration

- With the hand still on the patient's wrist, note the patient's respiration by observing the rise and fall of patient's chest walls.
- Count for one full minute or for ½ a minute and multiply by two and record the beats in circles per minute.
- Repeat the count for one minute if in doubt of accuracy or if any abnormalities are noted.
- Remove thermometer, wipe dry swabs from fingers to the bulb.
- Hold thermometer horizontally at eye level and read mercury level along the stem.
- Wipe thermometer toward bulb with moist swab (swab impregnated into antiseptic lotion) and return into container.
- Discard used swabs.
- Record readings in the register or chart.

BLOOD PRESSURE

Indications:

1. To established baseline in blood pressure
2. To monitor fluctuations in blood pressure

Method:

- Inform patient where necessary.
- Place patient in comfortable position with arm supported, elbow extends and palm facing upward.
- Nurse places herself in a convenient position so that she can read mercury at eye level.
- Wrap cuff of sphygmomanometer smoothly around patient's arm above the bend of the elbow.

- With fingertips feel strong pulsation at the elbow bend.
- Inflate the cuff until the pulsation is no more felt, inflate about 20mmmHg above this level.
- Place stethoscope on the brachial artery.
- Deflate cuff gradually noting on the manometer the point at which the first sound is heard, this is systolic pressure.
- Continue deflating until the last distinct loud sound is heard-this is diastolic pressure.
- Release the remaining air.
- Remove cuff and make patient comfortable.
- Record readings (in book or chart) and report any abnormality to the ward sister.

N.B. Conversion of body temperature

- From Fahrenheit to centigrade (F-32) x 5/9
- From centigrade to Fahrenheit (c x 9/5) + 32

PROCEDURE 4

Tepid Sponging

Aim:

To reduce a temperature above $39.4^{0}C$ (103^{0f}) by 1^{0c}

Requirements

Trolley with:

- Bowl of cold water at 33^{0c} (90^{0f})
- Bath thermometer
- 6 face cloths or sponges
- 2 bath towels
- Bowl of ice block
- Clean linen

Procedure:

- Explain the procedure,
- Take and record the temperature.
- Strip the bed leaving the patient covered with a sheet and remove the patient's gown.
- The patient's face and neck are sponged and patted dry.
- A cold compress is applied to the patient's forehead and changed at intervals during the procedure.
- Sponging is carried out systematically as for a bed bath.
- Long sweeping strokes are used and no drying is required.
- Place fairly wet cloths in the axilla and groins, renew as they become warm.
- When the patient is rolled on his side, remove compresses, and change the bottom sheet.
- Duration of treatment is 15-20minutes.
- Dress the patient in clean light clothing and remake the bed with clean line.
- A cool drink can be given if allowed.
- Return to take the patient's temperature in half an hour and chart it below the temperature which was taken before the procedure started.
- Should shivering occur during this procedure, cover the patient with a blanket and report to the nurse in charge.

PROCEDURE 5

Administration of drugs

General principles of serving medicine

- Always shake medicine bottle before pouring
- Liquid iron medicines are to be given through straws and patient to be given drink of water after. If straws is not available, use chewing stick or brush immediately and rinse mouth
- Powders are to placed on the back of the tongue or mix with drinking water before swallowing.
- Cough medicine should be given undiluted.
- Avoid mixing medicine unless specifically ordered.
- Attempt to administer medicines in a palatable way, may dilute with orange juice.
- Give warm drink after serving oil drugs.

Prescriptions

1. All orders for medicines must be written and signed for by the Doctor, prescription sheet must contain the following information.
    a) Patient's name
    b) Room or bed number
    c) Medications
    d) Dosage
    e) Frequency and time
    f) Date and time of initial dose
    g) Date and time medications should stop
2. Nurses write up should bear the following:
    a) Date
    b) Time
    c) Drugs
    d) Dosage
    e) Route
    f) Remarks
    g) Signature

N.B: If Doctor's writing is not legible, verify from the Doctor

I. Administration of oral medicines

Requirements

- Medicine trolley

  Inside the medicine trolley, we have the following:

- Medicine jackets with individual drugs
- Spoon and saucer
- Mixture or syrups if any
- Hand towel by the side of the trolley
- Jacket for empty drug sachet by the side of medicine trolley.

Under the medicine trolley

- A bowel of warm soapy water
- A bowl of clean water
- A tray containing cups or medicine cups for children
- A jug of drinkable water

Method of serving mixtures

- Check doctor's orders with the medicines.
- Check labels three times
- Identify patient carefully by calling his name
- Place each medicine in a separate medicine glass
- Take medicines to patient's bedside carefully keeping the trolley in view all the time and stay with patient until medicine is swallowed.
- Give extra water to drink if necessary
- Record medications given immediately.
- Avoid mixing medicine unless specifically ordered.
- Attempt to administer medicines is palatable may dilute with orange juice.
- Give warm drink after serving oily drugs.

Method of serving oily medicines

- Pour out medicines and offer to the patient
- Give patient arm drinking water, warm glucose drink or fruit juice
- Patient may lick sweets if he has to remove the oily taste from his mouth.

Method of serving powdered medicine

- Mix measured quantity of powder with drinking water and give to the patient or powder is placed on the tongue and a glass of water is used to wash it down.

Methods of Serving Tablets and Capsules

- Check doctor's orders with the medicines.
- Check labels three times
- Identify patient carefully by calling his name
- Put prescribed tablets or capsules on a spoon in a saucer.
- Pours it on the patients' palm.
- Give a glass of water to drink
- Ensure the patient swallow the drug
- Report if patient refuses or vomits the medicine
- Record the medication served on the treatment sheet
- Return the medication cupboard.

Administration of Dangerous Drugs of Addiction

- Confirm instruction to give the drug by checking that the prescription of the dangerous drug has been made, dated and signed by the Doctor on the prescription sheet containing the patient's name.
- Take prescription sheet to sister or staff nurse in-charge.
- Sister in-charge or staff nurse will bring out the drug from the D.D.A cupboard. Sister and student nurse both check the balance.
- Student records into the Dangerous drug book with the following particulars:
  a) Date
  b) Patient's name and bed number
  c) Amount of drug to be given
  d) Doctor's name that prescribed the drug
  e) Stock balance.

- Student that prepares the drug, both the giver and witness check drug label with prescription sheet and dangerous drug book. The witness must be a qualified nurse. Taking the prepared drug and prescription sheet, both the giver and witness go to the patient's bedside.

- Identify the patient, calling him/her by name.
- Give the drug and note the time
- Complete entry in the dangerous drug book stating the following;
    a) Time the drug was given
    b) Signature of giver
    c) Witness's signature is required in accordance with the instructions of D.D.A (Dangerous Drug Act).
- Wash and put away all articles used.

N.B. The D.D.A cupboard key must always be kept by the Sister in charge or trained nurse. At no time whatsoever, should the key be in the possession of a student Nurse.

Injection

Definition: is the administration of drug into the body tissue using a syringe and needle.

Method of administration

- Intramuscularly
- Intravenously
- Intradermal
- Subcutaneously/Hypodermically

Purpose of injection

1. To administer drugs
2. For rapid or quick absorption
3. To prevent the destruction of certain drugs by the action of digestive juice.

Indication

- When patient is vomiting or having gastric aspiration
- When patient cannot swallow drug or when it is dangerous for him to attempt to swallow.
- Very ill or unconscious patient.

Sites of injection

Method of administration	Site of injection	Muscles involved	Angle of needle
Injection Intramuscular	- Upper Arm - Anterior lateral aspect of the thigh. - Upper outer quadrant of Buttock	- Deltold muscle -Vastus lateralis muscle -Gluteus Maximus muscle	90^0
• Intravenous	-Veins	- Veins directly,	10^0
• Intradermal	- Inner surface of the forearm of the Skin	- under the skin	
• Subcutaneous	-Outer surface of upper arm. -Abdomen (under the umbilicus) -Lateral mid third of thigh	-Under the dermis	40^0

Requirements for a patient

1. A sterile tray with cover containing:

- Needle and syringes
- Appropriate drugs/injection
- Gallipot containing sterile dry cotton swab
- Gallipot containing sterile cotton wool swab with methylated spirit.
- An ampoule file
- Kidney dish for used swab

2. Safety box
3. Screen

Procedure

- Inform patient
- Provide privacy
- Wash hand and dry
- Prepare tray and take to patient bed side, with safety box
- Expose the buttocks to be injected
- Prepare injection to be given and expel air from the syringe
- Do not recap
- Cleanse area thoroughly with spirit swab

- Using the thumb and first two fingers, press the tissue down firmly and quickly insert the needle at right angle (Upper outer Quadrant of the buttock).
- If a child or emaciated patient, the muscle can be held up.
- Slowly pull the piston back to see if any blood appears.
- If no blood appears inject slowly
- Withdrawn needle quickly with one hand while other hand applies pressure with dry swab over the punctured area.
- Make patient comfortable
- Chart given medication.

Ensuring safe injections using the nine right

Right ways to give a safe injection

Key steps of a safe injection

- Use a syringe and needle from a new, sealed undamaged packet for every injection.
- Without re-capping, place syringe and needle in a safety box immediately after use.
- Manage injection waste safely and appropriately.

PROCEDURE 6

Catheterization

Definition: introduction of urinary catheter into the urinary bladder to empty the urine

Indications

- To obtain specimen for laboratory investigation.
- To empty bladder during labour
- Prior surgical interventions
- Incontinent patient.

