# CRITICAL CARE NURSES'PERCEPTIONS AND ATTITUDES ON THE USE OF THE OBJECTIVE STRUCTURED COMPETENCE EXAMINATION (OSCE) IN CRITICAL CARE EDUCATION IN TWO HOSPITALS IN ETHEKWINI, DURBAN, SOUTH AFRICA.

A Thesis Submitted

TO

The Department of Nursing at the University of Kwazulu- Natal, Durban

IN

Partial Fulfillment of the Requirements for the MASTER'S DEGREE IN PROGRESSIVE EDUCATION FOR HEALTH PROFESSIONALS

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# Acknowledgements

# Declaration

I, Winnie Thembisile Maphumulo declare that:

(i) The research reported in this dissertation, except where otherwise indicated, and is my original work.

(ii) The dissertation has not been submitted for any degree or examination at any other university

(iii) This dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.

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## List of Abbreviations

CCN:-Critical care nurse

CCU: Critical care unit

ICU: Intensive care unit

 OSCA: Objective Structured Clinical Assessment

OSCE: Objective Structured Clinical Examination

SANC: South African Nursing Council.

SP: Standardised patients

SPSS: Statistical Package for Social Sciences

WHO-World Health Organization

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# ABSTRACT

## Introduction:

Intensive care units in South Africa have been faced with various challenges which in turn affect the working condition of critical care nurses, thus leading to poor productivity. Nurses in the work environment blame this poor work quality of nursing to the way critical care nurses are trained and assessed in nursing schools. There is general concern that graduate nursing students lack the knowledge and skills necessary to equip them to work in intensive units.

**Objectives:** To measure the perceptions of critical care nursing students as well qualified critical care nurses on the use of OSCE as a valid and reliable tool to assess clinical competence in critical care nursing students.

**Methods:** A quantitative approach and descriptive survey was administered to critical care nursing students and qualified critical care nurses who had participated in OSCE examination. The intensive care departments of two provincial (states) hospitals and (provincial) nursing college that trained critical care nurses were used.

**Results:** The findings revealed that OSCE was still overwhelmingly accepted as a relevant tool for assessing clinical competencies in Critical Care courses by both students and staff. It was also clear that the students did not believe that all the competencies required in the ICU environment can be assessed using the OSCE method.

**Discussion:** Critical care nursing educators are facing a challenge to develop more comprehensive method for assessing clinical skills in critical care students nurses since OSCE

examination cannot assess all the skills that are necessary in intensive care environment.  In order for effective learning to take place during assessment, it is extremely important for nurse educators to give formative feedback in OSCE.

**Key words: OSCE, Competency assessment, standardized patients, black wash effect, critical care nurse**

# CHAPTER 1

## INTRODUCTION AND BACKGROUND

### 1.1. Introduction

In nursing education there is a close link between theory and practice, therefore it is impossible to learn theory without practice or *vice versa* (Papastavrou, Lambrinou et al. 2010). Although clinical education takes place in the multifaceted social context of the clinical milieu that is defined in many ways (Papp, Markkanen et al. 2003 ), recent studies reveal that most schools of nursing and midwifery, as well as advanced nurses' diplomas and degrees still favour the use of the Objective Structured Clinical Examination (OSCE) method to assess theoretical and practical aspects of student nurses' competence (Watson 2002; Brosnan, Evans et al. 2006; Rushforth 2007). OSCE has been hailed for its ability to assess a variety of clinical competencies, since the heart of any educational program in nursing should be based on the development of clinical competence (Hanley and Higgins 2005).

Since its inception in 1979 by the medical professionals, R.M. Hardenand F.A. Gleenson in Scotland, the use of OSCE has gained popularity in the health profession as a means of measuring clinical competence among all health professionals (Rushforth 2007).

OSCE was developed as an additional tool to deal with the limitations noted among traditional methods of evaluating clinical competence (Walsh, Bailey et al. 2009). OSCE has been praised as being more objective than other forms of assessment (Furlong, Fox et al. 2005), although it is not a real situation (Bremner, Aduddell et al. 2006). OSCE objectivity

lies in the fact that it eliminates patient and examiner variation, so that the only variable

being examined is the ability of the assessed (Mossey, Newton et al. 2001; Barman 2005).

This has led many institutions to believe that it is the most valid and reliable method of

assessment.  Yet, Rushforth (2007) believes this growth in the use of OSCE has resulted in

many health professionals beginning to debate several aspects of the process (Rushforth

2007).  In critically evaluating literature on the use of OSCE, much attention is given to its

trustworthiness as a means of assessment, in other words, whether or not the scores

students achieve in an OSCE examination can be regarded as a valid and reliable measure of

their clinical competence, and also OSCE's transferability of clinical skills to real life

situations is not considered.  It was noted in the literature review that few researchers have

examined OSCE use among graduate nurses.

Some authors have questioned the objectivity of OSCE to determine clinical competence

since it is difficult to define the term competence.  Competence is a vague concept which

many authors define in different ways (Watson 2002).  This is why the use of OSCE in

nursing education is being reconsidered and is gaining more scrutiny for its ability to

measure clinical competence (Walsh, Bailey et al. 2009).  Ross et.al.(1998), as cited in

Brookes (2009), highlighted that OSCE was not a suitable tool for evaluating nurses' practical

skills because it did not actually mirror the authenticity of nursing practice (Brookes 2007).

Some authors believe that for assessment to have meaning, skills and knowledge

measurement should be ensured (Brookes 2007).  The objectivity of OSCE is dependent on

its ability to measure multi-skills (El-Nemer and Kandeel 2009) and also allows for the

testing of large numbers of students simultaneously across a wide range of skills and

knowledge related to clinical practice (Walsh, Bailey et al. 2009).

OSCE is a widely used method of assessment in most colleges and universities of health sciences in South Africa. Most qualified professional nurses have been exposed to this type of assessment. Although using OSCE to assess student skills is a common practice among health professionals, little attempt has been made in South Africa thus far to bring some coherence to this method, improving its use to obtain valid and reliable results, or to refine this method of assessment. Few articles could be retrieved regarding the use of OSCE by medical professionals in South Africa before the year 2000. In general, limited literature has been published describing the use of OSCE by the nursing profession. This study aims to assess the use of OSCE in the South African context for Critical Care Nurses, this includes student nurses who were doing critical care nursing at the time of research as well as qualified critical care nurses who were working in two selected hospitals, and who trained in the same college as critical care nurses. In the whole of KZN there is one government college running a Critical Care nursing program which accommodates nurses across KZN hospitals and surroundings. The nurses admitted to the program differ in their experiences in the ICU environment; some have been exposed to the ICU for longer periods, while some only have High Care experience. The Critical Care nursing program offered by this college is a one-year-course culminating in a Diploma in Critical Care Nursing Science

## 1.2.   Background

The OSCE is a "performance-based examination where students are observed demonstrating various clinical behaviours, while the aim of assessment is to transfer classroom and learning experiences into simulated clinical practice" (McWilliam and

Botwinski, 2010:36).  Watson (2000) described OSCE as an examination where students

demonstrate their competence under a variety of simulated conditions (Watson 2002).

An OSCE is designed to consist of a series of workstations (16 -20), which are commonly

known as "circuits" (Jones, Pegram et al. 2010), that simulate or depict different health care

scenarios (Munoz, O'Byrne et al. 2005; El-Nemer and Kandeel 2009; McWilliam and

Botwinski 2010) where the student will be faced with a critical or common nursing practice

(Munoz, O'Byrne et al. 2005).  Each station takes 5-15 minutes (Rushforth 2007) and a

station may be interactive, for example, where real patients/standardised patients are used,

or non-interactive which involves written answers to a required task which are marked after

the examination (Austin, O'Byrne et al. 2003).  Each station is designed to evaluate

particular skills such as physical examinations, identifying diagnoses, history-taking, patient

education, communication skills, problem-solving skills or performance of technical

procedures ((Alinier 2003; Munoz, O'Byrne et al. 2005; Rentschler, Eaton  et al. 2007; Walsh,

Bailey et al. 2009).  Each candidate is expected to respond to the questions or commands

given by carrying out the task or solving the problem described in the situation (Munoz,

O'Byrne et al. 2005).  Students move between stations in response to a bell and, as they

rotate through each station, their clinical performance is assessed using structured

checklists or rating scales (Walsh, Bailey et al. 2009; Jones, Pegram et al. 2010; McWilliam

and Botwinski 2010).  Examiners stay with each station throughout the session, thus each

student is examined by all examiners, depending on the number of stations (Rushforth

2007).  This is done to reduce the risk of examiner bias (Bartfay, Rombough et al. 2004).

Rushforth (2007) acknowledged that OSCE in the nursing profession bear little

resemblance to Harden`s original model which advocated more stations (16-20), and that

each station should take 5 minutes (Rushforth 2007).  In nursing, fewer, longer stations or

case-scenarios that concentrate on a total patient consultation are commonly used

(Mitchell, Henderson et al. 2009).

For any assessment to be deemed valid, it requires solid, scientific evidence to prove

that it can measure what it is intended to measure (Munoz, O'Byrne et al. 2005).  Though

most authors believe that OSCE offers a high level of validity and reliability and also regard OSCE as a gold standard of health professional assessment (Schuwirth and van der Vleuten 2003; Bartfay, Rombough et al. 2004), Barman (2005) maintains that OSCE has low concurrent validity and predictive validity, and also contends that there is no evidence that OSCE has greater validity than other traditional methods of assessment (Barman 2005).

Some authors believe that the OSCE, as an assessment tool, is unable to assess the in-depth knowledge and skill necessary for postgraduate students, as the OSCE can only evaluate a narrow range of knowledge and skills (Barman 2005). They believe that the OSCE is not suitable for testing the cognitive domain of learning as well as other behaviours like empathy, rapport and ethics (Wallace, Rao et al. 2002; Brenner 2009) as well as caring (McGrath, Anastasi et al. 2006 ).

Some authors feel that OSCE is not contextualised and there is evidence that OSCE tests the student`s competency in a compartmentalised fashion which may not even imitate the real life situation (Gupta, Dewan et al. 2010), thus causing disintegration of practice (Redfern, Norman et al. 2002) and fragmentation of care (Joy and Nickless 2008). Therefore, students' ability to care for the patient holistically cannot be tested (Barman 2005).

Other researchers strongly believe that OSCE is an inappropriate method of assessing nursing skills since it cannot mirror the truth of nursing practice (Ross, Carroll et al. 1988), as cited in (Brookes 2007), for example, OSCE is unable to mimic higher psychiatric disorders like thought disorder (Wallace, Rao et al. 2002). Therefore, it is agreed that OSCE cannot replicate ward situations (Barman 2005), such as day-to-day pressures in the ward (Shanley 2001). Lastly, many authors also feel that OSCE requires extensive resources and too much

effort from personnel, finance, the administrative authority and students (Watson 2002). A few researchers argued that, although OSCE is expensive to prepare, the benefits exceed the effort (Wallace, Rao et al. 2002).

A new approach in nursing assessment called an Objective Structured Clinical Assessment (OSCA) was advocated by (Rushforth 2007). The OSCA is designed as a single station which incorporates many aspects of assessment such as communication skills, observation and recording of vital signs and each station takes 30 minutes. According to Major(2007), this method provides holistic patient care (Major 2005). OSCA can be used for two components of assessment, namely assessment of technical skills and knowledge assessment where students' levels of cognitive skills are assessed (Khattab and Rawlings 2001).

Mitchell et al. (2009) asserts that OSCE applications are very broad and dependant on the purpose of assessment stipulated by the specific faculty (Mitchell, Henderson et al. 2009). OSCE could be used for assessment of technical skills, intellectual components or integration of skills and knowledge. This is understandable because all nursing skills are interconnected, for example, you cannot simply dress a patient's wounds without communicating with the patient or observing skin integrity (Baillie, 2009), as cited in (Street and Hamilton 2010). Benner(1982) as cited in Mitchell et al. (2009) opposes the idea of integrating skills in an undergraduate curriculum because the main concern for students then is remembering rules with little or no recognition of contextual factors (Mitchell, Henderson et al. 2009). Major (2005) suggested that the OSCE design should be appropriate to the level of nurse's training whereby simulations are designed so as to begin with discrete

procedures, and then to move on to integrated abilities as the students' progress through their course of study (Major 2005).

Pierre et al. (2004) asserts that OSCE is an assessment method where students' clinical competence is evaluated in an extensive, uniform and structured manner, with close objectivity applied to the process (Pierre, Wierenga et al. 2004). Bergus and Kreiter (2007) also believe that OSCE has been lauded as being more objective in assessing clinical competence than other assessment methods (Bergus and Kreiter 2007).