Procedure for catheterization

In a female patient

- Explain procedure to patient – To obtain the patient's consent and co-operation.
- Screen patient – To ensure patient's privacy
- Assist the patient to get into bed and position her. – dorsal position with his knees flexed and abducted to facilitate access to urethra
- Wash hand thoroughly and dry – To keep hand clean with sterile towel
- Put on glove.
- Assistant help to open bowl containing dressing mackintosh and towel.
- With glove hand, place dressing mackintosh and towel under the buttock, the second dressing towel is placed over the abdomen.
- Clean the area thoroughly using as many swabs as necessary. Pick up the swab and pass it to the left hand and swab the labia majora, minora and the center.
- Position receiver in between the highs.
- Lubricate the catheter; separate the labia minora by using the thumb and one finger to locate the urethra orifice.
- Pick up the lubricated catheter at 7.5cm from the tip with the glove hand, introduce it gently, letting the end rest in the receiver that is between the thighs continue introducing until urine is obtained.
- If a specimen is required clip the catheter with forceps and place specimen bottle and leave remaining urine flow into the receiver.
- When sufficient quantity of urine is obtained remove specimen bottle and leave remaining urine flow into the receiver.
- Remove catheter, after all urine has been drained, if catheter is to be passed once.
- Make patient's comfortable.

- If catheter is to be retained inflate with specific amount of water and connect to urine bag and hang to the side of the bed.
- If catheter is for intermitted drainage close end of catheter with spigot.
- Remove requirements and make patient comfortable.
- Measure urine and record in a chart.
- Label and send specimen accompanied with necessary form to the laboratory.

In a male patient

1. The penis is held and elevated to make it vertical to the body (in male)
2. Clean the glans penis with antiseptic pass catheter slowly twist catheter slightly and continue insertion until urine drip.
3. Slight pressure is applied to the glans with mid index finger.

PROCEDURE 7

Dressing of Wound

General rules in dressing of wounds

- The nurse doing the dressing must have a sense of responsibility and be aware of the risk to patient if she is careless in her dressing technique.
- Observe doctor's instruction
- Sterile equipment are used for aseptic procedures
- Sterile pads can be stored ready for use when needed
- The trolley surface is cleansed for placing the sterile equipment
- A mask is worn by the nurse to prevent contamination from the nose
- The nurse must be clean.
- Part of the instrument that comes is direct contact with area treated must not be touched with hands.
- Cheated forceps are used for lifting sterile equipment
- There should be freedom from drought by closing windows and mask; this reduces contamination by air-borne organisms.
- There should be restriction on the number of people entering the room when the trolley is being set.
- The articles must be kept sterile and free from contamination while awaiting use and during use.
- The nurse can spread the dressing towels with washed hands.

Purpose

1. To bring the two edges of wound into close contact
2. To prevent infection
3. To arrest bleeding (Haemorrhage)
4. To promote drainage of wound
5. To promote healing
6. To protect the wound against further injury
7. To absorb drainage
8. To immobilize wound and surrounding tissue
9. To provide physical and mental comfort for patient
10. To provide haemostasis by pressure dressing
11. To apply medicine locally.

Requirements

On the trolley: Dressing pack (This contains the following) and it is of two layers.

The inner layer: It contains the following

- One kidney dish with the following instruments
- Two dressing forceps
- Two dissecting forceps
- Two galipots containing cotton wool and gauze (swabs)
- Two kidney dishes with cover.

NOTE: It is wrapped with a brown paper

Outer layer: It contains the following

- Hand towel (one)
- Dressing forceps (one)
- Dissecting forceps (one)
- Dressing mackintosh (one)

NOTE: All wrapped together with a brown (e) dressing towel

Under the trolley or bottom shelf

It has the following

- One destructor bowl (for dirty swabs) lined with brown paper, or a yellow bucket with lid.
- Bowl for used hand towel
- Kidney dish with lid containing Jik 1:6.
- One kidney dish with salvon lotion 1:20 for immersing of listed instrument.
- One tray containing the following.
- Lotions for dressing the wound
- Strapings (plasters)
- Counter scissors
- Bandage

Procedure

- It is a trolley and sterile procedure
- Inform patient (to prepare his/her mind)
- Screen patient (for privacy) and close window
- Check patient treatment sheet for type of dressing/medicated to use.
- Arrange top clothes by exposing the area to be dressed.

- Assess the wound e.g. for bleeding (in case of an extra additional dressing pack)
- Remove strapping edges with gloved hand, the old dressing on the wound.
- Remove glove, wash hands, put on mask
- Clean trolley with methylated spirit and cotton wool
- Set trolley
- Wheel trolley to patient's bed side
- Ask for and assistant, instruct her to wash hand and use mask
- Dresser washes her hand again
- Assistant helps to remove the outer strapping of the dressing pack.
- Dresser insert her hand inside the pack opening it completely
- Dresser picks the hand towel and dry hands with it.
- Dresser put on gloves
- Dresser picks a pair of dressing and dissecting forceps, using both forceps to arrange the dressing mackintosh and towel underneath the area to be dressed.
- Using the dressing forceps remove the whole dressing and discard the dressing in the destructor bowl.
- Discard the dressing forceps in the kidney dish with lotion underneath the trolley, resting the dissecting forceps on the brown paper of the outer pack.
- Open the inner pack and arrange instrument properly
- Instruct an assistant to pour the required lotion into the gallipot without allowing the bottle of the lotion to touch the gallipot.
- Using a new pair of dissecting and dressing forceps, cleans the wound with the required antiseptic lotion (inside-outward) in a stroke manner, once and discard, repeat until wound is clean.
- Discard the forceps in the lotion under the trolley
- With fresh pairs of forceps apply sterile dressing adequately to cover wound.
- Apply strapping
- Remove dressing towel and mackintosh with the used forceps
- Discard forceps
- Make patient comfortable, open windows, remove screen and wheel trolley to treatment room, disinfect, wash and sterilize instruments.
- Clean trolley.

PROCEDURE 8

Urine Testing

Before testing urine

Observe the physical components

1. Deposits or sediments

   It could be the following:

   a. **Mucus**: Could be woolly or cloudy

   b. **Phosphate:** In alkaline urine a heavier white deposit will be present

   c. **Urates**: If the urine is acidic, urates are commonly seen as light pink colour.

   d. **Blood:** The urine appear reddish in appearance

   e. **Pus:** It is a yellowish dense mass which lies at the bottom of the urine glass. It as a result of inflammation of any part of the urinary tract. It looks creamy is character.

2. **Odour**

   Freshly passed urine has an aromatic or slightly ammonia smell

- In some cases of diabetes the odour of acetone can be detected
- In infection of the urinary tract it may be fishy in character
- In a decomposed urine, it has an ammonia smell
- Urine has a sweetish character if acetone is present
- Urine has a fishy character if Bacillus coli is present.

3. **Reaction of urine to litmus paper**

   Normal urine: The reaction is usually slightly acidic i.e. blue litmus paper turns to red litmus paper.

   Alkaline Urine: A red litmus paper turns to blue litmus paper e.g. in cystitis.

4. **Colour of Urine**

   Normal urine is described as **amber** in colour. The following colour abnormalities may be found in urine.

   a. **Pink or Red**: May be due to blood or drugs such as rifampicin. It may also be due to local bleeding.

   b. **Black Or Brownish Green:** It may be due to bile also after poisoning with phenol or Lysol

c. **Blue or Green**: It may be due to dye

d. **Milky or Opaque**: May be due to pus.

5. Amount /quantity/output

In adult the amount is between 1200mls and 1500mls in 24hours.

The amount of urine could be in the following forms

a. Polyuria

b. Oliguria

c. Anuria

Polyuria: Is increase volume of urine and it is a result of extra fluid e.g. Diabetes Mellitus, Diabetes inspidus and Chronic Nephritis or Nephrotic Syndrome

Oliguria: Diminished volume or urine as a result of excessive sweating and certain diseases e.g. Nephritis, Dehydration, severe burns etc.

The term oluguria is used, if the 24 hours urine output is less than 400mls.

Anuria: Is the term used when the kidney secretes NO URINE. It may result from severe haemorrhage, severe crush injury, septic abortions acute nephritis, bi-lateral renal calculi, toxic damage to the kidney.

Specific gravity: Is the term used to described the weight of a substance as compared to the weight of an equal amount of distilled water. It is determine by using an instrument known as a **urinometer** which is calibrated

The level to which the instrument sinks, is read on when it is floated in a specimen glass full of urine. The specific gravity of water is taken as 1000.

The normal figure of urine which has a higher specific gravity than water is between 1,010 - 1,020.

In other words if a given volume of 1 litre of water weights 1000gms the same volume of urine will weight 1,015 – 1,025gm.

The specific gravity of urine is high in diabetics, glycosuria and concentrated urine, but it is low in certain forms of Nephritis, diluted urine and kidney-failure.

Note the following precautions

- The urinometer should be checked periodically.
- The urinometer must float freely in the urine and not touch the sides or bottom of the vessel.
- The reading is taken at the lower level of the meniscus

- The urine must be allowed to cool to room temperature before reading is made.

Test for albumin or protein

- **Cold test for albumin or protein**

1. Albustix strips test
   a. Dip the test end of the albustix into the urine and remove immediately
   b. Compare the colour of the dipped end with the colour chart.
   c. Notes any change in colour e.g. negative, no change in colour, Positive, moistened and turns green or blue green at once.
2. Salicyl-sulphoric acid test
   - To 5mls of urine in a test tube
   - Add few drops of salicylic sulphuric acid
   - Observe change in colour
   - Positive result gives an opalescent cloudy urine
3. Hot test for albumin of protein
   - **Hot test for albumin**

4. Acetic acid test

- Fill a test tube with urine three-quarter full
- Heat top inch of urine over spirit lamp, turning the tube at the same time.
- If it becomes cloudy, add a drop of **acetic acid**, if cloud disappear it is due to the presence of **phosphates or urates.**
- If the **cloudiness** remains it indicates the presence of albumin or protein.

5. Esbach's quantitative test

- Esbach's urinometer is used for this test and a glass tube graduates from 0 to 7 and marked with letter "U" and 'R'
- Urine must be acidic and filtered if cloudy.
- Fill the graduated tube with urine to mark 'U'
- Fill reagent to mark 'R'
- Place rubber stopper in the opening of the tube and invert a few times.
- Place within the wooden container and allow to stand undisturbed for 24hours.

- The level of any white precipitate formed in the graduated tube shows the amount of albumin in grams per litre of urine present. If the figure is divided by 10 this will give a percentage amount.

Notes:

- If there is large amount of albumin that is over 0.4gm% the urine may be divided with equal part of water, reassessed and the result multiplied by 2.
- Make sure that the urine is acidic and the specific gravity is 1008. If 1010 or more dilute the urine first to bring the specific gravity down.

TEST FOR GLUCOSE

- **Cold test**

2. Clinistix strips test

- Dip the test end of the clinistix in the urine and remove
- Leave for few seconds, and then compare with colour scale.
- Note any change in colour and compare with colour chart.

3. Clinitest tablet test

NOTE: Do not use the tablet if colour has changed to blue

- With dropper provided, place five drops of urine in the test tube
- Rinse dropper, then add ten drops of water
- Drop one tablet and watch reaction.
- Do not shake till fifteen seconds (15sec) after reaction ceases
- Compare the colour with the colour range on the chart scale. The colour range from blue, which is **negative**, to dark green (0.25%).

  Yellow (0.5%)

  Orange (1%)

  Brick red (2%)

- **Hot test**

Benedict's test

Place 5ml of Benedict's reagent into a test tube.

a. Add ten drops of urine
b. Boil the mixture vigorously for two minutes

c. The change in colour is from green to brick-red indicates increasing amount of sugar in percentage quantities they can be tabulated as follow:

- Blue negative
- Green 0.5%
- Yellow 1%
- Deeper yellow 1.5%
- Orange 2%
- Brick r
- ed over 2%

TEST FOR ACETONE

- Acetest tablet

a. Place an acetest tablet on a clean white sheet of paper (sheet paper)
b. Place drop of urine on the tablet
c. Leave for thirty seconds.

- Negative result no change in colour
- Positive result tablet changes from lavender to deep purple, according to the amount present.

Please Note: Acetone appears when the intake or utilization of carbohydrate in the body is insufficient for the complete metabolism of fat and are therefore seen in, diabetes, starvation and excessive vomiting.

PROCEDURE 9

Administration of Oxygen or Oxygen Therapy

Oxygen therapy is the administration of oxygen through specialized equipment to increase tissue oxygenation.

Indications

- After severe haemorrhage
- In severe case of Anaemia
- Certain diseases of respiratory tract such as pneumonia, asthmatic attack
- In shock
- In patient undergoing general anaesthesia
- In cases of prematurity
- In coronary myocardial infarction
- In cases of maternal and foetal distress
- Cardiac failure

Routes of Oxygen Administration

- An oxygen tent
- Nasal/catheter
- Disposable plastic mask
- Tudor Edward's Spectacles (Nasal tubes attached to it)

Rates of Flow

- For adult 2 – 4 litres
- Children 1-2litres

Requirement

- Cylinder of oxygen complete with
- Pressure gauge
- Adjustment valve
- Oxygen stand
- Flow meter
- Humidifier
- Oxygen key
- Rubber tubing from a cylinder to humidifier to the apparatus being used
- Tray containing the following items:

- Nasal catheter
- K.Y. Jelly
- Cotton wool swab in a galipot
- Adhesive strapping
- A pair of gloves

By catheter

- Explain the procedure to the patient
- Collect equipment
- Remove electrical appliances and exhibit "No Smoking"
- Attach humidifier to cylinder
- Attach nasal catheter to connecting tube on humidifier
- Measure catheter by holding it in a horizontal line from the tip of the nose to the ear lobe, mark it with a narrow tape
- Clean the patient's nostrils
- Dip tip of catheter in water and watch for bubbles
- Lubricate the catheter
- Hold the patients head up, insert catheter into nose until the marking on catheter is reached.
- Secure catheter by putting it upwards the side of patients face and above his ear and fix with adhesive tapes.
- Adjust litres flow to the rate specified 2 or 4 litres per minute (adult) 1-2 litres per minute (children).
- Make patient comfortable.

Method by Tudor Edward's Spectacle

- Set up same requirements as for nasal except that two rubber tubes are attached to the spectacle frames for insertion into each nostril.

By Mask

- Explain the procedure to patient
- Collect requirement
- Remove electrical appliances and exhibit "No Smoking"
- Connect inlet tube of mask face ensuring that there is no leakage
- Fix mask carefully to patients' nostrils and mouth
- Regulate litre flow as above

- Continue observation
- Repeat previous steps 1, 2 and 3
- Bring oxygen unit to bedside, turn oxygen flow and check inlet to outlet tent.
- Close all openings of the flood tent with oxygen
- Tuck the edges of the tent around the mattress so that tent forms an enclosure around the patient.
- Place a thermometer inside the tent and maintain a temperature of 64 -70^0f.

Precautions to be taken when oxygen is being administered

- Prevention of explosion by clearly display "No Smoking"
  a. There must be no naked flame near the patient e.g. matches and cigarettes.
  b. Alcohol and others must not be applied to the skin
  c. Oil must not be used to lubricate joints and fitting in any apparatus which is being used.
- Spare cylinders should always be at hand and empty ones marked "Empty"
- The apparatus must always be tested before it is taken to the bedside
- No electrical bulb, light or heat pads should be allowed inside the oxygen that

Potential Complications

1. Deterioration in respiratory function
2. Ulcerated nose or ears
3. Dry mouth
4. Atelectasis and lung infection

PROCEDURE 10

Oral Toilet

Definition: Oral toilet is the process of cleansing and refreshing the mouth, teeth and gum with a cleansing agent.

Purpose of oral hygiene

- To cleanse the mouth
- To promote normal flow of saliva when patients is having the following:
  i) nil per oral
  ii) has disease of tongue or mouth

iii) is on a milk diet

iv) is unconscious or unable to wash mouth

v) has dryness of mouth with high temperature

- To increase appetite
- To prevent tooth decay

Persons or illness that need oral toilet

- Dysphagia (somebody with difficulty in swallowing)
- Febrile conditions (High temperature with dryness of the mouth)
- Unconscious patients
- Patient on special diet e.g. milk diet
- If a patient is to be fed by artificial meals
- Dehydration (insufficiency fluid in the body)
- Person with disease of tongue or mouth

For a patient who can help himself/herself requirement

Tray containing

- Face flannel
- Mouth wash or water in tumbler
- Took brush and paste or chewing stick
- Bowl for denture. Receiver for returned mouth wash

Mouth washes	**Formulae**	**Strength**	**Properties**
Sodium Bicarbonate	NaHco	1:60	Hydroscopic, mucolytic
Hydrogen Peroxide	H_2O_2	1:20	Bacteriocidal, cleansing
Glycothymolin or Glycerine of Thymol	$C_3 H_3 O_3$	1:10	Solvent emollient
Oraldene		100%	Combines the properties of sodium Bicarbonate
Normal saline	Nacl	½ tsp to 150mls	

METHODS

- Explain the procedure to the patient
- Collect all articles and arrange them conveniently for the patient
- Help arrange patient in a comfortable position
- Allow patient to adjust receiver himself
- Wet tooth brush by holding it over the receiver and pouring some mouth wash or water on it.
- Apply tooth paste into the brush
- Instruct patient to brush gum and tongue then brush both sides of teeth using vertical movements.
- Patient then rinses the mouth with solution and return solution into receiver, wipe mouth with face towel.
- Rinse brush with remaining solution or water.
- Remove all used articles, make patient comfortable.
- Clean all used articles and put them back in their proper places

For a patient who cannot help himself (very ill patient)

Requirements:

A tray with cover containing

A receiver containing

1. 1 Spenser well artery forceps
2. 1 pair of dissecting forceps

   1 small bowl for gauze swab

   3 receivers for the following:

   - Used instruments
   - Returned mouth wash

3 gallipots containing the following:

i. Solution of sodium bicarbonate 1:160

ii. Solution of glycothymoline 1:10

iii. Glycerine of Borax or liquid paraffin

- Cape
- Small towel
- Galipot containing clear water for dentures (if necessary)

Procedure

- Inform patient about procedure
- Provide privacy
- Arrange bed clothes and put patient in comfortable position
- Remove dentures and put in galipot of water (if necessary)
- With dissecting forceps put a gauze swab in a galipot of sodium bicarbonate solution, pass into the Spencer wells artery forceps. Gently squeeze the gauze and clean the tongue, roof, floor and sides of the mouth.
- The gums are treated in the same manner and the teeth, in up and down movement/fashion.
- Drop all used swabs in the receiver for used swabs.
- This is followed by use of glycothymolin 1:10
- Rinse the mouth with water
- Wipe the tongue, if found coated, with gauze swab containing glycerine or borax.
- Treat the lips with lubricant.
- Return dentures if any after being washed under running water
- Make patient comfortable, remake the bed and clean the tray
- Report your observation if any.