However, McMullan et al. (2003), contradicts this claim by saying that an assessment is neither objective nor straightforward, but is strongly subjective and is influenced by context and assessments which are often over-specified. Therefore, no evaluation method can be "assessor-proof" as each assessor has his/her own interpretation of competence (McMullan, Endacott et al. 2003). McMullan et al. (2003) advise that the subjectivity of the assessor`s perception should be taken into account so that the assessment can be regarded as valid.(McMullan, Endacott et al. 2003). Baid (2011) also believes that the objectivity of clinical practice can be manipulated by the examiners when they use different criteria for evaluation (Baid 2011). OSCE objectivity is dependent on the length of the stations (Gupta, Dewan et al. 2010). Therefore, Gupta et al. (2010) assert that it does not mean that all that is objective is necessary reliable and conversely, all that is subjective is not necessary unreliable. The following diagram shows the processes involved in running an OSCE.

```
┌─────────────────┐         ┌─────────────────────┐         ┌──────────────────────┐
│     Student     │────────▶│  Faculty-assessors/ │────────▶│  Preparation of OSCE │
│(Level of Training)│       │ moderators (validity/│        │                      │
│                 │         │     reliability     │         └──────────────────────┘
└─────────────────┘         └─────────────────────┘                    │
                                      ╱╲                                ▼
                                     ╱  ╲              ┌──────────────────────────────────┐
                                    ╱    ╲             │  •  Venue                        │
                                   ╱      ╲            │  •  recruiting the examiners     │
                                  ╱        ╲           │  •  recruiting the SPs           │
                                 ╱          ╲          │  •  finance                      │
                                ╱            ╲         │  •  scoring sheets               │
                               ╱              ╲        │  •  equipment needed             │
         ┌──────────────────┐ ╱  ┌─────────────╲────┐  │  •  order of running stations    │
         │   COMPETENCIES   │╱   │ ASSESSMENT LEVEL│  │  •  practising prior             │
         │                  │    │                 │  └──────────────────────────────────┘
         │ • nursing knowledge│  │  Does           │
         │ • communication skills│ │                │
         │ • interpersonal skills│ │  Show how      │
         │ • patient care   │    │                 │
         │ • problem solving skills│ │  Know how    │
         │ • decision-making skills│ │              │
         │ • infection control│   │  Knows         │
         └──────────────────┘    └─────────────────┘
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┌──────────────────────────────────┐
│            Feedback              │
└──────────────────────────────────┘

Figure 1: Processes involved in conducting OSCEs (Boursicot and Roberts, 2005)

## 1.3. Rationale for Study

Past studies which have been conducted on the use of OSCE as a form of assessment have focused mainly on its acceptability and use as an effective and objective assessment method, favoured by educators. Not much attention has been given to the perceptions of students regarding the use of OSCE, as to whether it really measures their clinical competence. Another contributory factor is that post-graduate or advanced diploma courses also use OSCE, and the scarcity of research on the use of OSCE in these fields is a

matter of concern to those in the profession.  The use of OSCE in general has many

contributory factors to its success as an assessment method, such as the use of the tool, its

preparation, finance, staffing, and level of expertise, anxiety and the use of SPs.  This

research therefore, will identify the challenges that the students encounter when the OSCE

assessment method is used to measure their clinical skills and also look at the objectivity

and validity of using OSCE as a form of assessment.  It will also outline how using OSCE as a

form of assessment can affect student learning as well as examining the rate at which the

use of OSCE as an assessment tool helps to ensure  that the graduate has the necessary

skills to practice safely in the clinical situation.

# CHAPTER 2

## AIMS AND OBJECTIVES

### 2.1. Problem Statement

Since Critical Care nurses are highly skilled nurses who have mastered broad knowledge about critical care nursing (Moola 2004), the Critical Care student nurses' competencies should mirror the comprehensive nature of nursing practice, ensuring capability of functioning in a wide range of practice settings, and knowledge of cultural differences in dealing with human responses to life-threatening conditions (Moola 2004).  However there is a general concern articulated by Critical Care nurses that graduate nursing students lack the knowledge and skills necessary to equip them to work in intensive units (Ääri, Tarja et al. 2008).  This is in line with Archer's (2008) claims that Critical Care nursing students lack the skills to integrate knowledge and skill and are unfit to work in Critical Care Units (CCU), because working with critically ill patients requires a nurse to have proficiency in all three domains of Bloom`s Taxonomy, i.e. knowledge, skills and attitude(Archer 2008).  Therefore, assessment of competency in this field should go beyond the assessment of theoretical content knowledge and technical skills, and should include an assessment which adopts a holistic approach(Evans 2008).  Thus, using OSCE as an assessment tool in this field has raised many issues.

Another problem identified by Bremner et al. (2006) was that OSCE lacks authenticity and is not contextual because the idealised scenarios in the textbook may not mimic the real situation (Wallace, Rao et al. 2002; Brenner 2009).  Baid (2011) also agrees that the lack

of authenticity is a drawback of this method of assessment for Critical Care students because OSCE cannot produce a real critical care situation like a sedated patient, a patient presenting with ventricular fibrillation, or a ventilated patient in a simulated environment (Baid 2011).

Therefore, if these perceptions of Critical Care nurses about the lack of clinical skills in graduating student nurses are true, there is a need to develop more objective measures to attain competency in graduate education (Kurz, Mohamedy et al. 2009), because many efforts have been made to develop strategies to prepare nurses to work in the unpredictable, ever-changing clinical milieu, while little effort has been made to develop assessment strategies for complex nursing practices.  As the OSCE is one of the main strategies used in Critical Care Assessment in South Africa, this study aims to assess this strategy in the South African context of Critical Care Nurses.

## 2.2. Purpose

The aim of the study was to measure the perceptions and attitudes of the critical care student nurses and qualified critical care nurses on the use and appropriateness of OSCE as a tool for measuring clinical competence in critical care students

## 2.3. Objectives

1. To measure the attitudes and perceptions of Critical Care student nurses towards:

- The use of OSCE as a tool to measure clinical competence.

- The perceived effect of OSCE processes to address validity and reliability.

- The experiences of students with the use of OSCE as an assessment method.

1. To measure if there is a relationship between gender, experience and qualifications and Critical Care student attitudes.

2. To measure the attitudes and perceptions of Critical Care staff towards:

- Appropriateness of OSCE as a tool to measure clinical competence.

- Appropriateness of OSCE as a tool to measure knowledge content areas.

- Appropriateness of OSCE as a tool to measure professional qualities.

## 2.4. Hypothesis

$H_0$: Gender does not affect the overall mean perception score.

$H_0$: Qualifications do not affect the overall mean perception score

$H_0$: Years of experience do not affect the overall mean perception score

$H_0$: Experience with OSCES does not affect the overall mean perception score

## 2.5. Definition of terms

Table 1: Definition of terms

| Term | Definition |
|------|-----------|
| Attitude | **Operational definition**: this will mean the feelings of nurses towards the use of OSCE as assessment tool as measure by the tool. |
| Critical care student nurses | **Operational definition:** Critical Care student nurses are nurses who are training beyond their basic preparation as a Registered Nurse (RN) to meet the needs of patients and families who are experiencing critical illness, which is normally one year of training, resulting, on completion of their course in them being registered with the South African Nursing Council as Critical Care nurses. |

| Term | Definition |
|---|---|
| OSCE | **Operational definition:** This is an assessment format in which the candidates rotate around a circuit of stations at each of which specific tasks have to be performed, usually involving a clinical skill, such as history-taking or examination of a patient. The marking scheme for each station is structured and determined in advance to enable objective decision-making. The examination is structured so that each student can be expected to face identical or closely equivalent tasks and the content is related to the clinical skill that the student is expected to have at that stage of training(Boursicot and Roberts 2005). |
| Perception | **Operational definition**: These are self-expressed understanding of the student nurses and qualified Critical Care nurses towards the use of OSCE as assessment tool to measure clinical competences. |
| Standardised patients (SPs) | **Operational definition:** Standardised patients are individuals, with or without an actual disease, who have been trained to portray a medical case in a consistent manner (Battles, Wilkinson et al. 2004). |
| Critical care nurses | **Operational definition:** These are nurses who are registered by the South African Nursing Council as professional nurses and Critical Care nurses on completion of their intensive care training program. |
| Effectiveness | **Operational definition:** effectiveness will mean the ability of OSCE as a tool to measure clinical competence. |
| Competencies | **Operational definition:** the capacity of a nurse to incorporate the professional attributes required to execute a given task. "The ability to perform the task with desirable outcomes, under varied circumstances" (Benner 1982) as cited by (Ääri, Tarja et al. 2008) |
| Experience | **Operational definition:** Experience is measured through students perceptions of the process of administration of the OSCE |
| Intensive Care Unit | **Operational term:** The ICU is an area that provides highly technological care to critically ill patients and their families and/or support systems. |
| Simulated patients | **Operational definition:** Simulated patients may come from the ranks of volunteers or acting guilds, and are also trained to portray a medical/surgical case in a consistent manner. |

# CHAPTER 3

# LITERATURE REVIEW

## 3.1. Introduction

The following search terms were used to search for relevant articles on OSCES, namely *OSCE, assessment in health care, nursing profession, critical care nursing ,simulation ,clinical skills, assessment of competencies* in a number of databases, namely Medline, PubMED, CINAHL, Science direct, S.A. Publication, Jstor, Swetwise and Google Scholar. Due to lack of research on the subject, there were very few articles retrieved that were focusing on OSCES in South Africa for the period from 2000-2010.

## 3.2. OSCE in Critical Care Education

The main aim in a nursing education program is to produce a competent practitioner who can function independently, safely and effectively by keeping their knowledge and skills updated (Hanley & Higgs, 2005) in spite of an increase in public scrutiny (Higgs &Tichen,2001); shortages of registered nurses due to retirement, chronic illnesses, work dissatisfaction, an increasingly complex population of patients (Valdez 2008), and patients presenting with more critical conditions (Distler 2007), as well as a litigious society. McWilliam and Botwinski (2010) identify as another major issue in the nursing profession the fact that nurses are increasingly expected to exercise autonomy in clinical practice, whereas there are decreased learning opportunities in the clinical settings (McWilliam and Botwinski 2010) due to the downsizing of healthcare settings, and a shift to

community-based patient care (Distler 2007); and also due to the shrinking of personnel available for mentoring and supervision of student learners (Bremner, Aduddell et al. 2006). Distler (2007) also agrees with Bremner et al. (2006) in maintaining that the increase in technological intervention, specifically in areas such as critical care, poses another challenge to the nursing profession as it requires better-prepared learners in a fast-paced clinical environment (Bremner, Aduddell et al. 2006; Distler 2007). This poses the biggest challenge to nurse educators since they have to ease the integration of theory and practice (Brosnan, Evans et al. 2006) by providing a definite bridge to close the theory-practice gap (McCready 2007). Nurse educators of the students should prepare them to meet the health needs of all the people in the communities they serve.

Nursing education, and specifically critical care nursing education, should be geared towards producing individuals who are capable of critical thinking and making adequate decisions in practice, as well as solving problems, since critical thinking has been identified as fundamental to competent nursing care (Dickieson, Carte et al. 2008). Holmboe (2004) asserts that it is the moral and professional obligation of health educators to ensure that any student leaving his/her training program has obtained a minimal level of clinical skills to care for patients safely, effectively and compassionately (Holmboe 2004). Due to public calls for increased accountability in health facilities, there has been a need for nursing institutions and nursing regulatory bodies to stipulate the assessment standards and requirements as the basis of good practice (Ecclestone 2001). McCarthy and Murphy (2008) contend that the method of assessment should reflect the structure and the learning outcomes of the program.

Hanley and Higgins (2005) assert that programs to be included in the curriculum design should focus on the assessment of clinical competence (Hanley and Higgins 2005). These authors further suggest that assessment should integrate theory and practice, and that the facilitation of this integration needs to be monitored by nurse educators (Hanley and Higgins 2005). The World Health Organisation (2001) emphasises the need for well-educated nurses who are competent, accountable and flexible to work in hospitals and communities (WHO 2001). To respond to the WHO's call, the English National Board for Nursing, Midwifery and Health Visiting (2002) emphasises the need to assess clinical skills in the intensive care or critical care environment to ensure competent practice and quality care (McCarthy and Murphy 2008). The Joint Commission for Accreditation requires clinical competence to be continuously assessed with regard to all nursing staff and institutional supervisors to be held responsible for maintaining staff competence and for staff, continuous improvement (McCarthy and Murphy 2008). To be in line with the ICN and WHO's recommendation for competent nurses to work in both hospital communities, the government of South Africa, through the Nursing Act, No.50 of 1978,as amended, has delegated the responsibility for promotion and maintenance of standards in nursing education by ensuring that the public receives quality, safe and ethically sound nursing care according to the constitution of Act No. 108 of 1996 (Mekwa 2000).

## 3.3. OSCES and assessment

In the health profession, effective assessment of an individual`s competencies is imperative to ensure that self-determining and excellent professional practitioners who are capable of working in complex clinical situations are produced (McRobbie, Fleming et al.

2006). However, the assessment of competence is complex, because, as the professional grows and changes, the requirements for achieving competence also change. Assessment is a process which attempts to find out what the student is becoming or has accomplished by giving a value or making a judgment, where that judgment is imagined as a cognitive process (Hanley and Higgins 2005). Oermann et al. (2009) describe an assessment as a process of collecting information about students' learning and clinical skills overtime and interpretation of that information to make an evaluation. Furthermore, Oermannet al. (2009) and McWilliam and Botwinski (2010) describe two types of assessments, formative and summative assessments. The formative assessment is not graded but is a continuous process and needs on going feedback to identify the gaps in students' knowledge and learning needs, and to reinforce learning and decide on strategies for continued learning. Formative assessment promotes students' self-awareness and encourages self-directed learning, while summative evaluation is the assessment done at the end of the instruction or course to determine the extent of knowledge, skills, values achieved to which grades are assigned reflecting students' achievements (McWilliam and Botwinski, 2010 and (Oermann, Saewert et al. 2009).

As critical care nursing is a practice-based discipline assessment of clinical skills is at the forefront of nursing education (Jones, Pegram et al. 2010). Furthermore, Awaisu et al.(2007) believe that there is an urgent need for health disciplines to develop an improved assessment technique since the undergraduate curricula in undergraduate curricula in Pharmacist education places an emphasis on problem-based and competence-based instructions (Awaisu, Mohamed et al. 2007 ).

In addition, Martin and Jolly (2002) advocate that assessment is central to instruction and play a key role in the learning process since learning depends on the aims of assessment (Martin and Jolly, 2002). Therefore, Santy (2000) identifies several reasons for the assessment of clinical skills as this helps to monitor, motivate and measure students' achievements and to predict students' future (Santy 2000). The latter claim is contested by Van der Vleuten (2000) who believes that competence is content specific, therefore being competent in one clinical area is not a good predictor of competence in another area, hence assessment cannot predict a student`s future (Van der Vleuten 2000).

Assessment also helps to establish the effectiveness of the curriculum and gives a source of feedback about student progress (Walsh, Bailey et al. 2009). Hanley and Higgins(2005) agree with the latter and assert that assessment, in turn, facilitates the personal, academic and professional development of the individual which leads to effective professional practice (Hanley and Higgins 2005). Therefore ,Jones et al. (2002) believe that assessment should enlighten continuing professional development, meaning that the critical care students' assessments should not focus only on current achievements, but also on alternative current and unidentified future practices (McLean, Monger et al. 2005). Biggs (2003) as cited in Twari et al. (2005) argues, however, that assessment of students' clinical skills should not be a substitute for competence, otherwise students will be engaging in surface learning only, and this hinders professional development and professional competence (Tiwari, Lam et al. 2005). Tiwari et al. (2005) reveals that learning in student nurses is dependent on their interpretation of the demands of their assessment (Tiwari et al., 2005).

Most researchers believe that assessment can motivate students to learn more, however Watkins et al. (2005), in their phenomenolographic study on Swedish and Hong Kong university students, reveal that in order to ensure that students learn through assessment, it is necessary to change the way the assessment is arranged and performed, since assessment has an effect on learning which is known as the "backwash" effect (Watkins, Dahlin et al. 2005). This backwash occurs when the students' learning relies greatly on what they perceive they will be assessed on (Tiwari, Lam et al. 2005). Biggs (2003) as cited in Tiwari (2005) asserts that assessment can lead to a negative backwash when students do surface learning, however deep learning leading to a positive backwash depends on what the students perceive they will be assessed on (Tiwari et al., 2005). According to (Biggs 2003), nursing knowledge can only be acquired through a deep approach to learning that has a solid theoretical foundation (Tiwari, Lam et al. 2005). Furthermore, the exploratory study done by Tiwari et al.(2005) in Hong Kong confirmed that what is learned in the clinical environment and how students learn is largely determined by what the students perceive they will be asked during an assessment (Tiwari, Lam et al. 2005). This is in line with what Gupta et al.(2010) claim as the 'steering effect' assessment has on the learning process, meaning that examination/assessment has the capacity to drive the student learning process (Gupta, Dewan et al. 2010). Therefore, educators must be capable of developing assessment methods that will be effective to motivate students to learn and acquire positive attitudes towards learning (Watkins, Dahlin et al. 2005). In addition, Tiwari et al. (2005) argue that an assessment as a whole does not give a clear picture of how the student would behave or act in a real situation (Tiwari, Lam et al. 2005). These researchers also express concern that assessments encourage students to create their own syllabus by determining what the assessment task will be, thus ignoring the official

curriculum (Tiwari, Lam et al. 2005).  This study also reveals that students use different strategies to survive assessments, such as rote learning, memorisation and rehearsing the procedure without understanding, therefore students regurgitate those skills when needed (Tiwari, Lam et al. 2005).  Thus poorly developed assessment methods can lead to passive or rote learning and reading just to get through the examination, which leads to failure to apply knowledge and skills in real practical situations (Brown and Doshi 2006).

These findings by Tiwari et al.(2005) are in line with studies done by Watkins et al. (2005) which argue that any assessment system that places an emphasis on the fact that a final examination is not an appropriate testing tool for authenticity, while continuous assessment is the way forward to authenticity (Watkins, Dahlin et al. 2005).

In conclusion, there are three areas of a good summative assessment, namely that the assessment should be able to promote future learning, it should be able to protect the public by identifying unfit/underperforming practitioners, and should also assist in selecting individuals who are fit for future training (Epstein and Hundert 2002).

## 3.4. Competence assessment using OSCE

As mentioned before, the word competence is defined in different ways by different authors.  Although this word is widely used in nursing, there is little or no consensus has been reached by authors on the definition of the term competence (Watson et al.2002, McMullan et al., 2003;Cowan et al., 2005; Defloor et al., 2006).

Use of the term 'competence' is unclear, perplexing and it is used contradictorily and interchangeably with terms like performance, capacity and competency ((McMullan,

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Endacott et al. 2003). Bench et al.(2003) consider the term 'competence' in critical care to be a vast and contentious topic with multiple interpretations (Bench, Crowe et al. 2003). Levett-Jones et al. (2011) also agree that the term 'competence' is a complex concept that is difficult to define and even more difficult to measure (Levett-Jones, Gersbach et al. 2011) how it is related to terms like capability and performance is also unclear (McMullan, Endacott et al. 2003). Watson (2002) believes that the concept of competence mirrors an anti-educational mentality (Watson, 2002).

Looking at different definitions about competence, it is a dynamic, continuous process that changes as experience, knowledge and skills develop through, and in practice, and should be viewed as a continuum along which people move throughout their careers (Storey 2001). Fletcher (2008) defines clinical competence as the will and ability of the individual/student to select and act consistently and relevantly, in an efficient, effective, economical and human manner in accordance with the environmental social context in order to solve the health problems of a person or group (Fletcher 2008). Benner (1982) defines competence as the capacity to execute a task with desirable outcomes under varied circumstances in the real world (Dunn et al., 2000).

Other authors maintain that there are two components of competencies:(a) the one relating to the mastery of a multitude of facts which is the knowledge of cognitive skills called clinical competence, and (b) professional competency that relates to the ability of a nurse to complete tasks related to the profession acceptably, such as critical care (Epstein and Hundert 2002; Ääri, Tarja et al. 2008; Dunn, Lawson et al. 2000). Clinical competence in critical care includes the application of clinical guidelines, nursing interventions and principles of nursing care, while professional competency deals with nurses' attitudes

towards their job, as well as their skills and knowledge, therefore it includes ethical activity, developmental work and decision-making in this domain (Ääri, Tarja et al. 2008). This author also defines competency in critical care as "the calm surface under which a hidden dream is unfolding, fraught with difficult clinical and ethical problems"(Ääri, Tarja et al. 2008). Therefore, in the critical care environment, it is impossible to differentiate between these two domains because the CCNs are supposed to perform their clinical tasks professionally all the time. In addition to these domains, Kayihura (2007) also describes two competence domains as (c) foundational competence which is the ability of the individual to demonstrate an understanding of what "one is doing" and "why" the task is carried out in the way one is doing it and (d) reflective competence as the ability of the individual to adapt to change and unforeseen circumstances when carrying out a task and explain his/her reason for doing it. Reflective competence integrates actions with understanding of the action so that learning occurs; and changes are made when necessary (Kayihura 2007).

According to Epstein and Hundert (2002) competence is dependent on habits of mind, including thoughtfulness, critical inquisitiveness, self-awareness, and presence. Professional competence is developmental, temporal, and context- dependent (Epstein and Hundert 2002). Furthermore, Defloor et al. (2006) concur with Dunn et al. (2000) in believing that clinical competence can only be assessed in the clinical context, therefore some authors define competence as the functional ability and sufficiency to incorporate knowledge and skills with attitude and values into a specific context of practice (Defloor et al., 2006). Some authors base the definition of competence on behavioural outcomes while others use a holistic approach. The behavioural or performance-based approach stresses the ability of the individual to complete visible tasks (McMullan, Endacott et al. 2003). This

approach takes for granted that a competent person will be able to combine all the domains such as cognitive, affective and psychomotor domains of practice (Meretoja, Leino-Kilpi et al. 2004).  The behavioural approach has been criticised by many authors such as (Manley and Garbett 2000) and (Scholes, Endacott et al. 2000) because it overlooks the correlation between the task and the complexity of the task (McMullan, Endacott et al. 2003).  The behaviourist approach in competency assessment has been blamed for its inability to develop problem-solving skills and critical thinking skills, while nursing is rooted in the naturalistic paradigm and the assessment of competence in nursing is impractical and unpleasant if placed in the positivist paradigm (Christensen and Hewitt-Taylor 2006).

The behavioural approach also ignores the importance of working as a team in the approach to health delivery; competencies are individualised (McMullan, 2003). Assessments are too specified between the tasks, and the complexity of the task is overlooked causing over-clarification, minimisation and disintegration of knowledge, therefore competence becomes fragmented (Manley and Gibert, 2000).  This approach also emphasises technical skills at the expense of knowledge and understanding (McMullan, Endacott et al. 2003).  Wolf (1998) and Gonczi et al. (1994), as cited in McMullan et al. (2003), argue that although competence can be observed through performance, it cannot be observed directly.  Furthermore, McGaughey (2004) describes clinical competence in critical care as being reflected in the student performance as a holistic approach which comprises an interrelationship of knowledge, skill, values and attitudes (McGaughey 2004).

To summarise the above claims, McCarthy and Murphy (2008) remark that what contributes to the difficulties in defining the word 'competence' in nursing is that the nursing practice is complex and continuously changing.

Looking at different approaches to competency by different regulatory nursing

bodies, An Bond Altrains (2000a), the Irish Regulatory Body for Nursing, as citied in Hanley

and Higgins (2005) came out with the most appropriate definition of the word 'competence'

which adds the dimensions of safety and scope of practice, and defines 'competence' as the

ability of a registered nurse to practice safely and effectively, fulfilling his/her professional

responsibility within her/his scope of practice (Hanley and Higgins 2005).  This definition

acknowledges the relationship between cognitive, psychomotor and attitudinal skills, and

also includes the recognition of ethics and values, reflective practice, context-specific

knowledge and skills (Barlett, Simonite et al. 2000).  Similarly, the Canadian Nurse

Association (2005) as cited in Hanley and Higgins (2005) also defines competencies as the

specific knowledge, skills, judgment and personal attributes required for a registered nurse

to practice safely and ethically in a designated role and setting.  To summarise these

approaches, Hanley and Higgins (2005) suggest that a multi-method approach is necessary

to ensure comprehensive assessment of a student`s complex clinical skills.

For this reason McMullan et al. (2003) suggest that for any assessment to represent

objectivity and a holistic perspective in competence, it must incorporate knowledge, skills,

values and attitudes in a context-specific situation.  Furthermore, the complexity and variety

of nursing practice leads to constant changes in response to the social context and makes

this impossible to replicate in the examination (Hodges and McIlroy 2003; McMullan,

Endacott et al. 2003).  Therefore, since OSCE is simulated life, not real life, it is unable to

accommodate contextual factors, and it is impossible to measure the level of competence in

critical thinking skills that a student will apply in real clinical settings which are dynamic and

complex (Mitchell, Henderson et al. 2009).  The problem of a nursing OSCE is to reproduce a

ward environment which can lead to ignoring important factors such as the pressures of the nursing environment, shift work, personality and many others (Shanley 2001).

Many authors claim that OSCE is able to measure competencies which are psychological constructs including cognitive, affective and psychomotor skills such as critical thinking and problem-solving as well as incorporation of knowledge, values, beliefs and, attitude (Watson 2002; Cowan, Norman et al. 2005; Defloor, Van Hecke et al. 2006). However, the study done by Walsh et al.(2009) concludes that correlation between OSCE and other evaluating methods varied from one study to another, depending on the skills selected for testing and the students being evaluated, for example, evaluating areas of knowledge shows a correlation of moderate to high between OSCE and other evaluating methods (Walsh, Bailey et al. 2009).  Theoretically, this view of assessing competence mirrors a positivist, behaviourist or managerial position, where educators are seen as mechanist, devoid from context and detached from the holistic nature of practice (Skinner and Whyte 2004).

## 3.5. Assessing and measuring clinical competence in OSCEs

Miller (1990) developed a conceptual model for assessing clinical competence which outlines four levels at which a learner can be assessed (that is, **knows, know how, show how and does**).  According to Miller (1990), any program of student assessment should be closely related to students' future practice (Miller, 1990), however, Holmboe (2004) comments on the inability of OSCE to **show how** real skills are obtained because it sits below the "**does**" level in Miller`s pyramid (Holmboe 2004).  Therefore, Holmboe (2004) believes that the clinical examination can only ensure that the student has obtained the first

level of basic skills to begin the next stage of residency (Holmboe 2004). Dr Jordan of the Association of American Medical College, as cited in Holmboe (2004), asserts that to assure the public that graduates have acquired the skills necessary to practice, it is important to measure clinical skills, though clinical skills' examination does not imply that the student has acquired a high level of skills to function as an independent practitioner (Holmboe 2004).

To ensure that a competent practitioner is produced for society, Fletcher (2008) believes that measuring competence requires several measuring instruments, each representing a different aspect of competence, since competence consists of knowledge, skills and attitudes (Fletcher, 2008). Therefore assessment should be structured, in such a way that each student can be expected to face identical or closely equivalent task and the content that is related to the clinical skill that the student is expected to have at that stage of training by mapping the learning objectives of the course (Boursicot and Roberts 2005). While, McCready (2007) contends that a method of assessment in the Nursing profession that measures skills only and not knowledge is inadequate, because in this way, only a quarter of the clinical skills are measured (McCready 2007).