APPENDIX V: SCORES
PRETEST SCORES

S/N	SONAKURE	SON ILESA	U.I. IBADAN	LAUTECH OSOGBO
1	55	54	56	57
2	54	52	50	51
3	56	55	53	54
4	51	55	53	54
5	48	56	55	56
6	56	57	60	56
7	55	53	52	54
8	54	56	59	56
9	49	48	50	50
10	57	56	53	54
11	49	57	55	57
12	57	49	50	49
13	57	56	55	52
14	49	54	52	54
15	54	56	55	56
16	46	52	48	50
17	56	54	50	54
18	46	53	50	50
19	49	48	50	51
20	54	50	52	50
21	56	48	51	52
22	56	50	51	50
23	56	57	53	51
24	48	49	50	52
25	56	57		56
26	54	53		55
27	56	58		57
28	56	54		55
29	57	56		53
30	54	49		49
31	57	58		57
32	50	49		49
33	55	56		56
34	53	54		53
35	52	56		54
36	46	56		48
37	54	55		50
38	46	58		
39	50	48		
40	50	50		
41	53	55		
42	56	57		
43	54	53		
44	55	57		
45	58	56		
46		58		
47		59		
48		60		
49		54		
50		56		
51				

TPE EXAMINATION SCORES (S.O.N. AKURE)

S/N	EXAM NO	EXAMINER 1	EXAMINER 2	TOTAL/70	TOTAL /100
1	O01	45	48	46.5	65
2	002	35	40	37.5	54
3	003	38	49	48	67
4	004	41	45	43	61
5	005	46	46	46	64
6	006	43	40	41.5	58
7	007	39	47	43	61
8	008	37	57	47	65
9	009	43	41	42	60
10	010	45	45	45	64
11	011	42	52	47	67
12	012	41	53	47	67
13	013	45	35	40	57
14	014	42	46	44	60
15	015	42	52	47	65
16	016	45	48	46.5	65
17	017	42	42	42	60
18	018	38	40	39	55
19	019	45	38	41.5	59
20	020	36	43	39.5	54
21	021	38	38	38	54
22	022	37	36	36.5	51
23	023	36	38	37	53
24	024	50	41	45.5	63
25	025	47	31	39	54
26	026	48	44	46	64
27	027	37	39	38	54
28	028	47	31	39	54
29	029	38	41	39.5	56
30	030	40	40	40	56
31	031	40	31	35.5	49
32	032	35	44	44.5	55
33	033	34	46	40	56
34	034	37	49	43	60
35	035	32	48	40	56
36	036	49	37	43	60
37	037	40	40	40	56
38	038	40	49	44.5	62
39	039	30	48	39	54
40	040	43	42	42.5	61
41	041	39	42	40.5	58
42	042	38	51	44.5	62
43	043	36	38	37	52
44	044	35	45	40	57
45	045	40	34	37	51

OSCE EXAMINATION SCORES (S.O.N. AKURE)

S/N	EXAM NO	STATIONS=10mks each										TOTAL /100
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1	**O01**	6	5	7	6	7	7	6	5	8	7	63
2	**002**	6	6	7	8	6	7	6	6	6	8	66
3	**003**	5	8	7	6	6	6	8	5	6	6	63
4	**004**	6	6	5	6	8	6	7	6	7	6	62
5	**005**	5	5	7	6	7	7	6	5	7	5	60
6	**006**	5	6	7	7	5	6	5	5	7	6	59
7	**007**	6	5	7	6	5	7	6	5	6	7	60
8	**008**	5	6	5	6	5	6	5	6	7	5	56
9	**009**	5	6	5	6	5	6	5	6	5	5	54
10	**010**	5	5	5	5.5	5	6.5	5	6	7	6	55
11	**011**	5	5	4	5	5	6	5	5	7	5	52
12	**012**	6	5	7	6	5	6	6	7	6	6	60
13	**013**	6	7	5	8	6	6	8	7	7	8	68
14	**014**	8	7	9	8	8	7	8	8	8	7	78
15	**015**	5	6	5	6	5	6	5	6	5	5	54
16	**016**	5	6	5	6	5	4	5	6	5	5	52
17	**017**	8	6	5	8	6	7	8	6	8	7	69
18	**018**	8	6	7	6	7	7	6	5	7	8	67
19	**019**	6	5	7	7	6	8	6	5	7	6	63
20	**020**	5	5	7	6	5	7	6	5	6	7	59
21	**021**	6	5	6	6	5	7	5	5	6	6	57
22	**022**	5	5	7	5	5	6	6	5	6	7	57
23	**023**	5	7	5	7	6	5	7	5	8	7	63
24	**024**	7	5	7	6	5	7	6	5	6	8	62
25	**025**	6	6	7	5	5	6	6	5	6	7	59
26	**026**	5	5	4	5	5	6	5	5	6	5	51
27	**027**	5	5	4	5	5	7	5	6	7	6	55
28	**028**	5	7	5	7	5	8	8	7	6	7	65
29	**029**	8	6	7	6	7	7	6	5	7	8	67
30	**030**	8	6	5	8	6	7	8	6	6	7	67
31	**031**	6	5	8	6	6	8	6	5	6	8	64
32	**032**	6	5	7	6	5	7	6	6	7	7	62
33	**033**	6	5	7	6	7	7	6	7	8	7	66
34	**034**	6	5	7	6	5	7	6	5	6	7	62
35	**035**	5	6	5	5	5	6	5	6	7	5	55
36	**036**	4	5	4	5	6	6	8	6	7	8	59
37	**037**	8	6	7	8	6	7	8	6	6	7	69
38	**038**	6	8	6	6	8	6	6	5	6.5	5	62
39	**039**	6	5	5	6	5	6	7	6	7	7	60
40	**040**	5	6	6	6	5	6	5	7	7	8	61
41	**041**	8	6	6.5	8.5	8	7	8	6	8	7	73
42	**042**	6	5	7	6	5	6	6	7	6	6	60
43	**043**	6	5	7	6	7	7	6	7	8	7	66
44	**044**	6	5	7	6	5	7	6	5	6	7	62
45	**045**	8	6	7	6	7	7	6	5	7	8	67

TPE /OSCE EXAMINATION SCORES (S.O.N. AKURE)

S/N	EXAM NO	TPE (Control Examination)	OSCE (Experimental Examination)
1	O01	**65**	63
2	002	**54**	66
3	003	**67**	63
4	004	**61**	62
5	005	**64**	60
6	006	**58**	59
7	007	**61**	60
8	008	**65**	56
9	009	**60**	54
10	010	**64**	55
11	011	**67**	52
12	012	**67**	60
13	013	**57**	68
14	014	**60**	78
15	015	**65**	54
16	016	**65**	52
17	017	**60**	69
18	018	**55**	67
19	019	**59**	63
20	020	**54**	59
21	021	**54**	57
22	022	**51**	57
23	023	**53**	63
24	024	**63**	62
25	025	**54**	59
26	026	**64**	51
27	027	**54**	55
28	028	**54**	65
29	029	**56**	67
30	030	**56**	67
31	031	**49**	64
32	032	**55**	62
33	033	**56**	66
34	034	**60**	62
35	035	**56**	55
36	036	**60**	59
37	037	**56**	69
38	038	**62**	62
39	039	**54**	60
40	040	**61**	61
41	041	**58**	73
42	042	**62**	60
43	043	**52**	66
44	044	**57**	62
45	045	**51**	67

TPE EXAMINATION SCORES FOR DEPARTMENT OF NURSING, U.I.

S/N	EXAM NO	EXAMINER 1	EXAMINER 2	$^{1}/_{2}$TOTAL/70	TOTAL /100
1	O01	**39**	**41**	**40**	**57**
2	002	**38**	**44**	**41**	**58**
3	003	**42**	**46**	**44**	**62**
4	004	**39**	**43**	**41**	**59**
5	005	**38**	**50**	**44**	**62**
6	006	**41**	**45**	**43**	**61**
7	007	**38**	**42**	**40**	**57**
8	008	**36**	**46**	**41**	**58**
9	009	**38**	**48**	**43**	**61**
10	010	**35**	**49**	**47**	**67**
11	011	**34**	**36**	**35**	**50**
12	012	**32**	**38**	**36**	**51**
13	013	**37**	**43**	**40**	**57**
14	014	**41**	**37**	**38**	**54**
15	015	**39**	**41**	**40**	**57**
16	016	**38**	**36**	**37**	**53**
17	017	**34**	**48**	**41**	**58**
18	018	**39**	**47**	**43**	**61**
19	019	**36**	**38**	**37**	**57**
20	020	**42**	**34**	**38**	**54**
21	021	**37**	**37**	**37**	**53**
22	022	**34**	**38**	**36**	**51**
23	023	**43**	**45**	**44**	**62**
24	024	**34**	**36**	**40**	**57**

OSCE EXAMINATION SCORES FOR DEPARTMENT OF NURSING U.I

S/N	EXAM NO	STATIONS=10mks each										TOTAL /100
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1	**O01**	8	7	6	8	6	7	8	7	6	8	**71**
2	**002**	7	6	5	7	6	7	8	6	6	7	**65**
3	**003**	5	3	4	4	5	4	5	5	6	6	**47**
4	**004**	5	5	4	5	5	6	5	5	6	7	**53**
5	**005**	7	6	7	6	7	7	6	5	7	8	**66**
6	**006**	8	7	8	7	8	7	8	9	7	8	**77**
7	**007**	6	6	7	6	5	7	6	7	6	7	**63**
8	**008**	5	6	4	5	6	6	5	5	6	6	**54**
10	**009**	4	4	5	6	5	4	4	5	4	6	**47**
11	**010**	5	5	4	4	5	6	5	5	6	5	**50**
12	**011**	8	6	7	6	8	7	6	7	7	8	**70**
13	**012**	5	4	3	5	3	5	4	5	3	4	**41**
14	**013**	8	7	7	6	7	7	6	6	7	8	**69**
15	**014**	8	8	9	8	8	8	8	9	8	8	**82**
16	**015**	6	6	7	7	5	6	5	6	7	8	**63**
17	**016**	5	5	4	6	5	6	5	5	7	6	**54**
18	**017**	4	4	3	5	4	5	4	3	4	4	**63**
20	**018**	5	6	4	5	5	7	6	5	6	7	**56**
21	**019**	6	5	6	6	5	7	5	5	6	6	**63**
22	**020**	8	6	7	6	8	7	8	7	6	7	**70**
23	**021**	5	5	5	5	5	7	5	6	6	8	**57**
24	**022**	8	8	9	9	8	8	8	9	9	8	**84**
25	**023**	5	5	6	7	5	7	5	5	6	6	**57**
26	**024**	8	6	7	6	7	7	6	7	8	7	**69**