However, McCarthy and Murphy (2008) argue that a person may seem competent at one point in his/her career but does not necessarily remain competent throughout it (McCarthy and Murphy, 2008). This concurs with Rushforth's (2007) exploratory study which concluded that a low, average or good performance at one OSCE station is not predictive of similar performances at another station; correlation varies between 0.14-0.33 (Rushforth 2007). These also coincide with the study done earlier by Wessel et al. (2003) which concluded that OSCE is a poor predictor of further clinical grades (Wessel et al.,

2003). The use of longer or more stations in OSCE assessments was suggested in order to overcome this limitation (Newble 2004).

A study done by Martin and Jolly (2002) aimed at assessing the ability of OSCE to predict future clinical performance so that poorly performing students could be put into a remedial program. Results from this study revealed the OSCE score correlation of 0.477. The conclusion of the study revealed that 38 of the 56 students identified did not fail any examination, but their average scores in later examinations remain significantly lower than other students who had no problem initially (Martin and Jolly 2002). Therefore, these authors concluded that OSCE evaluation can give some guide to future performance and thus allow the opportunity for constructive counselling and remedial work, but it is not a perfectly reliable examination because an accurate predictor will achieve an Alpha correlation of more than 0.8 ((Martin and Jolly 2002).

Hanley and Higgins (2005) suggest that the qualified practitioners' ability to assess their own clinical competence and on-going professional development needs to be reconsidered (Hanley and Higgins 2005). The major concern is that educators "fail to fail " underperforming students unless there is evidence of unsafe practice, but this, in turn, compromises patient safety as well as lowering nursing standards (Watson 2002), as cited in (Levett-Jones, Gersbach et al. 2011).

Watson (2002), as cited in Levett-Jones et al. (2011) also asserts that it is difficult to determine the level of competence as well as to determine the level at which the student was deemed incompetent, but affirms that it is easier to identify incompetence than competence (Levett-Jones, Gersbach et al. 2011). Furthermore, Watson (2002) argues whether getting an A score in the assessment as judged by a series of tasks means that

students are competent to practice, and who decides which areas of practice are important than others (Levett-Jones, Gersbach et al. 2011). Levett-Jones et al. (2011) conclude that the problem still lies with educational institutions that have employed many innovative strategies to prepare nurses to work in volatile, complex environments, but still focus on psychomotor skills instead of taking account of the multidimensional nature of competence and the range of attributes required for professional practice during clinical assessment (Levett-Jones, Gersbach et al. 2011).

## 3.6. Advantages of OSCE

- **Provides the opportunity to assess the acquisition and use of knowledge by the students**

For health workers, the aim of education is to help the student to attain knowledge and enable him/her to understand it and be able to judge how to apply that new knowledge in a clinical setting (Epstein and Hundert 2002). Epstein and Hundert (2002) assert that a competent practitioner has the integrative skill to think, feel and act according to the situation (Epstein and Hundert 2002). Schon (1983) however asserts that professional competence is the capacity to deal with indistinct problems, handle these problems effectively and draw conclusions with limited information rather than the ability to solve problems using factual knowledge. Some authors believe that a professional should learn to apply technical knowledge within a varied social context as in the situational learning theory. This perspective claims that `learning to do' (closely related to `knowing how') takes place through solving problems in context, since the context will always involve other people who are experienced at solving similar problems (Maudsley and Strivens 2000).

McCarthy and Murphy (2008) maintain that OSCE enables the assessor to rate different parts of learning according to Bloom`s Taxonomy which include psychomotor, ability, knowledge and attitudes (McCarthy and Murphy 2008). In addition, OSCE stimulates students to apply reasoning skills to both cases with hidden agenda and direct information (McWilliam and Botwinski 2010). In the study done by McWilliam and Botwinski (2010), results show that students appreciated the authenticity and valued the OSCE experience in their education(McWilliam and Botwinski 2010). Furlong et al. (2005) contend that in their evaluation of the OSCE for Project 2000, students and lecturers see the preparation of OSCE as a key to its success (Furlong, Fox et al. 2005).

- **Provides faculty with an opportunity to determine whether educational objectives are being met**

An important component of any curriculum is the ability to evaluate whether the educational objectives were achieved. OSCE allows the faculty to define those competencies that are crucial to enable a student to achieve competence in a specific area (Hanley and Higgins 2005), for example, in the critical care unit, it is essential to be able to perform Cardiopulmonary resuscitation. Using OSCE as a tool to evaluate student clinical competence stems from behaviourism (Kneebone 2003). Behaviourism has three assumptions that underpin the process of learning, i.e.**(1).**learning is manifested by change in behaviour.**(2**).environments shape behaviour.**(3).**the principle of contingency and reinforcement (Kneebone 2003). For behaviourism, learning is the acquisition of new behaviour through conditioning. Behaviourists are particularly interested in measurable changes in behaviour, rather than the internal process of thought (Kneebone 2003).

Therefore, when using OSCE for formative assessments the examiner aims to help the student to develop confidence, to be a skilful or competent practitioner, by giving feedback which is necessary for the acquisition of skills (Bergus and Kreiter 2007). Summative assessment is, however, the original mode of operation of OSCE as defined by Harden & Gleeson (1979), where the role of the examiner is to observe and record the performance of the student without helping her/him.  In Alinier's (2003) opinion, OSCE can be used as a mixed method where a session can be run as a summative assessment while some time, before the end of the session, can be allowed to give feedback to the students and answer their questions (Alinier 2003).

According to Rushforth (2007) and Mitchel et al. (2009) OSCE helps to evaluate the "show how level" of performance and competence with the students hands-on, which conforms to the third level of Miller`s pyramid.  This concurs with Alinier's (2003) claims that the highest level of Miller's pyramid can be tested using OSCE because this method enables students to put evidence-based medicine, which integrates knowledge and communication skills, into practice (Alinier 2003).

- **Direct student learning of specific crucial skills**

OSCE also affords the faculty the chance to direct students' concentration towards the mastery of skills which may otherwise receive little attention elsewhere in the educational program (Alinier 2003).

The study done by Pierre et al. (2004) reports that students felt that feedback given by those at the stations helped to motivate them and to drive the learning process. This is in line with the claim made by Rentschler et al. (2007) which contends that OSCE equips trainees with innovative learning experiences (Rentschler et al., 2007). Students should thus be given feedback immediately after they receive their marks from the examiners or lecturers, in order for them to integrate cognitive and psychomotor skills, especially when new skills are learned (Paul 2010). Most researchers agree that OSCE in nursing programs can be used successfully if it is used for formative assessments (Alinier, 2003and Major, 2005). The study by Anderson and Stickley (2002) on students' perceptions of the use of OSCE reveals that students felt OSCE should be used for formative assessments only (Anderson and Stickley 2002). Brenner (2009) also maintain that it is easy to simulate scenarios that are stressful in real practice using OSCE (Brenner 2009).

- **Allows for reflection on practice**

Schon (1983), as cited in McCarthy and Murphy (2008), also acknowledges the important of reflecting on experiences in practice because this helps one to visualise some situational facts that one has gained from using one's skills. This is in line with the constructivism premise that learners build knowledge from reflecting on their experiences that make sense, and is congruent with the use of problem-based simulation in education (Lewis 2009). The PBL refers to an instructional approach that promotes student knowledge through reflection on experience or practice within a complex scenario or real life problem simulation (Lewis 2009). Redfern et al. (2002) assert that OSCE appears to be reliable and provides a valid method to evaluate students' clinical skills, as well as to provide students

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with reflection-on-practice.  Thus, Alinier's (2003) study reveals that students prefer more practice by repeating the same OSCE, thus giving them the opportunity to reflect on their performance, so that when the same scenarios happen in their professional life they will be able to handle them (Alinier 2003).  Examiners in this study were of the same opinion that students need more OSCE practice because some of them lack confidence in their practice, but both groups were not of the same opinion about the frequency at which OSCE should be repeated in the year.  Students prefer it to be repeated three to four times a year while lecturers indicate a lower frequency, probably because of the intensive work involved (Alinier 2003).

- **Identify knowledge deficit by giving individualised feedback**

In the cross-sectional study done by Awaisu et al. (2010), about 80% of the students in this study believed that OSCE was useful in discovering their areas of weakness and strength in their clinical skills.  In the same study, about 51% of the students were positive that their clinical skills on OSCE would improve their final grade for the course (Awaisu, Abd Rahman et al. 2010).  Furlong et al. (2005) believe that OSCE can be used as a teaching tool because student's strengths and weakness can be identified during OSCE preparation and remedial work can be done.  Not only does OSCE motivate students to improve their learning skills by reflection as maintained by (Alinier 2003), but it also helps to identify knowledge deficit (Alinier 2003).  Another advantage is that giving early feedback after OSCE helps to reinforce the development of good habits and prevent the formation of bad lifetime habits that can endanger patients' lives (Payne, Bradley et al. 2008).

- **Student progress**

Brown and Atkins (1988), as cited in Alinier (2003),maintain that what is important to remember is that the major role of educational institutions is to guide students towards their future professional activities by providing them with opportunities to gain knowledge and skills (Alinier 2003). McWilliam and Botwinski (2010) contend that OSCE can be used successfully, if resources are adequate, so each department should take the time to determine whether using OSCE is a feasible option for the program of evaluation and whether it is also an assessment tool (Alinier 2003). Walters and Adams (2002) believe that OSCE preparation is an attempt to introduce a positive experience for the students.

In a cohort study by Alinier (2003) on the perspectives of students and examiners on the use of OSCE, the results revealed that both teachers and students believe that OSCE can be used for summative and formative assessment. Many authors believe that OSCE can be used as a formative and summative process (Alinier 2003). The OSCE process is a good method for the formative assessment of clinical skills for student nurses, although it is labour-intensive, involves faculty time, costs and staffing (Pierre, Wierenga et al. 2004). Khattab and Rawlings (2001) once commented that the educational benefits outweigh its financial cost, because OSCE still offers an attractive option for the assessment of practitioner competence.

- **Helps to evaluate the program**

OSCE facilitates the identification of strengths and gaps in the curriculum (Walsh, Bailey et al. 2009), because if the majority of students perform poorly in the OSCE this could indicate a mismatch between skills and knowledge (Berger and Kretter,2007). Whereas

Awaisu et al. (2010) assert however that overall poor performance in an OSCE session can also point to the fact that the instructions given during the OSCE were ambiguous, so more detailed instructions need to be designed. OSCE can also assist in assessing the mode of subject delivery (Awaisu, Abd Rahman et al. 2010).

- **Offers safe practice**

Since OSCE is a form of examination that closely simulates the real clinical situation (Brosnan, Evans et al. 2006), it offers learners a safe and controlled environment for skill acquisition, without fear, and offers them confidence when facing real situations (Wallace, Rao et al. 2002; Alinier 2003; Hodges and McIlroy 2003).  Alinier (2003) believes that OSCE helps students to acquire skills in a safe environment without fear of being a danger to the patient, and offers students confidence when they are confronted by technical instruments in real life situations (Alinier 2003).  These statements agree with those of Brenner (2009) who claim that it is easy to mimic scenarios that are distressing to real patients in an OSCE while the OSCE offers a safe and controlled environment for practice (Brenner 2009). Rentschler et al. (2007) assert that the OSCE provides students with innovative learning experiences (Rentschler, Eaton et al. 2007).  Harder (2010) notes that higher levels of confidence were reported among students involved in OSCE (Harder 2010).

## 2.7. Tools and methods used in OSCEs

### 2.7.1. Use of standardised patients or simulated patients

Many efforts in nursing education have promoted programs that are more related to the real world and evaluation methods that mirror situations in the workplace (Pell, Homer et al. 2008). This is why the use of simulated or standardised patients (SPs) is common in nursing education. The use of standardised patients has high face validity (Brown and Doshi 2006). The aim of using simulation in nursing is to translate classroom knowledge into a safe learning environment (Kaakinen and Arwood 2009). The SPs are used to amalgamate teaching and learning of interpersonal skills with technical skill and for giving direct feedback to the student (Brown and Doshi 2006).

Standardised patients or simulated patients (SPs) have been used in performance assessments as part of OSCE to measure the competence of health professionals and the quality of their practice (Battles, Wilkinson et al. 2004). Standardised patients are individuals with or without a disease who are trained to simulate a specific set of symptoms (Kurz, Mohamedy et al. 2009). Each institution determines the amount of time allocated to training and how SPs will be trained, depending on the complexity of the scenario and the previous knowledge of the SP (Kurz, Mohamedy et al. 2009).

SPs are indistinguishable from the real patients and this can help to detect errors of omission or commission related to practice settings (Battles, Wilkinson et al. 2004). These SPs are also trained to give accurate and complete feedback about student examination (Battles, Wilkinson et al. 2004). The feedback from SPs helps to indicate whether the student's behaviour reflects educational objectives (McWilliam and Botwinski 2010).

Feedback should be delivered to the students in third person, meaning the SPs to break out of the character they were portraying in the OSCE (McWilliam and Botwinski, 2010).

The use of real patients in OSCE is discouraged because real patients can suddenly change conditions and exhibit symptoms that may be above student competence levels and the fact that this can lead to anxiety and ethical issues also needs to be considered (Sayer, Evans, Wood, 2002). However, Boursicot and Roberts (2005) believe that the use of real patients rather than SPs adds greatly to the validity of the OSCE assessment (Boursicot and Roberts 2005).

The use of professional nurses as SPs is discouraged in the OSCE because the study done by Wilson et al. (2005) reveals that the use of professional nurses as SPs in the case scenario causes them to fail to depict case scenarios as they have been written, and they are also liable to offer hints which weaken the OSCE format and could cause the ruling of the assessors to be biased in either direction (Levett-Jones, Gersbach et al. 2011).

McWilliam and Botwinski (2010) contend that nonmedical SPs should be used because they can depict illnesses as written in the case scenario and give feedback without reference which enhances the reliability of the OSCE. The latter claim opposes Watson's viewpoint (2002) where he pointed out that the assessor, unknown to the student, may base his/her decision on the student performance during the OSCE period, which may not be representative of the student's overall performance, since performance may be adversely affected by other factors like anxiety.

The use of SPs to simulate real patients is important to enable human performance to be examined without placing a real patient at risk of human error, and as a patient safety

tool, it is an important weapon to prevent medical error and patient harm (Battles, Wilkinson et al. 2004).  Simulation is purported to be the vehicle which transforms classroom knowledge into a protected learning environment (Leigh 2008).  Holmboe (2004) however declined the idea of using SPs because it is expensive and they are not readily available at all institutions. It remains important to remember that SPs should not replace real observation of students' performance with actual patients, but should be used as a supplement (Holmboe 2004).

Although most researchers believe that the use of simulation will help students to be more confident in performing their clinical tasks, Kaakinen and Arwood (2009) believe that self-confidence and self-efficacy is small portion of the learning picture, and that other parts of learning include knowing concepts and skills development (Kaakinen and Arwood, 2009). Dickieson et al. (2008) assert that students should be afforded with opportunities to learn and apply critical thinking in safe settings (Dickieson, Carte et al. 2008).  Holmboe (2004) believes that educators can only get a full picture of longitudinal changes and growth in clinical skills through real observations of students with real patients.  Holmboe (2004) also points out that SPs operate according to the kind of information provided, but in a real situation which is diverse and unpredictable, it is impossible to use OSCEs to determine on-going and continuous care of patients who are not following a predefined script.  Many authors point out that there is no evidence that the use of simulation is transferable to real clinical practice (McCaughey and Traynor 2010), although Battles et al. (2004) believe that SP-based OSCEs are a valid and reliable tool to assess competency continuity (Battles, Wilkinson et al. 2004).  Use of simulation in the health profession is gaining interest because it increases patient safety (Bearnson and Wiker 2005); it is risk free, and allows for the

integration of basic and clinical science for students (Bremner, Aduddell et al. 2006), decreases errors, improves clinical judgment, increases proficiency in clinical skills (Harder 2010);and is useful in teaching and evaluating clinical skills (Bearnson and Wiker 2005; Bremner, Aduddell et al. 2006).  The study done by Bremner et al. (2006) reveals that most teachers believe that skills learned during simulation can be transferred to real situations but half of the students disagree and maintain that these skills are not transferable to real situations (Bremner, Aduddell et al. 2006).

### 2.7.2.  Developing case scenarios in OSCEs

Case scenarios are developed by faculty experts in the content area and are intended to incorporate a specific range of nursing knowledge and skills (McWilliam and Botwinski 2010).  Case scenarios should include detailed patient profiles, illnesses, history, social history, effect of illness on the patient and patient`s behaviour (McWilliam and Botwinski 2010).  Therefore, students need to be reminded that most skills are made up of discrete parts which can be incorporated into an examination at a later stage (Jones, Pegram et al. 2010).

The case scenarios should depict current and up-to-date nursing standards of care reflecting the content to be tested (McWilliam and Botwinski 2010).  Kayihura (2007) believes that case scenarios should be tested beforehand to ensure feasibility and practicability.  To ensure the development of critical thinking, the problem-based scenarios should be developed.  This is in line with constructivist theories that learners construct their knowledge from reflecting on their experiences that make sense, and this is congruent with the use of problem-based simulation in education (Lewis 2009).

### 2.7.3. Tools used in OSCE assessment

An exploratory study was conducted by Rushforth (2007) to check the accuracy of rulings made by examiners, since the results are dependent on the judgement of an examiner (Rushforth 2007).  Accuracy was tested using inter-rate reliability (IRR) with a selected station being independently marked by two examiners.  Most of these studies show different correlation between 0.4-0.96.  The difference in correlation suggests that it is important not to rely on the judgment of one examiner, and some authors advocate the use of two examiners at each station (Humphris and Kaney 2001).

Rushforth (2007) also expresses concern that students' performance may be negatively affected by the station rather than reflect their actual ability where there is poor patient consistency, when patients/standardised patients fail to present their fictitious scenarios convincingly (Rushforth 2007) although, Watson (2002) contends that in OSCE the use of binary checklists which breaks down performance into a series of discrete items or competencies is being questioned.  Other authors blame OSCE for undermining holism by compartmentalising holistic patient care into discrete and unrelated elements (Alinier 2003),but Friedman Ben-David (2000) is of the opinion that this fragmentation is relevant for the early stages of undergraduate curricula which focus on the assessment of specific skills (Friedman Ben-David 2000).  Other researchers also believe that OSCE undermines examiners who are experts in clinical judgment because it requires the examiner to tick each element in the list as either 'done' or' not done' (Bartfay, Rombough et al. 2004), and also due to its potential limitation of trivialisation resulting in detailed checklists which incompletely reflect the examinees' performance of the task (Newble 2004).  The checklist is subject to criterion rating (Newble 2004); but Wass et al. (2001) advocate criterion

referencing as the only appropriate standard to ensure "fitness for practice" and to maintain

safe, professional gate-keeping (Wass, Van der vleuten et al. 2001).

Another limitation of checklists is that they can be used adversely by students to

guide their learning; therefore they may practice wrong skills when following the steps of a

poorly designed OSCE (Newble 2004). This is line with the results of the study done by

McIlroy et al. (2002) which reveals that students' study can be influenced by their

knowledge of the assessment tool, as they seems to study more when they know that a

global rating will be used compared to when checklists are applied (McIlroy, Hodges et al.

2002). Another assumption is that experts do not solve problems using approaches in a

checklist rating system (McIlroy, Hodges et al. 2002).

### 2.7.4. Pass mark

Academic institutions are progressively obligated to enhance the validity or

soundness of evaluation methods, regrettably often at the cost of losing the reliability of the

assessment (Pell et al., 2008). Jones et al. (2010)believe that there is a great challenge for

educators to develop a healthy and transparent individual station, marking criteria and

examination protocol for OSCE (Jones, Pegram et al. 2010). At Florence Nightingale School

of Nursing and Midwifery, a blue-printing and standardisation process has been adopted to

address this challenge (Newble, 2004). Blue-printing means the process by which skills to be

examined in the OSCE stations are mapped to specific learning outcomes of the module or

course (Newble 2004). The marking criteria should relate to the skills being assessed to

ensure the validity of the OSCE station (Jones, Pegram et al. 2010). Elements such as

greeting the patient should not be awarded a mark because the inclusion of such factors will

compromise validity, since students can pass a station without actually conducting the

required procedure.  Nonetheless ,elements such as patients' feelings, maintenance of dignity and establishing nurse-patient relationships is important to accommodate when developing each OSCE station, as this is in line with good practice and the code of conduct (Jones, Pegram et al. 2010).  Hodges and McIlroy (2003) suggest the use of a global rating, since global ratings allow examiners to comment on the subjective nature of student performance when including these elements, but this should be in line with the mark achieved by the student.

Another issue was the reliability of OSCE which also seems to depend on the consistency of assessor judgment (Pell, Fuller et al. 2010).  The study done by Pell et al. (2010) which aimed at assessing pass marks awarded by trained and untrained assessors in the OSCE assessment reveals that untrained assessors tend to award more marks than trained assessors (Pell, Fuller et al. 2010).  There was a difference of 0.86 marks between stations' mean marks when comparing the trained and the untrained assessors.  This difference in the marks of trained and untrained assessors produces an important effect on the results which are not related to student performance.  Therefore, Pell at al. (2010) contend that all assessors used for OSCEs should be trained, since they are more consistent in marking.  These concerns were raised by former researchers like Shanley (2001), who expressed concern regarding the reliability of score results since these can be compromised by examiner inability to assess clinical skills at a particular station (Shanley 2001).  There is thus a belief that the examiners' marks may be masked by bias due to poor concentration (Humphris and Kaney, 2001); lack of attention and stereotypical judgments which may be evidence of fatigue, as examiners have to pay close attention to the performance of

repetitive tasks (Furlong, Fox et al. 2005).  It is thus important to remember that when preparing for OSCE the unfairness of examiners should be addressed (Baid 2011).

Assessor issues are other matter to consider in the assessment using OSCE method. A conclusion made by Pell (2000) was that female assessors are usually more generous in overall marking than male assessors (Pell, Fuller et al. 2010).  This means that the increase in female assessors will lead to an increase in students' marks.  Pell et al.(2010) advocate that the gender interaction is reported to be at a 5% level in each year group, but is present in all cohorts to some degree, and when all year groups are combined, it reaches a 1% level (Pell, Fuller et al. 2010).  The cross-sectional survey by Awaisu et al. (2007) revealed that about 50% of students were concerned that their scores were affected by sources of biases like gender, personality, ethnicity as well as inter-patient  and inter-assessor variability (Awaisu, Mohamed et al. 2007 ).  Conversely, Singh et al.(2009) contend that OSCE is an objective evaluation tool that is standardised and is not affected by personality and social relations (Singh, Singh et al. 2009).

Mitchell et al. (2009) believe that for OSCE to be valid and reliable there is a need to develop a robust method to determine a passing score, otherwise this achievement will be useless if a passing score is not set appropriately (Mitchell et al., 2009).  Therefore, OSCE developers should reach consensus on the pass mark for each station, also known as "standardisation" (Jones, Pegram et al. 2010).  OSCE experts thus need to agree on how many marking criteria and credits need to be achieved by the borderline student to constitute safe practice, since a conventional pass mark of 40% in OSCE will indicate that the student is unfit to practice safely (Jones, Pegram et al. 2010).  In a study of OSCE done by McGaughey (2004), experts agreed on a minimal cut score for each station.  A station with

basic life support had a cut score of 75%, while a difficult station had a cut score of 40%. In this study, the response rate was 42%, and only 8 of those who responded believed competencies should be assessed using OSCE (McGaughey, 2004). Jones et al. (2010) emphasise that to ensure the consistency, validity and reliability of OSCE, it is of paramount important that examiners agree on the process of the examination, which phrases to be used when giving instruction, and issues such as stopping immediately, to give a mark/credit once a bell has signalled the end of that examination session(Jones, Pegram et al. 2010). After all the attempts made to determine passing scores, the matter of assigning a passing score or passing standard continues to be contentious (Pell, Homer et al. 2008).

Looking at the issue of how students perceive their passing score, a study conducted reveals that students were unsure whether their scores were an actual reflection of their clinical performance (Pierre, Wierenga et al. 2004). A sequential survey by Zyromski et al. (2003) reveals that in the first survey, students felt scores received were not an appropriate measure of their skills, but in the second survey, students' attitudes towards OSCE changed (Zyromski, Staren et al. 2003). However, the study by El-Nemer and Kandeel (2009) reveals that 83.1% of first year students and 78.7% of third year students agree that scores obtained during OSCE are a true reflection of their performances (El-Nemer and Kandeel 2009).

Most critics of OSCE express the concern that while it may simulate the real world ,it is not the real world, therefore we cannot safely conclude that findings from an OSCE assessment reflect actual practice in the ever-changing clinical practice (Downing and Haladyna 2004) and also, because OSCE sits perpetually below the top of Miller`s pyramid (Rushforth 2007). The study by Brosman et al. (2006) reveals that mature students score more marks in OSCE than younger ones (Brosnan, Evans et al. 2006).

Parks et al. (2006) assert that student misconduct or fraudulent behaviour has been reported on many occasions, and that this is not restricted to any particular culture. Past studies reveal that the prevalence of student collusion in examinations is increased with seniority, because students develop a relaxed atmosphere towards academic norms (Parks, Warren et al. 2006). Although Parks et al.(2006) point out that it is dubious whether knowledge of content before OSCE does affect performance evaluation because previous studies showed no difference in the overall score in an OSCE administered from a few days to three months where students were urged to discuss OSCE content (Parks, Warren et al. 2006). In contrast, the study of Colliver et al.(1992) reports a rise in overall scores when OSCE was administered over longer periods of time (Parks, Warren et al. 2006). Parks et al. (2006) believe that information about OSCE content will benefit some students causing them to get higher scores than their peers, and students who do not cheat may feel that they are being failed by the system (Parks, Warren et al. 2006). The major concern raised by students was the ethical issue surrounding their cheating peers, since this could affect their professional practice (Parks, Warren et al. 2006).

### 2.7.5. Level of expertise

According to Hodges and McIlroy (2003), OSCE has not been designed to accommodate the level of expertise of each candidate participating in it (Hodges and McIlroy 2003). The expertise differs objectively among novices, and OSCE uses binary checklists to score the behaviour observed in each student, meaning that these scores are used to distinguish individuals who are competent from those who are not (Hodges and McIlroy 2003). There is a general complaint about the deficiencies in the checklist's ability to accommodate complex human behaviour such as empathy and caring, among other factors (Hodges and McIlroy 2003).

Another matter of concern is the way experts reach diagnoses or solve problems. Hodges and McIlroy (2003) contend that expert clinicians collect focused information then quickly, and automatically, respond to such observations without following the formal steps of problem-solving. Hodges and McIlroy (2003) also describe expert thinking as being very comprehensive and difficult to break down into component steps which renders this different to novice thinking. Thus these researchers contend that the OSCE binary checklist is not a valid measure of clinical competence, since the novice can pass without arriving at the correct diagnosis because s/he can follow the steps (Hodges and McIlroy 2003). The OSCE checklist does not accommodate the complex and hierarchical problem-solving methods of the expert. In line with Hodges and McIlroy's opinion (2003), Peeraer et al. (2008) also contend that the checklist can fail to acknowledge expertise because it does not reward attention to detail (Peeraer, Muijtjens et al. 2008). The OSCE binary checklist is not a valid measure of clinical competence at a higher level, since novices can pass the examination without arriving at the correct diagnosis because they can follow the steps of a diagnosis technique (Hodges and McIlroy 2003).