TPE/OSCE EXAMINATION SCORES FOR DEPARTMENT OF NURSING U.I

S/N	EXAM NO	TPE (Control Examination)	OSCE (Experimental Examination)
1	O01	**57**	71
2	002	**58**	65
3	003	**62**	47
4	004	**59**	53
5	005	**62**	66
6	006	**61**	77
7	007	**57**	63
8	008	**58**	54
9	009	**61**	47
10	010	**67**	50
11	011	**50**	70
12	012	**51**	41
13	013	**57**	69
14	014	**54**	82
15	015	**57**	63
16	016	**53**	54
17	017	**58**	63
18	018	**61**	56
19	019	**57**	63
20	020	**54**	70
21	021	**53**	57
22	022	**51**	84
23	023	**62**	57
24	024	**57**	69

TPE EXAMINATION SCORES FOR OAUTHC. SON WESLEY GUILD

S/N	EXAM NO	EXAMINER 1	EXAMINER 2	$^1/_2$TOTAL/70	TOTAL /100
1	O01	38.5	42	40	57
2	002	38.5	46	42.25	60
3	003	40.5	36	38.25	55
4	004	39/5	35.5	37.5	54
5	005	38	43	40.5	58
6	006	42.5	30	36.25	52
7	007	38	52	45	64
8	008	39	40	39.5	56
9	009	38	41.5	39.75	57
10	010	38	39.5	38.75	55
11	011	36.5	44	40.25	58
12	012	37	44	40.5	58
13	013	36.5	48	42.25	60
14	014	41	55	48	69
15	015	37.5	42	39.75	57
16	016	39.5	40.5	40	57
17	017	38	55	46.5	66
18	018	32	45	38.5	55
19	019	39.5	60	49.75	71
20	020	43.5	58	50.75	75
21	021	38.5	41.5	40	57
22	022	37.5	44	40.75	58
23	023	40.5	46	43.25	62
24	024	39	44	41.5	59
25	025	39.5	50	44.75	64
26	026	40.5	55	47.75	68
27	027	38.5	42.5	40.5	58
28	028	36.5	47	41.75	60
29	029	38	48	43	61
30	030	35	48	41.5	59
31	031	40.5	59	46.25	66
32	032	40.5	59	49.75	71
33	033	37	43.5	40.25	58
34	034	45	40.5	42.75	61
35	035	41	45	43	61
36	036	38	48	43	61
37	037	40	55	47.5	68
38	038	39.5	58	48.75	70
39	039	36.5	39.5	38	54
40	040	42	46	44	63
41	041	37	51	44	63
42	042	37	46	41.5	59
43	043	43	50	46.5	66
44	044	43.5	52	47.75	68
45	045	38-5	39	38.75	55
46	046	32	39.5	35.75	57
47	047	39	48	43.5	62
48	048	40	48	44	63
49	049	43.5	50	46.75	67
50	050	40.25	50	45.25	65
51	051	35	43	39	56

OSCE EXAMINATION SCORES FOR OAUTHC. SON WESLEY GUILD

S/N	EXAM NO	STATIONS=10mks each										TOTAL /100
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1	**001**	8	7	9	8	8	7	8	8	8	6	**77**
2	**002**	6	5	8	6	6	8	6	5	6	8	**64**
3	**003**	6	7	9	7	8	7	8	8	8	6	**74**
4	**004**	6	7	7.5	6	6	8	6.5	7	6	8	**68**
5	**005**	6	5	7	6	6	7	6	5	6	8	**62**
6	**006**	6	5	5	6	6	8	6	5	6	8	**61**
7	**007**	6	5	8	6	6	8	6	7	6	8	**66**
8	**008**	6	5	8	6	6	8	6	5	7	7	**64**
9	**009**	6	5	8	6	6	8	6	7	8	8	**68**
10	**010**	6	5	8	6	6	8	6	5	6	8	**64**
11	**011**	6	5	8	6	6	5	6	5	6	8	**61**
12	**012**	6	5	7	6	6	8	6	5	6	7	**62**
13	**013**	6	7	8	6	7	8	6	5	6	8	**67**
14	**014**	6	5	8	6	6	8	6	7	6	8	**66**
15	**015**	6	5	8	7	6	8	6	5	6	8	**65**
16	**016**	5	7	7	7	8	7	8	7	8	7	**71**
17	**017**	8	7	9	8	9	7	9	9	9	8	**83**
18	**018**	8	7	7	8	6	7	6	8	6	7	**70**
19	**019**	6	5	7	6	6	7	6	5	6	6	**60**
20	**020**	8	7	7	8	8	7	8	8	6	7	**74**
21	**021**	6	5	8	6	6	8	6	5	6	5	**61**
22	**022**	6	5	8	6	6	8	6	5	6	7	**62**
23	**023**	6	8	8	6	6	8	6	5	6	8	**67**
24	**024**	6	5	6	6	6	8	6	5	6	6	**68**
25	**025**	6	5	8	6	6	8	6	5	6	8	**64**
26	**026**	8	7	7	6	6	7	8	7	8	7	**71**
27	**027**	6	5	8	6	6	7	6	5	6	6	**67**
28	**028**	8	7	6	8	7	7	7	7	7	6	**71**
29	**029**	6	5	7	6	5	7	6	6	6	5	**58**
30	**030**	8	7	8	6	8	7	8	7	6	7	**72**
31	**031**	6	5	8	6	6	7	6	5	6	6	**67**
32	**032**	6	5	8	6	6	8	6	5	7	8	**65**
33	**033**	6	5	7	6	5	7	6	6	7	6	**61**
34	**034**	6	5	7	6	7	7	6	7	8	7	**66**
35	**035**	6	5	7	6	5	7	6	7	7	8	**66**
36	**036**	6	7	6	8	8	7	8	8	8	7	**73**
37	**037**	6	5	8	6	6	7	6	5	6	6	**67**
38	**038**	7	7	7	7	8	7	6	8	6	7	**70**
39	**039**	6	7	8	8	8	7	8	8	8	7	**75**
40	**040**	8	7	6	8	8	7	8	8	8	7	**75**
41	**041**	6	5	8	6	6	7	6	5	6	7	**68**
42	**042**	6	5	8	6	6	7	6	7	6	7	**64**
43	**043**	8	7	7	6	8	7	6	6	8	7	**70**
44	**044**	6	5	8	6	6	8	6	5	6	6	**68**
45	**045**	6	5	8	6	6	6	6	5	6	5	**65**
46	**046**	7	7	6	8	8	7	8	8	8	7	**74**
47	**047**	7	5	8	6	6	7	6	5	6	6	**68**
48	**048**	8	7	9	8	9	7	9	9	9	9	**84**
49	**049**	5	6	7	7	6	7	6	5	6	6	**67**
50	**050**	6	5	8	6	6	7	6	5	6	7	**68**
51	**051**	5	4	5	6	5	4	5	5	4	5	**48**

TPE/OSCE EXAMINATION SCORES FOR OAUTHC SON WESLEY GUILD

S/N	EXAM NO	TPE	OSCE
1	O01	57	77
2	002	60	64
3	003	55	74
4	004	54	68
5	005	58	62
6	006	52	61
7	007	64	66
8	008	56	64
9	009	57	68
10	010	55	64
11	011	58	61
12	012	58	62
13	013	60	67
14	014	69	66
15	015	57	65
16	016	57	71
17	017	66	83
18	018	55	70
19	019	71	60
20	020	75	74
21	021	57	61
22	022	58	62
23	023	62	67
24	024	59	68
25	025	64	64
26	026	68	71
27	027	58	67
28	028	60	71
29	029	61	58
30	030	59	72
31	031	66	67
32	032	71	65
33	033	58	61
34	034	61	66
35	035	61	66
36	036	61	73
37	037	68	67
38	038	70	70
39	039	54	75
40	040	63	75
41	041	63	68
42	042	59	64
43	043	66	70
44	044	68	68
45	045	55	65
46	046	57	74
47	047	62	68
48	048	63	84
49	049	67	67
50	050	65	68
51	051	56	48

TPE EXAMINATION SCORES FOR LAUTECH

S/N	EXAM NO	EXAMINER 1	EXAMINER 2	½ TOTAL/70	TOTAL /100
1	O01	36	38	37	52
2	002	42	38	40	57
3	003	46	42	44	64
4	004	37	39	38	54
5	005	43	40	41	59
6	006	37	45	41	59
7	007	39	42	41	59
8	008	36	36	36	52
9	009	45	43	44	63
10	010	35	35	35	50
11	011	44	46	45	65
12	012	36	38	37	54
13	013	43	37	40	57
14	014	35	38	36.5	52
15	015	37	35	36	52
16	016	46	39	42.5	61
17	017	42	42	42	60
18	018	48	41	44.5	64
19	019	50	41	45	65
20	020	45	47	46	66
21	021	43	39	41	59
22	022	35	35	35	50
23	023	39.5	40	39	56
24	024	40	50	45	65
25	025	36	36	36	52
26	026	36	34	35	50
27	027	38.5	43.5	41	59
28	028	41	46	43	62
29	029	38	42	40	57
30	030	45	47	46	66
31	031	44	40	42	60
32	032	36	37	36	52
33	033	38	40	39	56
34	034	37	42	39	56
35	035	36	40	38	55
36	036	48	44	46	66
37	037	37	41	39	56