The use of a global rating is suitable to differentiate between students at different levels of training (Peeraer, Muijtjens et al. 2008), however; Gupta et al. (2010) contend that global rating mandates that only people with subject expertise can be used as examiners. Holmboe (2004) also argues that most OSCEs use SPs while most SP examinations prefer completeness over efficiency, thus SP evaluations may be accorded less validity by the experts.

### 2.7.6. Feedback

Feedback is crucial in order to channel learners towards expected performance goals (Perera, Mohamadou et al. 2010).  Feedback refers to the giving of information which explains the practitioner`s performance in an observed clinical situation (Carr 2006).  According to Carr (2006), students should be given precise and personal comments on their observed performances, in a way that is beneficial for them to think about and use to improve their future performances.  There are three conditions mentioned by Perera et al. (2010), which are major necessities for students to gain from feedback; the student must (a) obtain a concept of the standard or goal that s/he aims to attain, (b) s/he must match his/her current level of performance with that standard, and (c) must employ strategic actions which lead to a disclosure which is the core in educational quality.  For feedback to generate learning, feedback must be given instantaneously, should be given sensitively, and should draw attention to any disparity between the perceived and actual performance (Cushing, Abbott et al. 2011).  Carr (2006) believes that, when giving feedback to the student, you are demonstrating that you are concerned and have regard for that person and his/her professional development and, as a result, feedback may also help to motivate students.  Therefore feedback should not be judgmental, although it is inevitable that it may be judgmental sometimes (Carr 2006).  There are rules for feedback as outlined by Carr (2006), which allow for the active participation of a student rather than him or her being a passive recipient of feedback.

- The examiner elucidates matters of fact.
- The student should be able to discover what went well and also what did not go well and how s/he could improve that aspect of his/her performance.

- The examiner should highlight what s/he observes went well and also areas that need improvement.

- Both the examiner and the student should agree on areas that need improvement and should then formulate an action plan.

### 3.7.7. Stress and anxiety due to participating in OSCEs

Many authors agree that all assessment and examination processes have the potential to induce stress and anxiety (Furlong, Fox et al. 2005),and the same applies to an OSCE. Most literature on students' perceptions of this assessment method reveals that it is the most intimidating and anxiety-provoking method of assessment (Zartman, McWhorter et al. 2002). The study by Baid (2011) reveals that students in critical care perceived the use of OSCE differently; some welcomed its use as they felt it offered them the opportunity to have a clinically-focused, hands-on examination, while others found the exposure to OSCE very intimidating and stressful, and this simulated environment had a negative impact on their studies. In the study by Brand and Schoonheim-Klein (2009) on dental students to measure the level of anxiety during students' assessments, students perceived OSCE as more stressful than other assessment strategies and indicated that the stress does not decrease with the increase in experience (Brand and Schoonheim-Klein 2009).

Most researchers agree that OSCE is a stressful and intimidating experience, however, Brosman et al.'s (2006) study reveals that the stress is heightened prior to commencing procedures or while in the waiting-room, but that once the students are working at their respective stations their anxiety levels decrease and they are able to perform well (Brosnan, Evans et al. 2006). This claim is argued by some authors who believe that anxiety persists despite student briefings or mock-OSCEs (Marshall and Jones 2003). El-

Nemer and Kandeel (2009) also reveal that a significant amount of first-year students in their study found OSCE to be very stressful and intimidating, compared to the opinions of third-year students (El-Nemer and Kandeel 2009). In the study by Furlong et al. (2005) students agreed that OSCE motivated them to develop clinical skills, but that the experience was very stressful, intimidating and tiring (Pierre, Wierenga et al. 2004). Therefore, Furlong et al. (2005) suggest that for OSCE to be a good learning experience and to help to reduce anxiety related to its format, OSCE preparation is essential. The study done on mental health students reveals that students were grateful for their pre-orientation of score-sheets, as this made them aware of what was expected of them, thus reducing the stress (Anderson and Stickley 2002)

Stress is described by Cox (1978) cited in Furlong et al. (2005:354) as a "dynamic, complex interaction between human beings and their environment, which is dependent on the perceptions of the demands placed on a person and his/her ability to cope" (Furlong, Fox et al. 2005). Since stress occurs when the demands placed on the individual are too taxing or exceed his/her adjusting resources, it is dependent on the person facing the situation, the stressors, and how the person decides to deal with the situation, as well as cultural factors, childhood experience and hereditary factors (Furlong, Fox et al. 2005). Clark (1984), cited in Furlong et al. (2005), believes that stress can work in two ways: (1)it can be beneficial (eustress), leading to learning and the ability to cope or,(2)it can be destructive (distress), leading to poor performance and inability to cope (Furlong, Fox et al. 2005). Furlong et al. (2005) believe that many students have high anxiety levels which affect their performance in the examinations. Baid (2010) maintains that some critical care students have difficulty in expressing their thoughts in a short space of time, and also that

some students lack verbal skills which can lead to more anxiety, however, these disadvantages can also be seen as an opportunity for the students to develop these skills. This is in line with Byrne and Smyth (2008) who believe that students should learn to conquer anxiety during OSCE to improve their overall performance (Byrne and Smyth 2008).

Marshall and Jones's (2003) study aimed at quantifying the anxiety of the post-graduate student prior to assessment by measuring both the state of anxiety using the Spielberger state and also trait anxiety (Marshall and Jones 2003). State anxiety is defined as unpleasant emotional arousal in the face of threatening demands or dangers. Trait anxiety reflects the existence of stable individual differences in the tendency to respond to the state anxiety while anticipating threatening situations (Marshall and Jones 2003). This study revealed that OSCE was threatening and anxiety-provoking, and this could be because OSCE is not done in a real situation, the environment is unfamiliar to students, and also because the students experience a face-to-face encounter with the examiner (Marshall and Jones 2003). Other studies reveal that stress can have a negative effect on student performance. Street and Hamilton (2010) concur with Duffield and Spencer's (2002) idea that it is natural to be nervous in an examination and that nervousness helps you to perform at your peak, but that one should be able to control anxiety because, if it is out of control, it can lead to negative outcomes and poor performance. A study on midwifery students reveals that some students actually commented that "a bit of adrenaline always helps to stimulate thinking", meaning that the stress in the OSCE was necessary or at least conducive to making them think (Jay, 2007:35). Jay's (2007) study also reveals that OSCE was the most stress-producing method of assessment but suggests that anxiety does not affect the final results of the assessment.

### 3.7.8. Controversy regarding the validity and reliability of the OSCE method

In OSCE, validity will be concerned with whether a test measures what it is supposed to measure (Rushforth 2007). For any assessment to stand the validity test, it requires solid, scientific evidence to prove that it can measure what is intended to measure (Munoz, O'Byrne et al. 2005). Most authors believe that OSCE offers high levels of validity and reliability, and also regard OSCE as a gold standard of health professional assessment (Bartfay, Rombough et al. 2004). However, Brookes (2007) contends that the validity of an assessment is dependent on the quality of the problems presented at each station and the design of the assessment (Brookes 2007). Gupta et al. (2010) assert that, when aiming at building a higher construct validity of OSCE, blue-printing needs to be carried out by course experts in the faculty. OSCE has low concurrent validity and predictive validity, and this study also contends that there is no evidence that OSCE has greater validity than other traditional methods of assessment (Barman 2005).

Reliability describes the degree to which the test consistently measures what it is intended to measure. Reliability in OSCE can be affected by many factors like fewer OSCE stations, poor sampling, and the trivialisation of SP tasks, inappropriate checklists, trainer inconsistency, student fatigue due to long OSCE stations, and a lack of standardised patients (Wass, Van der vleuten et al. 2001; Boursicot and Roberts 2005; Gupta, Dewan et al. 2010). Leakage of checklists or examination material and dishonesty from both the examiners and students can adversely alter the validity and reliability of an OSCE examination (Gupta, Dewan et al. 2010).

Therefore, Rushforth (2007) suggests that the issue of reliability should be carefully investigated, because factors like stress during examinations can also seriously compromise

students' performance, since students clearly find the process to be enormously stressful (Rushforth 2007).

In contrast, Bartfay et al. (2004) argue that in the real world practice is often stressful, so being able to perform in a stressful situation increases the validity of an OSCE assessment.  Mitchell et al. (2009) advocates the use of longer, or more stations to increase the reliability of OSCE, since studies reveal that the performance at one station is not predictive of a similar performance at another station, and no valid assessment method to evaluate all aspects of clinical competence has, as yet been designed (Mitchell, Henderson et al. 2009).

McWilliam and Botwinski (2010) dispute the fact that poor student performance may only be due to student inabilities, but believe that inadequately trained SPs, poorly designed curricula and poorly constructed case scenarios could affect student performance. To ensure content validity when using OSCE, the course faculty must update curriculum content and case scenarios on at least a yearly basis (McWilliam and Botwinski 2010). Brookes (2007) asserts that a panel of experienced teachers and a course team must discuss the construct validity of an assessment before commencing the assessment process.

Another issue about the validity of OSCE was revealed by McWilliam and Botwinski's (2010) study which indicated that SPs reported fatigue and confusion after working for more than eight hours due to continuous interaction with students and giving feedback, and this could influence the validity of the OSCE.  For the evaluation criteria to be reliable, they must not be too detailed, because the more the examiner has to score, the lower the reliability (Fletcher 2008).

Mitchell et al. (2009) in viewing the results of their study concluded that the examiners and students viewed OSCE as relevant in measuring clinical skills, thus increasing face validity.  However, in spite of the high face validity of OSCE, other authors believe that OSCE has inconsistencies in reliability and validity (Brosnan, Evans et al. 2006) which can be overcome by using a larger number of short stations (Mitchell, Henderson et al. 2009). Fletcher (2008) asserts that to obtain high face validity and content validity in the use of OSCE, simulated patients must be able to give accurate feedback to the students.  Mitchell et al. (2009) contend that OSCE is a valid examination because it is possible for the examiner to control the complexity of the content, define openly the abilities, attitude, problem-solving skills and knowledge that are to be evaluated (Mitchell, Henderson et al. 2009).

Newble (2004) defines three steps that are required in establishing content validity:

- Identify the problems or conditions that the student needs to be competent to manage.
- Identify the tasks covering the problems with regard to which the student has to be competent.
- Adopt a blue-print which allows the sample of items to be tested to be defined.

Shanley (2001) believes that reliability and validity in OSCE can be improved by controlling the variables such as the examiner and patient variation, although other researchers still maintain that stress, ambiguous checklists, ineffective training of the SPs and lack of experience of the examiners can reduce the reliability of OSCE.  This study concluded that OSCE is not a solution for validity and reliability shortcomings in the assessment of clinical assessment (Shanley 2001).

Bergus and Kreiter (2007) contend that to ensure moderate reliability of OSCE, the approach to the use of OSCE should be to use small, multiple, formative OSCEs throughout

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the clinical year of the student, and that the aggregate scores obtained by the student on these OSCEs be used to provide summative scores. They also believe that this approach will help the faculty to identify underperforming students in time for remedial action to assist them to master their skills, and also to allow faculty staff to develop skills which enhance their accuracy in giving feedback and their observation (Bergus and Kreiter 2007).

### 3.7.9. Acceptability of OSCE as a method of assessment

Most studies reveal that OSCE is well accepted by many of the students who are exposed to it. Conversely, Duffield and Spencer (2002) indicate that the acceptability of an evaluation method is strongly influenced by its perceived fairness and equity (Duffield and Spencer 2002). The study by the aforementioned authors regarding the fairness of OSCE which compared the opinion of students early in their studies and in the latter part of training reveals that student' opinions regarding the use of OSCE change as they progress through their program. This may be due to the fact that the training of doctors is longer than that of the nurses. The study by El Nemer and Kandeel (2009) reveals that students view OSCE as an acceptable tool for evaluating student clinical performance. OSCE is viewed as a fair assessment tool which covers an extensive area of knowledge, and allows students to compensate in some areas and minimises the chances of failing (El-Nemer and Kandeel 2009).

The cross-sectional survey by Awaisu et al. (2007) on the perceptions of pharmacy students in Malaysia of the use of OSCE to evaluate competence reveals that about 88% of the students found OSCE helpful in identifying the areas of weakness and strengths in their clinical skills. In this study, 66% of the students indicated that OSCE was fair in measuring their skills. About 56% of the students also agreed that they saw OSCE as a unique

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opportunity to practice for experiences in real life situations (Awaisu, Mohamed et al. 2007 ). Again, the study by Dastjerdie et al. (2010) on the perceptions of lecturers regarding OSCE reveals that most lecturers believe that OSCE is a reliable tool for evaluating communication skills and patient care using SPs (Dastjerdie, Saboury et al. 2010).

### 3.7.10. Conclusion

The literature reviewed indicates that most authors agree that, due to the complexity of assessment, specifically in critical care, debates about assessment will continue, but that the educational institution has an obligation to carry out assessments that seem most appropriate for the course directed. Rowntree (1987), as cited in Brookes (2007:31), suggested that an "assessment will remain with us from the cradle to the grave" (Brookes 2007). To assure quality, safe and cost-effective health care, it is important to assess the competence of trainees in the health care field (Defloor, Van Hecke et al. 2006). This assessment should afford society the assurance that the training program delivers competent individuals (Van der Vleuten 2000). In order for the competence assessment to have any meaning, there is a need to articulate competencies for each specialist area, such as critical care, the context of care and the specialist critical care skills required for the critical care environment be acknowledged (Hanley and Higgins 2005).

The literature also reveals that, after two decades of OSCE use, there is still a growing use of OSCE in health institutions, and that OSCE has been considered as the most reliable and innovative method of assessment of clinical skills although it is labour-intensive. As noted in the literature, OSCE has its key strengths, and just like any other assessment, it has its own imitations