OSCE EXAMINATION SCORES FOR LAUTECH

S/N	EXAM NO	STATIONS=10mks each										TOTAL /100
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1	**O01**	6	6	7	6	5	7	6	5	6	7	61
2	**002**	6	5	7	6	6	7	8	7	8	7	67
3	**003**	5	5	7	5	5	6	6	5	8	8	60
4	**004**	8	6	5	8	6	7	8	6	8	6	68
5	**005**	8	8	5	8	6	7	8	7	8	8	73
6	**006**	7	5	5	6.5	7	7	7	6	7	8	66
7	**007**	8	7	5	8	6	7	8	7	8	8	72
8	**008**	8	8	7	8	7	8	8	7	8	8	77
9	**009**	6	6	5	6	6	7	7	6	8	7	64
10	**010**	7	6	7	6	7	7	6	5	7	8	66
11	**011**	8	6	5	8	6	7	8	6	8	7	69
12	**012**	8	8	9	8	9	8	8	9	8	9	84
13	**013**	6	5	8	6	6	8	6	7	6	8	66
14	**014**	6	5	7	6	5	5	5	6	7	6	58
15	**015**	6	5	5	7	5	6	5	6	7	4	56
16	**016**	7	5	6	7	5	6	6	6	7	6	61
17	**017**	7	8	5	8	6	7	8	6	8	8	71
18	**018**	8	6	5	8	6	7	8	8	8	7	71
19	**019**	8	6	5	8	6	7	8	6	8	8	68
20	**020**	5.5	5	5	6.5	5	6	5	6	7	7	58
21	**021**	5	4	4.5	5.5	7	7	7	8	7	8	61
22	**022**	5	4	5	5	3	4	5	4	4	5	44
23	**023**	5	6	5	8	6	7	8	6	8	7	66
24	**024**	5	6	7	7	5	6	5	5	7	7	60
25	**025**	6	5	7	6	5	5	6	5	6	5	56
26	**026**	5	6	5	4	5	6	5	6	5	5	52
27	**027**	5	7	6	5	6	7	5	7	6	6	57
28	**028**	5	7	5	7	5	7	8	6	7	6	62
29	**029**	5	5	7	7	5	6	7	7	7	7	63
30	**030**	6	5	7	6	5	6	6	7	6	7	61
31	**031**	8	9	6	8	6	7	8	7	8	8	75
32	**032**	5	6	7	7	5	6	7	5	7	7	62
33	**033**	8	9	5	8	6	7	8	7	8	8	74
34	**034**	7	6	8	6	5	7	5	6	5	5	60
35	**035**	8	6	5	7	6	7	5	6	5	5	60
36	**036**	4	4	6	5	6	6	4	6	4	5	50
37	**037**	6	5	7	7	6	7	6	6	7	6	63

TPE /OSCE EXAMINATION SCORES FOR LAUTECH

S/N	EXAM NO	TPE	OSCE
1	O01	52	61
2	002	57	67
3	003	64	60
4	004	54	68
5	005	59	73
6	006	59	66
7	007	59	72
8	008	52	77
9	009	63	64
10	010	50	66
11	011	65	69
12	012	54	84
13	013	57	66
14	014	52	58
15	015	52	56
16	016	61	61
17	017	60	71
18	018	64	71
19	019	65	68
20	020	66	58
21	021	59	61
22	022	50	44
23	023	56	66
24	024	65	60
25	025	52	56
26	026	50	52
27	027	59	57
28	028	62	62
29	029	57	63
30	030	66	61
31	031	60	75
32	032	52	62
33	033	56	74
34	034	56	60
35	035	55	60
36	036	66	50
37	037	56	63

APPENDIX VI: RELIABILITY ANALYSIS RESULTS

BED BATH

Case processing summary

		N	%
Cases	Valid	27	84.4
	Excluded[a]	5	15.6
	Total	32	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	1.6667	1.51911	.840	297.7407	215.353	14.67492
A2	2.1852	1.33119				
A3	.2222	.800064				
A4	.9630	1.19233				
A5	.5556	1.08604				
A6	.8889	1.31071				
A7	.9630	1.34397				
A8	1.4074	1.50024				
A9	2.2222	1.25064				
A10	2.0000	1.27064				
A11	.5185	1.12217				
A12	.9630	1.31505				
A13	1.3704	1.39085				
A14	.5285	1.12217				
A15	1.4815	1.47727				
A16	.9259	1.26873				
A17	1.3333	1.30089				
A18	1.0000	1.10940				
A19	.9259	1.20658				
A20	1.4444	1.39596				
A21	1.4815	1.39698				
A22	.8889	1.05003				
A23	1.0000	1.20894				
A24	.8148	1.00142				
A25	.4444	.84732				
A26	.9630	1.05544				
A27	.5926	1.08342				

RELIABILITY ANALYSIS RESULTS

Students' Perception

Case Processing Summary

		N	%
Cases	Valid	5	100.0
	Excluded[a]	0	.0
	Total	5	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach' Alpha	Total Mean	Total Variance	Total Std. Deviation
B1	1.6000	.54772	.744	11.0000	8.000	2.82843
B2	1.6000	.54772				
B3	1.6000	.54772				
B4	1.8000	.44721				
B5	1.6000	.54772				
B6	1.2000	1.09545				
B7	1.6000	.54772				

Variables	Mean	Std. Deviation	Cronbach' Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	1.6667	1.51911	.840	29.7407	215.353	14.67492
A2	2.1852	1.33119				
A3	.2222	.80064				
A4	.9630	1.19233				
A5	.5556	1.08604				
A6	.8889	1.31701				
A7	.9630	1.34397				
A8	1.4074	1.50024				
A9	2.2222	1.25064				
A10	2.0000	1.27098				
A11	.5185	1.12217				
A12	.9630	1.31505				
A13	1.3704	1.39085				
A14	.5185	1.12217				
A15	1.4815	1.47727				
A16	.9259	1.26873				
A17	1.3333	1.30089				
A18	1.0000	1.10940				
A19	.9259	1.20658				
A20	1.4444	1.39596				
A21	1.4815	1.39698				
A22	.8889	1.05003				
A23	1.0000	1.20894				
A24	.8148	1.00142				
A25	.4444	.84732				
A26	.9630	1.05544				
A27	.5926	1.08342				

Variables	Mean	Std. Deviation	Cronbach' Alpha	Total Mean	Total Variance	Total Std. Deviation
C1OSCE	2.0000	.00000	8.533	21.2000	.700	.83666
C2	1.8000	.44721				
C3	1.6000	.54772				
C4	1.0000	1.00000				
C5	1.4000	.54772				
C6	1.4000	.54772				
C7	1.8000	.44721				
C8	2.0000	.00000				
C1TRADITION	.4000	.54772				
C2TRADITION	.8000	.83666				
C3TRADITION	1.4000	.54772				
C4TRADITION	1.4000	.89443				
C5TRADITION	1.2000	.83666				
C6TRADITION	1.8000	.44721				
C7TRADITION	.4000	.89443				
C8TRADITION	.8000	.44721				

RELIABILITY ANALYSIS RESULTS

Traditional Practical Examination Instrument

Case Processing Summary

		N	%
Cases	Valid	63	90.0
	Excluded[a]	7	1.0
	Total	70	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach' Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	3.1587	.81728	.575	38.1270	23.500	4.84765
B1	2.3651	.73620				
C1	3.9921	.88213				
D1	12.5556	2.50662				
E1	3.0476	.68223				
F1	2.6111	.81044				
G1	2.8810	.67629				
H1	2.5873	.57178				
I1	2.2698	.72859				
J1	2.6587	.79730				

RELIABILITY ANALYSIS RESULTS

Posttest

Case Processing Summary

		N	%
Cases	Valid	14	93.3
	Excluded[a]	1	6.7
	Total	15	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach' Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	1.7143	.46881	.698	62.6429	11.170	3.34220
A2	1.1429	.36314				
A3	1.5714	.51355				
A4	1.9286	.26726				
B1	1.9286	.26726				
B2	1.9286	.26726				
C1	1.4286	.51355				
C2	2.0000	.00000				
D1	2.0000	.00000				
D2	1.8571	.36314				
D3	1.9286	.26726				
D4	1.8571	.36314				
D5	1.5714	.51355				
D6	1.9286	.26726				
D7	1.9286	.26726				
E1	2.0000	.00000				
E2	2.0000	.00000				
E3	1.8571	.36314				
E4	1.8571	.36314				
E5	1.9286	.26726				
F1	1.7857	.42582				
F2	1.9286	.26726				
G1	19286	.26726				
H1	1.9286	.26726				
H2	1.9286	.26726				
H3	2.0000	.00000				
H4	1.5714	.51355				
I1	1.9286	.26726				
I2	1.9286	.26726				
I3	1.7143	.46881				
I4	1.8571	.36314				
J1	1.9286	.26726				
J2	2.0000	.00000				
J3	1.8571	.36314				

RELIABILITY ANALYSIS RESULTS

Question Stations

Case Processing Summary

		N	%
Cases	Valid	6	18.8
	Excluded[a]	26	81.2
	Total	32	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach' Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	1.0000	.00000				
A2	.8333	.40825				
B1	.8333	.40825				
B2	1.0000	.00000				
C1	.8333	.40825				
C2	1.0000	.00000				
C3	1.0000	.00000				
C4	1.0000	.00000				
D1	.1667	.40825				
D2	.00000	.00000				
D3	.00000	.00000				
D4	.3333	.51640				
E1	.8333	.40825				
F1	1.0000	.00000	0.874	24.8333	44.167	6.64580
G1	1.0000	.00000				
G2	.6667	.51640				
H1	.8333	.40825				
H2	.8333	.40825				
H3	.8333	.40825				
H4	.6667	.51640				
I1	.3333	.51640				
J1	.3333	.51640				
J2	.3333	.51640				
K1	.6667	.51640				
K2	.6667	.51640				
L1	.8333	.40825				
L2	.6667	.51640				
M1	.1667	.40825				
M2	.3333	.51640				
M3	.3333	.51640				
M4	.5000	.54772				
N1	.8333	.40825				
N2	.8333	.40825				
N3	.6667	.51640				
N4	.6667	.51640				
N5	.6667	.51640				
01	.6667	.51640				
02	.6667	.51640				
03	.0000	.00000				