# CHAPTER 4

# FRAMEWORK

## 4.1. Introduction

For this study two frameworks are used, namely Miller's framework and a Systems framework. Miller`s framework focuses on clinical competencies for assessment which is of core importance in critical care and the systems framework allows all the contextual information in critical care to be considered.

## 4.2 Miller's Framework

Miller, (1990) developed a conceptual model for the assessment of clinical competences which features four levels of assessment (as indicated in the diagram). In the systems framework the following factors will be included in the framework, (1) Individual factors,(2) content and(3) process.
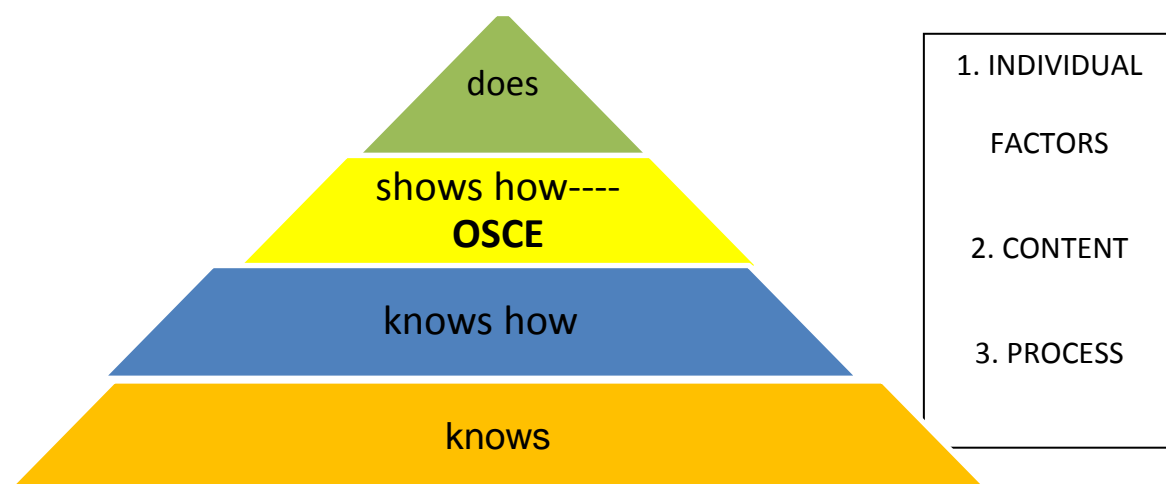


Figure 2: Modified framework based on Miller

### 4.2.1 Levels of Assessment

At the base of pyramid is the **Knows level**- factual recall which can be tested using multiple-choice questions, essays and oral tests.

- The **Knows how level**- context-based assessment which demonstrates the capacity to use knowledge from a particular perspective.  This can be tested using multiple-choice questions, essays and oral tests.

- The **Show how-** level- assessment of competence on this level reveals the person`s skill to act appropriately in a particular situation and this can be tested using simulations or OSCE.  It is important to note that OSCE cannot reveal how an individual will really act in real practice.

- The **Does-** level- assessment of performance.  This level refers to actual performance in real practice-this can be identified through observation in a real situation.

The first and second levels of the pyramid are appropriate in the early stages of training where the focus is on recalling of factual knowledge and application of knowledge to problem-solving and decision-making, but, as learners become more skilful, and teaching becomes more integrative, careful design of the assessment format becomes critical (Wass, Van der vleuten et al. 2001).

### 4.3 System Framework

Since many methods of assessments have been developed, these methods need to be used efficiently and combined into a system of evaluation (Norcini, Holmboe et al. 2008).

Authors agree that for OSCE to be successful as a valid measure of clinical skills certain factors have to be considered.

### 4.3.1. Individual factors

Individual factors include factors relevant to the students and lecturers which can influence the validity and reliability of the OSCE.

- **Students:** The level of the trainee to be assessed has to be considered, since the competencies to be assessed should match the students' level of training (Gupta, Dewan et al. 2010). This also includes the learning objectives of the students, because the OSCE session should meet the learning objectives (Gupta, Dewan et al. 2010)

- **Lecturers/assessors:** One of the major issues is that educators/assessors themselves possess the necessary skills to effectively observe, evaluate and provide constructive feedback to the students (Holmboe 2004). Individual factors such as the unique method of scoring by an expert can affect OSCE results (Gupta, Dewan et al. 2010).

### 4.3.2 Content

There is a need to articulate competencies for each specialist area that acknowledges the context of care and the specialist skills required for each environment(Hanley and Higgins 2005). This includes both the content and the competency, and the best way to assess these competencies (Norcini, Holmboe et al. 2008). One way of testing candidates' clinical competencies is to design the clinical tasks of the OSCE to map the learning objectives of the course and candidates' levels of learning (Boursicot and Roberts 2005). This can be done through a process of blue-printing. Blue-printing helps to ensure that all different domains of skills are tested equitably (Wass, Van

der vleuten et al. 2001; Boursicot and Roberts 2005; Gupta, Dewan et al. 2010). Epstein and Hundert (2002) add the issue of context in assessing clinical competence, since competence is context dependent, meaning it is related to the capacity of an individual to execute the task in its reality, that is, in the world itself (Epstein and Hundert 2002).

### 4.3. 3. Processes of OSCEs

Factors in the processes of conducting OSCES can also affect the outcome of these tests. Examples of these include:

**Standardised Patients (SPs):** OSCEs often use Standardised Patients (SPs). It is important to train the SP adequately to avoid bias and subjectivity that is likely to occur when the assessors are not trained adequately (Levett-Jones, Gersbach et al. 2011). OSCE results can also be affected by inconsistent standardised patients, whose presence assesses only one component of clinical skills (Gupta, Dewan et al. 2010). The age and the sex of the SPs should be consistent with the case scenario that the individual SP has to display. Some studies reveal that sex and age which is not relevant to the case scenario might confuse the examinees (Huang, Liu et al. 2007).

**Determining marking criteria and pass mark:** The expert faculty must also decide on the marking criteria that will be used, the global rating or checklists according to the benefits of both (Wass, Van der vleuten et al. 2001; Gupta, Dewan et al. 2010). The biggest challenge in the assessment of clinical skills is to ascertain the pass mark and also to determine which procedures are regarded as a "must to master'', meaning that their omission is regarded as unsafe practice (Khattab and Rawlings 2001).

**Organisational factors**: The environmental factors that may contribute to the smooth running of the OSCE are: adequacy of resources, setting up a suitable venue, recruitment of examiners, recruitment of SPs, running order of stations, production and processing of mark sheets, liaising with clinical skills staff, signs indicating different rooms and stations, time allocation and how to ensure proper monitoring of the assessment, as well as testing of equipment and practicability of the station to eliminate the errors prior to examination (Boursicot and Roberts 2005). These environmental factors also have major effects on the validity, objectivity, feasibility and reliability of OSCE.

**Feedback**: Gupta (2010) asserts that the faculty must also decide as to how systematic feedback will be given to the faculty experts, SPs and the student (Gupta, Dewan et al. 2010). Interactive feedback is important to help students to improve and develop professionally (Carr 2006).

# CHAPTER 5

# METHODOLOGY

## 5.1. Setting

The study was conducted using two hospitals in the province of KwaZulu-Natal, Durban. Durban is the largest city in the province and is the location of secondary and tertiary hospitals. Both hospitals are situated in the Durban South region, and they are about10km apart. The first hospital is one of the largest hospitals in the province of KwaZulu-Natal which was opened in 2002. The hospital has a total bed statistic of 843 beds, but only 505 beds are used due to staffing problems. This institution was selected as it is the only tertiary institution in KZN with advanced technology and is a paperless hospital. This hospital (1) has eight Intensive Care units and two High Care units therefore it has the highest volume of Critical Care nurses, and it was possible to get a variety of opinions due to their different environmental experiences. The second institution is hospital (2). This institution has one Intensive Care unit which also has a high volume of trained Critical Care nurses. It also has a Training College for post-basic courses where the Critical Care nurses are trained. This institution has one Surgical ICU with forty-two Intensive Care-trained nurses. The nurses' College of Nursing is located at this institution. The college has two groups of nurses training in Critical Care Nursing at the College and four lecturers.

## 5.2. Design

A quantitative study was administered using two descriptive surveys, one for students who have participated in OSCEs and one for staff involved in conducting OSCEs. A survey using two questionnaires, was designed to obtain information from the above population directly regarding the, distribution, and interrelations of variables within those populations (Polit and Hungler 1997). A survey questionnaire asked the respondents to report their perceptions, attitudes, opinions or behaviours in terms of participating or conducting OSCEs. The advantages of using a survey research is that it is an economical way of collecting a large amount of information from a large population (Polit and Hungler 1997). Descriptive studies can be used to identify problems in current practice, to determine participants' experiences and to justify current practice (Polit and Hungler 1997).

## 5.3. Population and Sampling

### 5.3.1 Student Population and Sampling

All 22 students currently completing their final year of study in Critical Care and who had been exposed to OSCE as an assessment method were included in the study. No sampling was done.

### 5.3.2. Staff Population and Sampling

Convenience sampling was done in selecting two training institutions in KZN. The population included all Critical Care graduates who had experienced an assessment of

clinical competence using the OSCE as an assessment tool during their Critical Care training

in the two selected institutions in KZN, and who had completed their training in 2005-

2011,namely 143 (Table 2).  No sampling was done as the entire target population was

included.

**Table 2: Population of the participants**

| Intensive care | Hospital 1 | Hospital 2 |
|---|---|---|
| Transplant  Unit ICU 1 | 2 | |
| Neurosurgery and General ICU 2 (a and b) | 22 | |
| Cardiothoracic ICU 3 | 26 | |
| Paediatric ICU 4 | 15 | |
| Coronary Care Unit CCU | 8 | |
| Trauma ICU | 10 | |
| Burns Adult | 5 | |
| Neonatal ICU | 8 | |
| Haemodialysis | 3 | |
| Burns Paediatric Unit | 2 | |
| Surgical | | 42 |
| TOTAL | 101 | 42 |
| TOTAL POULATION | 143 | |

## 5.4. Tools

Two tools were used, namely a questionnaire for students, and a questionnaire for

lecturers and Critical care staff.

### 5.4.1 Questionnaire for Students

A structured questionnaire was used for the students.  This questionnaire was adapted

from the study by (Bagri, Zaw et al. 2009) , which was an instrument to measure Geriatric

Medicine fellows` experiences and attitudes towards an Objective Structured Clinical

Examination.  To suit the critical care nurse`s practice in the South African context the items

in the questionnaire were grouped into four factors related to the systems framework and

pilot testing it in the South African context

- SECTION A- (Questions 1-7c) focused on the demographic data of students who were registered for Critical Care Nursing Science in 2010-2011. These questions were combined and comprised multiple response questions.

- SECTION B- used a five-point Likert scale to measure the perceptions and attitudes of Critical Care student nurses on the use of OSCE as an assessment method to measure their clinical competencies. Questions 1-5 focused on the perspectives of students towards the effect of OSCE's content on the success of OSCE to measure clinical competences. Questions 6-8 focused on the effect of organisational/environmental factors in OSCE as an assessment tool. Questions 9-12 looked at the processes of OSCE. Questions 13-18 focused on the overall effects of individual factors on the success of OSCE as a tool to measure clinical competence. These questions were all closed ended questions.

### 5.4.2 Questionnaire for Staff

A structured questionnaire was used for the staff based on South African critical care competencies. The questionnaire was adapted on the Epstein and Hundert (2002) tool which measured competences for medical profession. It was modified by mapping the critical care competences as per critical care curriculum in one Provincial College of Nurses in Durban, to suit the South African context.

- SECTION A- (Questions 1 – 7b) focused on the demographic data of Critical Care lecturers and qualified Critical Care nurses who were still in the field. It comprised multiple response questions.

- SECTION B- focused on the competencies that could be assessed using OSCE as an assessment method in the critical situation. This questionnaire focused on the lecturers' and the qualified Critical Care nurses' attitudes on the use of OSCE as assessment method, using Miller`s model of assessment, and also their attitudes towards the type of the patients (real or simulated patients) which OSCE could use. This section covers Questions 1-24.Questions 25 and 26 looked at the opinions of staff regarding whether they would prefer OSCE to be changed to another type of assessment, and which assessment method they felt was the best for assessing clinical skills. Question 1 -23 and closed ended questions and question 24-26 at the end of the instrument were open ended questions.

## 5.5. Validity and Reliability of Tools

### 5.5.1 Reliability

Reliability refers to the degree to which an instrument produces reproducible results in repeated tests (Joubert and Ehrlich 2007).

**Pilot Study**: The pilot study used five of the participating qualified Critical Care nurses to complete the questionnaires twice over a two week period in order to establish test-retest reliability. The first set of questionnaires was distributed and was collected after three days. The second questionnaire was distributed a week after the initial ones were collected and this questionnaire was also collected after three days. Five students from Critical Care Nursing Science were requested to complete the questionnaire twice, and these

questionnaires were distributed to students who were located in the ICUs by the researcher due to convenience.  This also enabled the researcher to identify students who were given questionnaires which were collected after three days. A week later, the same set of students was given the same questionnaires to complete and these were collected after three days.  The participants were requested to complete these questionnaires during their lunch-breaks.  The participants used in the pilot study were marked to enable them to be excluded from the main population, but since data in the pilot study did not lead to the modification of materials or procedures, the data was incorporated into the main study.

**Internal consistency:** This was estimated by determining the degree to which each item in a scale correlated with each item (Terre Blanche, Durrheim et al. 2006 :154).  This is similar to determining the association between a series of different split half tests and it controls for possible systematic differences between one half of a test and another (Terre Blanche, Durrheim et al. 2006 :154).  The coefficient that is used to measure the internal reliability of the instrument is called Cronbach`s alpha coefficient and is based on the inter-item correlation (Maree 2007).  If the items are strongly correlated with each other, their internal consistency is high and the alpha coefficient will be close to one. If on the other hand, the items are poorly formulated and do not correlate, the alpha coefficient will be close to zero (Maree 2007).

### 5.5.2 Validity

Validity refers to the extent to which the questionnaire actually measures what it is intended to measure.  It is a determinant of the extent to which the instrument actually

reflects the abstract construct or concept being examined(Burns and Grove 2009).  In this study, both face validity and content validity were tested.

**Face validity**: Face validity refers to the extent to which the measure or question makes sense to those knowledgeable about the subject (Joubert and Ehrlich 2007).  These questionnaires were scrutinised by experts in the faculty, including the research supervisor, the lecturers in Nursing Education and the Faculty Research Committee.

**Content validity***: Content validity is an assessment of how well the instrument represents all the different variables to be measured. In this study, the researcher used content validity to determine the validity of data collection instruments based on the Framework(Burns and Grove 2009).  (Polit and Hungler 1997; Burns and Grove 2009) assert that the content validity of the instrument can be achieved by referring to literature pertinent to the topic. The tables below set out the validity of the questionnaires against the set objectives and the research framework.

Table 3: Students Questionnaire Content Validity

| Objective | Framework component | Questionnaire and Question number |
|---|---|---|
| To measure the attitudes and perceptions of Critical Care student nurses towards | | |
| 1.  The use of OSCE as a tool to measure clinical competence. | Content factor | 1-5 |
| 2.  The perceived effect of OSCE processes to address validity and reliability. | Organisational factors Process factors | 6-8 9-12 |
| 3.  The experiences of students with the use of OSCE as an assessment method. | Individual factors | 13-18 |

**Table 4: Lecturer Questionnaire Content Validity**

| Objectives | Framework | Questions |
|---|---|---|
| To measure the attitudes and perceptions of Critical Care staff towards | | |
| 1. Appropriateness of OSCE as a tool to measure clinical competence. | Miller(1990) conceptual model of assessment | 24-26 |
| 2. Appropriateness of OSCE as a tool to measure knowledge content areas. | Miller(1990) conceptual model of assessment | 1-17 and 19 |
| 3. Appropriateness of OSCE as a tool to measure professional qualities | Miller(1990) conceptual model of assessment | 18<br>20-23 |