CHECKLIST FOR PROCEDURE STATIONS

Vital signs

Case processing summary

		N	%
Cases	Valid	21	65.6
	Excluded[a]	11	34.4
	Total	32	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	1.7619	.62488	.638	45.7143	49.414	7.02953
A2	.1905	.60159				
A3	.6667	.96609				
A4	1.0952	.62488				
A5	1.4762	.81358				
A6	1.6190	.80475				
A7	1.7143	.71714				
A8	1.9048	.43644				
A9	1.7143	.71714				
A10	1.0000	.63246				
A11	1.4286	.87014				
A12	1.3333	.91287				
A13	1.6190	.74001				
A14	1.5714	.74642				
A15	1..5238	.87287				
A16	1.7143	.71714				
A17	2.0952	.83095				
A18	.8095	.98077				
A19	2.0000	.00000				
A20	2.2857	.46291				
A21	1.6190	.80475				
A22	1.6190	.80475				
A23	1.2381	.99523				
A24	1.2381	.99523				
A25	1.1429	1.01419				
A26	1.7143	.71714				
A27	1.7143	.71714				
A28	.9524	.86465				
A29	.7143	.56061				
A30	1.2381	.53896				
A31	1.5238	.74960				
A32	1.4762	.87287				

RELIABILITY ANALYSIS RESULTS

Nurse educators' Perception

Case processing summary

		N	%
Cases	Valid	5	83.3
	Excluded[a]	1	16.7
	Total	6	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	1.3333	1.15470	0.700	37.3333	9.333	3.05505
A2	1.6667	.57735				
A3	1.3333	.57735				
A4	2.0000	.00000				
A5	1.3333	.57735				
A6	2.0000	.00000				
A7	1.6667	.57735				
A8	2.0000	.00000				
B1	2.0000	.00000				
B2	1.6667	.57735				
B3	1.6667	.57735				
B4	2.0000	.00000				
B5	2.0000	.00000				
B6	2.0000	.00000				
B7	1.6667	.57735				
B8	1.6667	.57735				
Bi1	.3333	.57735				
Bi2	1.0000	1.00000				
Bi3	1.3333	.577735				
Bi4	.6667	.577735				
Bi5	.6667	.577735				
Bi6	1.3333	.577735				
Bi7	1.0000	1.00000				
Bi8	1.0000	1.00000				

RELIABILITY ANALYSIS RESULTS

URINE TESTING

Case processing summary

		N	%
Cases	Valid	19	57.6
	Excluded[a]	14	42.4
	Total	33	100.0

a. List wise deletion based on all variables in the procedure.

Variables	Mean	Std. Deviation	Cronbach Alpha	Total Mean	Total Variance	Total Std. Deviation
A1	2.8947	.31530	.645	26.3684	14.468	3.80366
A2	3.0000	.00000				
A3	2.9474	.22942				
A4	3.0000	.00000				
A5	3.0000	.00000				
A6	2.9474	.22942				
B1	2.6842	.74927				
C1	2.3684	1.11607				
D1	1.3684	.149854				
E1	2.1579	1.34425				

APPENDIX VII: LETTERS

UNIVERSITY OF IBADAN,
IBADAN, NIGERIA
COLLEGE OF MEDICINE
FACULTY OF CLINICAL SCIENCES
DEPARTMENT OF NURSING

Fax: 02-8103042
E-mail: nursing@comui.edu.ng

14th March 2014

The Principal,
Obafemi Awolowo UniversityTeaching Hospital Complex
School of Nursing,
Wesley Guild, Ilesa,
Osun State.

Dear Sir/Madam

RE: EDWARD, MARY IDOWU (MATRIC. NO. 78936)
PERMISSION TO COLLECT DATA

This is to confirm that the above named Edward Mary Idowu is a Ph.D student in the Department of Nursing, College of Medicine, University of Ibadan, Ibadan.

She wants to use your establishment for her Ph.D research project. Her study is on **"Effectiveness of Objective Structured and Traditional Practical Examination Instruments for assessing students' psychomotor skills by Nurse Educators in selected Schools of Nursing in South-West Nigeria".**

Kindly give her the necessary assistance.

Thank you for your anticipated cooperation

Yours faithfully

14/03/14
Dr. F. A. Okanlawon
Ag. Head of Dedpartment.

UNIVERSITY OF IBADAN,
IBADAN, NIGERIA
COLLEGE OF MEDICINE
FACULTY OF CLINICAL SCIENCES
DEPARTMENT OF NURSING

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CLINICAL NURSING UNIT
- Medical/Surgical Nursing
- Mental Health Nursing
- Nursing Administration

Dr. Adenike C. Onibokun
Dr. Prisca O. Adejumo
Dr. Modupe O. Oyetunde
Dr. Beatrice M. Ohaeri
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MIDWIFERY & COMMUNITY HEALTH NURSING UNIT
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Dr. O. Abimbola Oluwatosin
Dr. F. A. Okanlawon
Mrs. Titilayo D. Odetola
Mrs. Chizoma M. Ndikom

Clinical Instructor
Mrs. Margaret Akinwaare

14th March 2014

The Principal,
Ondo State School of Nursing,
Akure
Ondo State

Dear Sir/Madam

RE: EDWARD, MARY IDOWU (MATRIC. NO. 78936)
PERMISSION TO COLLECT DATA

This is to confirm that the above named Edward. Mary Idowu is a Ph.D student in the Department of Nursing, College of Medicine, University of Ibadan, Ibadan.

She wants to use your establishment for her Ph.D research project. Her study is on **"Effectiveness of Objective Structured and Traditional Practical Examination Instruments for assessing students' psychomotor skills by Nurse Educators in selected Schools of Nursing in South-West Nigeria".**

Kindly give her the necessary assistance.

Thank you for your anticipated cooperation

Yours faithfully

14/03/14
Dr. F. A. Okanlawon
Ag. Head of Dedpartment.

UNIVERSITY OF IBADAN,
IBADAN, NIGERIA
COLLEGE OF MEDICINE
FACULTY OF CLINICAL SCIENCES
DEPARTMENT OF NURSING

Fax: 02-8103042
E-mail: nursing@comui.edu.ng

14th March 2014

The Head,
Department of Nursing Science,
Ladoke Akintola University of Technology
Ogbomoso
Oyo State

Dear Sir/Madam

RE: EDWARD, MARY IDOWU (MATRIC. NO. 78936)
PERMISSION TO COLLECT DATA

This is to confirm that the above named Edward. Mary Idowu is a Ph.D student in the Department of Nursing, College of Medicine, University of Ibadan, Ibadan.

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Yours faithfully

14/03/14

Dr. F. A. Okanlawon
Ag. Head of Dedpartment.

INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)

COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN. IBADAN, NIGERIA.

Director: **Prof. A. Ogunniyi,** B.Sc(Hons), MBChB, FMCP, FWACP, FRCP (Edin), FRCP (Lond)

Tel: **08023038583, 08038094173**

E-mail: **aogunniyi@comui.edu.ng**

UI/UCH EC Registration Number: **NHREC/05/01/2008a**

NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: Effectiveness of Objective Structured and Traditional Practical Examination Instruments for assessing students' Psychomotor Skills in Selected Schools and Departments of Nursing in South-West Nigeria

UI/UCH Ethics Committee assigned number: UI/EC/14/0123

Name of Principal Investigator: **Mary Idowu Edward**

Address of Principal Investigator: Department of Nursing,
College of Medicine,
University of Ibadan, Ibadan,

Date of receipt of valid application: 01/04/2014

Date of meeting when final determination on ethical approval was made: **N/A**

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee.*

This approval dates from 02/07/2014 to 01/07/2015. If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the* UI/UCH EC *assigned number and duration of* UI/UCH EC *approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. *No changes are permitted in the research without prior approval by the* UI/UCH EC *except in circumstances outlined in the Code. The* UI/UCH EC *reserves the right to conduct compliance visit to your research site without previous notification.*

UI/UCH EC
02 JUL 2014
APPROVED
COLLEGE OF MEDICINE, U.I.

Professor A. Ogunniyi
Director, IAMRAT,
Chairman, UI/UCH Ethics Committee
E-mail: uiuchirc@yahoo.com

ONDO STATE GOVERNMENT
MINISTRY OF HEALTH
Office of the Permanent Secretary
State Secretariat, Alagbaka Quarters, Akure, Ondo State.
www.ondostatemoh.gov.ng

AD.4693/125

14th April, 2014

Edward Mary Idowu,
Department of Nursing,
University of Ibadan,
Ibadan.

APPROVAL OF ETHICAL REVIEW COMMITTEE

The proposal on "Effectiveness of Objective Structured and Traditional Practical Examination Instruments' for Assessing Students' Psychomotor Skills In Selected Schools and Departments of Nursing in South West Nigeria." has been reviewed.

The Committee found the research proposal to be in compliance with guidelines for research study.

In view of the foregoing, the Committee has given approval for the conduct of the study as proposed.

Best regards.

Dr. E. T. Oni,
Permanent Secretary/Chairman,
(Research Ethical Review Committee)

Ondo STATE
IṢẸ LOỌGÚN IṢẸ

SCHOOL OF NURSING

PMB 675, IGBATORO ROAD, AKURE, ONDO STATE OF NIGERIA
e-mail: ondostateschoolofnursing@yahoo.com

All communications should be addressed to the Principal quoting our Ref No.

Our Ref: SNA.68/149

Your Ref:.....

Date: 16th June, 2014

The Head of Department,
Department of Nursing,
University of Ibadan,
Ibadan,
Oyo State.

Dear Sir/Madam,

RE-PERMISSION TO COLLECT DATA BY EDWARD MARY IDOWU

This is to inform you that the above named individual reported in this school in March 18th, 2014 with a letter seeking for permission to collect data using second year students:

2. The exercise took place between April and June, 2014.

3. She organized and conducted practical examination for the students using traditional practical format.

4. Students were taught some Nursing procedures after which she later organized training for educators and students on objective structured practical examination (OSPE)

5. All the process ended in 13th June, 2014.

Yours faithfully,

F. O. Leramo (Mrs.),
Director/Principal

UNIVERSITY OF IBADAN,
IBADAN, NIGERIA
COLLEGE OF MEDICINE
FACULTY OF CLINICAL SCIENCES
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Mrs. Chizoma M. Ndikom

Clinical Instructor
Mrs. Margaret Akinwaare

25th July 2014

Mrs. Edward, Mary Idowu
Department of Nursing
University of Ibadan
Ibadan

Dear Mrs. Edward

RE: PERMISSION TO COLLECT DATA

I refer to your letter of 14th March 2014 requesting to use students in the Department collect data on your Ph.D research project titled: **"Effectiveness of Objective Structured and Traditional Practical Examination Instruments for assessing students' psychomotor skills by Nurse Educators in selected Schools of Nursing in South-West Nigeria."**

I hereby convey approval to you to conduct your research in the department as requested.

Thank you.

Yours faithfully

25/07/14
Dr. F. A. Okanlawon
Ag. Head of Department.

OBAFEMI AWOLOWO UNIVERSITY TEACHING HOSPITALS COMPLEX

Chairman: *Pharm. Matthew A. Urhoghide, FPSN.*
Chief Medical Director: *Prof. O. Adejuyigbe MBBS (Ibadan) FMCS (Nig) FWACS)*
Chairman, Medical Advisory Committee: *Prof. F. J. Owotade BchD (Ife), FWACS*
Director of Administration: *M.A. Oyelami, B.Sc, (Ib); M.Sc (Eng); M. Div (Ogb); FHAN, MCIPM.*

SCHOOL OF NURSING, WESLEY GUILD HOSPITAL, ILESA.

P.M.B. 5538
Ile-Ife
Nigeria
Tel +23481520092751
+2348152092755
+2348152092999
Email: info@oauthc.com
Website:www.oauthc.com

Our Ref: O.A.U.T.H.C./WGH/SON/14/115

Date: 11 Sept., 2014

The Ag. Head of Department
Department of Nursing,
University of Ibadan
Ibadan,
Oyo state.

Dear Sir/Madam,

RE - EDWARD MARY IDOWU (MATRIC NO 78936) PERMISSION TO COLLECT DATA

This is to inform you that the aboved named individual reported in this school - Obafemi Awolowo University Teaching Hospital Complex Wesley Guild, School of Nursing, Ilesa in April, 2014 with letter seeking permission to collect data.

Her proposal was read and permission was granted by the school authority to carry out her study using the second year student nurses.

She taught the students and did training for academic staff, some clinical instructors and clinical assessors on objective structured practical examinations (OSPE) process.

She finally organised and conducted two practical examination sessions for the students using traditional and objective structured practical examination instruments with the help of academic staff, clinical instructors and clinical assessors.

She concluded the data collection process on the 11th of September, 2014 with total supports from every member of staff and students.

Yours faithfully,

11/09/14.

MR. S.B. ADESANYA
DDNE / Principal.

DEPARTMENT OF NURSING

COLLEGE OF HEALTH SCIENCES ISALE-OSUN, OSOGBO.

LADOKE AKINTOLA
UNIVERSITY OF TECHNOLOGY
OGBOMOSO, NIGERIA.

P. M. B. 4000, Ogbomoso,
Nigeria.
Tel: (038) 720776
Email: nightingalelau@yahoo.com

Our Ref: NSG/SM/46 Your Ref:..... Date: 18/09/2014

Head of Department,
Department of Nursing Science,
College of Medicine,
University of Ibadan.
Ibadan, Oyo State.
Nigeria.

Dear HOD,

The Use of Nursing Students for Research Study on "Effectiveness of Objective Structured and Traditional Practical Examination Instruments for Assessing Students' Psychomotor Skills in Selected Schools and Department of Nursing in South-West, Nigeria by Mrs. Edward Mary Idowu.

This is to inform your office that the above named Ph.D students from your department submitted her proposal to the College for ethical approval upon which I was mandated to comment on the visibility of the study.

The researcher commenced the teaching of students on the 26th August, 2014 and completed the assignment on the 18th of September, 2014 under the watchful eyes of a senior lecturer, three (3) Lecturer I and 3 clinical instructors of not lower than MSc (Nursing).

Therefore, I am affirming that she actually carried out the research in the department of Nursing, Faculty of Clinical Sciences, College of Health Sciences, Osogbo, LAUTECH, Ogbomoso.

Thank you.

Yours faithfully

Dr. B. L. Ajibade (FWACN)

APPENDIX VIII

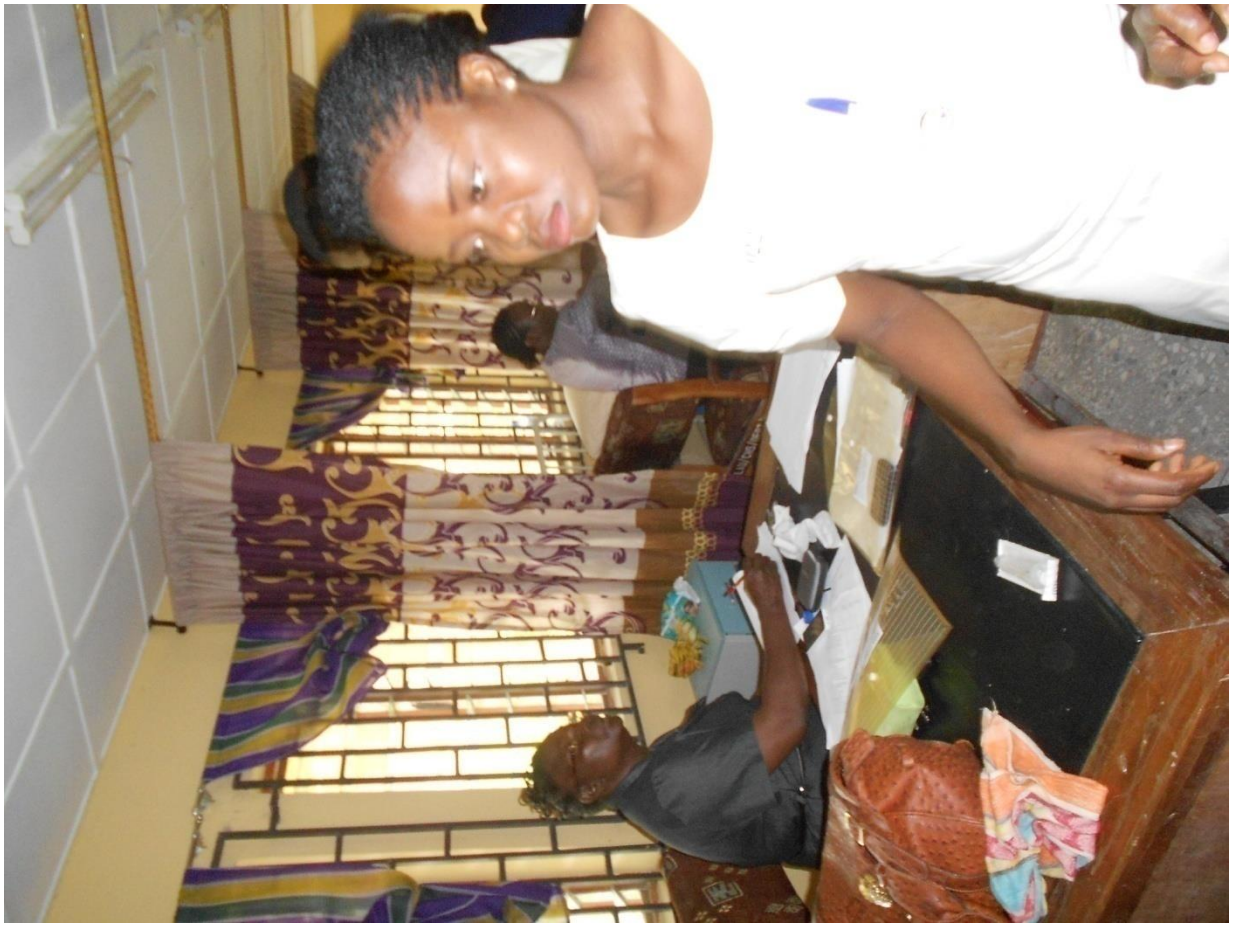
RESEARCHER AND A SET OF NURSING STUDENTS DURING TEACHING IN ONE OF THE UNIVERSITY BASED NURSING SCHOOLS

RESEARCHER AND A SET OF NURSING STUDENTS DURING TEACHING IN ONE OF THE HOSPITAL BASED NURSING SCHOOLS

PICTURE SHOWING RESEARCHER TEACHING NURSING STUDENTS POST OPERATIVE BED MAKING

PICTURE SHOWING TWO NURSING STUDENTS DURING RETURN DEMONSTRATION OF CATHETERIZATION

PICTURE SHOWING ASSESSORS AND ASSESSEES DURING OSCE IN ONE OF THE SCHOOLS



ASSESSOR AND AN ASSESSEE DURING TPE IN ONE OF THE SCHOOLS

RESEACHER AND AN ASSESSEE DURING OSCE IN ONE OF THE SCHOOLS

ASSESSORS AND ASSESSEES IN SOME OSCE STATIONS IN ONE OF THE SCHOOLS

PICTURE SHOWING RESEARCHER AND TEAM OF ASSESSORS FOLLOWING OSCE EXAMINATION