| To measure if there is a relationship between gender, experience and qualifications and Critical Care student attitudes. | | Demographic data-1-6 |

## 5.6. Data collection process

Permission was obtained from the Ethical Committee, KZN Health Department. Nurse Managers of both institutions, the Principal of the Nursing College, nurse educators, operational managers of all Intensive Care Units; students registered for the Critical Care course and qualified Critical Care nurses were approached.  The purpose of the study and its significance was discussed with them and they were requested to participate voluntarily in the study.  Lunch breaks for day and night nurses were used to collect the data in the ICUs, but in the College with the permission of the Principal, the questionnaires were distributed to the students while they were located in the ICUs.  The researcher personally distributed the questionnaires and they were collected when they had been completed.  Confidentiality was maintained by the researcher.  The researcher assigned codes and numbers to each

questionnaire so that it was not possible to link the questionnaire to an individual respondent.

## 5.7. Data analysis

Questionnaires were the primary source of collecting data.  Two questionnaires were used, one for students and one for qualified staff. Data was collected on paper and then entered into SPSS VERSION 19 which was used to capture and analyse the data. All the questionnaires were scrutinised for completeness and illegibility.  Data was coded and entered and cleaned in SPSS. Response rates and completion rates for tools were calculated, and samples were described using descriptive statistics.

### 5.7.1 Data analysis Student Questionnaire

A structured questionnaire was used to measure the students' perceptions towards the use of the OSCE using a Likert scale.  The Likert scale data was coded 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.  The Likert Scale data was re-coded to Agree (Strongly Agree and Agree) and Disagree (Neutral, Disagree and Strongly Disagree).

*Analysis included*: Response rates for questionnaires and demographic data which were described using descriptive statistics of frequencies and percentages.  The data were reported against four factors affecting the use of OSCEs, namely content, organisational factors, process factors and individual factors.  For each construct the following analysis was done.  Levels of agreements for each items was calculated using frequencies and percentages and individual items were ranked and compared against a 75% level of

agreement. Individual ratings were combined to create a total score for each construct. Means (95%CI), Medians and Standard Deviations were calculated. To allow for comparison between factors, standard scores out of 100 were calculated. Total scores and component scores and individual items were compared by demographically categorical variables using the Mann-Whitney Independent Samples test.

## Data analysis Student Questionnaire

Response rates for questionnaires, demographic data and competencies were described using descriptive statistics of frequencies and percentages. The questionnaire asked the staff to rate their agreement as to the appropriateness of 23 competencies. The number of "Yes" responses for each competency on the questionnaire was counted, and frequencies and percentages for each competency were produced. For the appropriate competencies as identified by a YES, the level of assessment and type of patient was quantified and reported by counts and percentages.

## 5.8. Ethics

Permission to conduct the study was obtained from those in charge of the institutions as well as ethical clearance from the university. After being granted permission to conduct the study, the following ethical principles were employed.

- **Obtaining the informed consent:** Informed consent was obtained from the participants. This includes Critical Care student nurses, qualified Critical Care nurses in practice and lecturers of Critical Care nurses. All the participants were familiar with the use of OSCE, as assessors, or as people who had had personal exposure to

this assessment tool. (Joubert and Ehrlich 2007) identified three elements that characterise informed consent and these elements were monitored.

- **Capacity:** meaning the research participants must be legally and mentally competence to participate in a proposed research. The National Health Act, No. 61 OF 2003 has stipulated the age requirements for the research participants. For this study all the participants were in the required age and mentally capable to make informed decision.

- **Disclosure:** the researchers should disclose to the research participants all relevant information about the proposed study, including its purpose, potential risks, benefits and social implications. If this is impossible, the researcher must seek guidance from the ethical committee. The participants in this study were advised that the main significance of this study was to add to the body of knowledge about the use of OSCE as an assessment tool and that there were no risks involved in partaking in this research study.

- **Understanding:** The researchers should ensure that the participants understand the disclosure. In this study English was used as the medium of exchange. The language used in the consent form was simple and easy for the participants to understand.

- **Voluntary nature***:* The consent was explained verbally to the participants to ensure that when they signed, it constituted informed consent (Brink, 2003). Willing participants were asked to sign the consent form after explanation of the aims of the study, how the study was to be conducted, and lastly how the results would be used. The participants were made aware that they had a choice in participation, meaning that each participant in the study had the right to choose whether to participate or not to participate. This choice did not end once the consent was signed. The

participants were informed that they had the right to withdraw from the study at any stage, before their questionnaires were put in the collection box, without explanation and with no penalty.  The participants were informed that withdrawal from the study was not going to affect the relationship with the researcher or their lecturers or the college.  The participants were assured that there were no direct benefits.

- **Confidentiality:** It is the duty of the researcher to ensure that issues of privacy and confidentiality are acknowledged throughout the inquiry and even after the results are published.  Confidentiality refers to the investigator's responsibility to protect data collected during the course of the project from being divulged or being made available to other persons (Brink, 2003).  The researcher in this study did not link a specific response or behaviour to a particular research participant.

- **Anonymity:** All participants in this study remained anonymous, no names were used.

- **Honesty:** The researcher was totally honest with the students, Critical Care nurses and lecturers in this study.  The students were informed that their participation in the study would not affect their marks in the Critical Care course.

# CHAPTER 6

# RESULTS

## 6.1. Introduction

The usefulness of the OSCE in Critical Care education as a valid assessment tool was measured using two perspectives, one from students and one from staff. The students' perceptions towards the use of OSCEs were measured using 18 items ($\alpha$=0.55) on an ordinal scale from 'strongly agree' to 'strongly disagree'. Using this framework, perception of the appropriateness of the use of the OSCE for content ($\alpha$=0.7). The items that were included in the content were: *Relevance to training, Tasks reflected, Balance of Content and Range of knowledge.* For the organisational ($\alpha$=0.7), the items included were: *The OSCE exam was structured in a well-organised manner, Instructions at all stations were clear and Standardised patients were realistic.* For the processes ($\alpha$=0.2) of the OSCE ,the items were: *The faculty feedback was helpful in highlighting areas of weakness, Passing or failing an exam is a true measure of clinical skills, OSCE scores were standardised and Feedback was detailed enough.* For the individual ($\alpha$=0.1), the items analysed were: *I will incorporate what I have learned in OSCE into clinical practice, I learned a great deal from the OSCE, Gender and personality did not affect my scores, Clinical assessment may be useful but there are other methods, Inter-patient and inter-evaluator variability affect OSCE scores and OSCE exams produces the same anxiety as other exams.* To compare the factors, the total scores for each of the factor were converted to standard scores out of a 100 to enable comparisons

and a standard of 75 was used as a guide for good agreement.  Secondly, the perceptions of staff about the validity of the OSCE for assessing Critical Care Competencies were measured using a total of 23 skills. The results are reported accordingly.

## 6.2. Perceptions of the students experience of the use of OSCE as a clinical tool

Overall 81.8% of students (18) felt that the experience of using the OSCE as a clinical tool was worthwhile. The perceptions of students' experiences of the use of the OSCE as an assessment tool was further discussed and analyzed in terms of whether Content, Process, Organizational and Individual factors influenced their perceptions of the use of the tool.

### 6.2.1 Demographics

All 22 (100%) Critical Care final semester student nurses answered the questionnaires. Nineteen of these students were females (86.4%) and three were male (13.6%), ranging in age from 29 to 57 years of age (mean 37.9 ± 7.5).  Nine students (40, 9%) had no post-graduate qualification, 10 (45.5%) students had one post-graduate qualification, one student had two post-graduate qualifications and two students had more than two qualifications.

On average, students had two years' experience in Intensive Care Units (2.1 years ± .77), with just under a half, 9 (40.9%) having 2 to 6 years, 8 (36.4%) above 6years and 5 (22.7%) students had less than two years 'experience.

Most of the students had done an OSCE in the last 3 years, with 18 students (18.8%) having done at least 1 OSCE, 6 students 2OSCEs (27.3%), one student had done 3OSCEs, two

students had done 4OSCEs (9.4%), and only one student had done 5OSCEs. The data also shows that 20 (90.9%) students had done 2OSCEs during their Critical Care course, one student had done 1OSCE during the Critical Care course (4.5%) and one student had done 4OSCEs during a Critical Care course (4.5%).

## 6.2.2 Perceptions of Content Factors

Perceptions of content were measured using six items, namely whether the content of the stations was relevant to the level of training, whether the tasks reflected skills learned, whether the wide range of knowledge covered by the OSCE had a good balance of subjects and whether, overall, the OSCE was a worthwhile exercise.

The highest level of agreement was for "Relevance to training" with 20 of the 22 students agreeing (90.9%), with the lowest level of agreement was for "range of knowledge" with only 16 (72.7%) of the students agreeing. This was also the only item of where the level of agreement was the below 75%.Table 5shows the level of agreement from students (% agreed) with each of the items.α

**Table 5: Level of Agreement for Perceptions of Content**

| Content Item | No (% Agree) |
|---|---|
| Relevance to training | 20 (90.9%) |
| Tasks reflected | 18 (81.8%) |
| Balance of Content | 18(81.8%) |
| Range of knowledge | 16 (72.7%)* |

*Agreement level below 75%

Using a standard score out of a 100, the students' average agreement score for Content was 81.8 ± 26.1 (median 100, 95%CI 70.2-93.4).

### 6.2.3. Perceptions of organisational/environmental factors

Perceptions of organisational and environmental factors were measured using three items, namely whether the OSCE exam was structured in a well-organised manner, instructions at all stations were clear, and standardised patients were realistic.

There was a high level of agreement that the OSCE was structured in a well-organised manner 19 (86.4%), though fewer students felt that standardised patients were realistic 15 (68.2%).  This was also the only items with agreement levels below 75%. Table 6 shows the level of agreement from students with each of the items.

Table 6: Level of Agreement for Perceptions of organizational /environmental factors

| Perceptions of organisational/environmental factors | No (% Agree) |
|---|---|
| The OSCE exam was structured in a well-organised manner | 19(86.4%) |
| Instructions at all stations were clear | 19(86.4%) |
| Standardised patients were realistic | 15(68.2%)* |

*Agreement level below 75%

Using a standard score out of a 100, the students' average agreement score for Environmental factors was 80.3% ± 32.0 (median 100, 95%CI 66.1-94.5).

### 6.2.4. Perceptions of processes of administrating an OSCE

Perceptions of process factors were measured using four items, namely whether passing or failing an examination is a true measure of clinical skills; whether the faculty feedback had been helpful in highlighting the areas of weakness; whether feedback was more detailed and whether OSCE scores were standardised.

Process items had low levels of agreement with none of items reaching 75%. The highest agreement was for faculty feedback which most students, 16(73.0%) felt was helpful in highlighting the areas of weaknesses, though fewer students felt that feedback was detailed enough, 7(31.8%). There was also moderate agreement about the standardisation of OSCE scores (15, 68.2%). Table 7 shows the level of agreement of students with each of the items.

**Table 7: Level of Agreement for Perceptions of Process**

| Process of OSCE | No(%Agree) |
|---|---|
| The faculty feedback was helpful in highlighting areas of weakness | 16(73.0%) |
| Passing or failing an exam is a true measure of clinical skills | 15(68.2%) |
| OSCE scores were standardised | 15(68.2%) |
| Feedback was detailed enough | 7(31.8%) |

*Agreement level below 75%

Using a standard score out of 100, the students' average agreement score for process factors was 60.2 % ± 25.2 (median 63.0, 95% CI 49.0-71.4)

## 6.2.5. Perceptions of the Individual Factors

Perceptions of individual factors were measured using six items, namely "I will incorporate what is learned in the OSCE into clinical/teaching practice, I have learned a great deal from OSCE, OSCE exams produce the same anxiety as other exams, gender and personality did not affect my scores, clinical assessment may be useful but there are other methods, and inter-patient and inter-evaluator variability did not affect OSCE scores".

Using a standard score out of 100, the students' average agreement score for individual factors was 64.3 % ± 18.0 (median 67.0, 95% CI 56.0-72.3).  Table 8 shows the level of agreement of students with each of the items.  There was a high level of agreement as most students believe they will incorporate what has been learned in the OSCE into clinical practice, 20 (90.9%), and they also believe that they have learned a great deal from the OSCE, 20 (90.9%), while fewer students felt that inter-patient and inter-evaluator variability affect the OSCE score, 9 (40.9%), and a few students believe that OSCE exams produce the same anxiety as other exams, 9 (40.9%).

**Table 8: Level of Agreement for Perceptions of Individual Factors**

| Individual | No(%Agree) |
|---|---|
| I will incorporate what I have learned in OSCE into clinical practice | 20(90.9%) |
| I learned a great deal from the OSCE | 20(90.9%) |
| Gender and personality did not affect my scores | 17(77.3%) |
| Clinical assessment may be useful  but there are other methods | 10(45.5%) |
| Inter-patient and inter-evaluator variability affect OSCE scores | 9(40.9%) |
| OSCE exams produces the same anxiety as other exams | 9(40.9%) |

### 6.2.6. Overall perceptions' score

The overall agreement score was 71 ±14.4 (range 33.3 to 88.9) with the median agreement average scores for the factors but this may be due to the small sample size (Figure 3) score reaching 75.
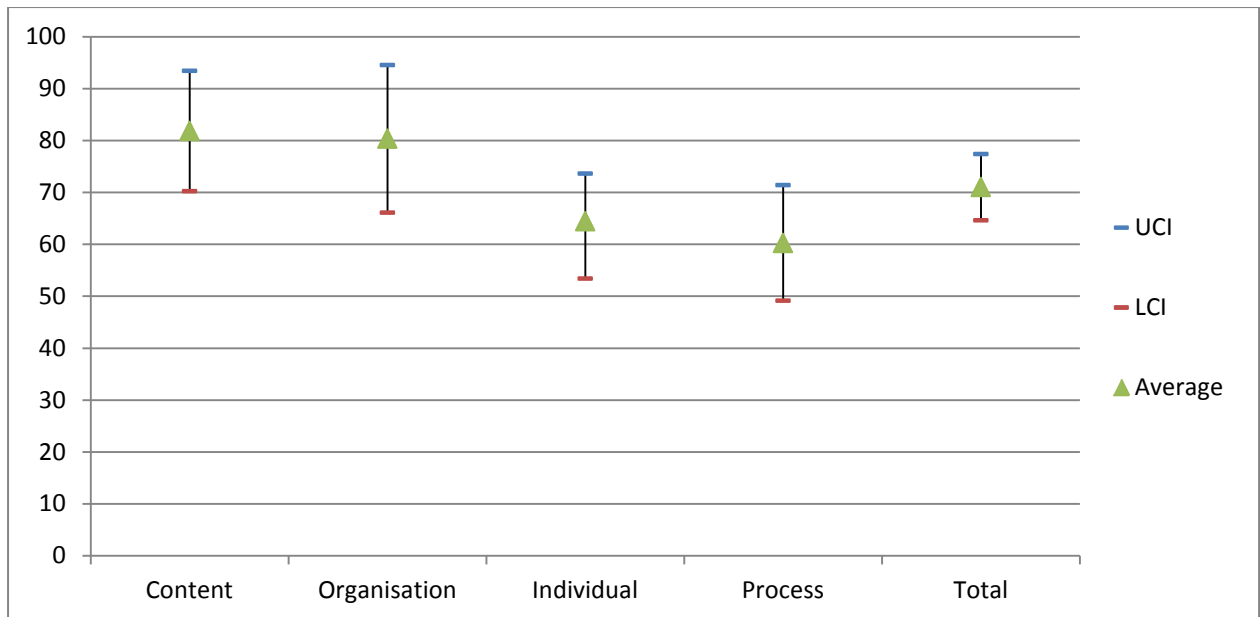
**Figure 3: Comparison of Perception Factors**

Comparing the standard scores for all the factors, the highest level of agreement was for content, with process agreement levels being the lowest. There were no significant difference between the average scores (95% CI) for the factors but this may be due to the small sample size (Figure 3).

There were no significant differences in any of the mean standard scores by gender (p=.146 to p=.921), qualification (p=.191 to p=.823), experience with OSCE (p=.123 to p=.553) and years of experience (p=.248 to p=.992) (Tested using Mann-Whitney Independent Samples Tests). There was a significant difference (Mann-Whitney Independent Samples Tests, *U*=2.3, p=.021) in the total score between people with 1 exposure to courses (Mean=69.2 ± 11.8), and people with 2 exposures to OSCE (Mean=78.4 ±24.5). This difference was driven by differences in the mean Process perceptions scores of 56.8 ±17.7 and 86.1 ±18.2 respectively, (*U*=2.2, p=.038).

## 6.3. Perceptions of the staff regarding the use of OSCE as a clinical tool

Out of 143 qualified Critical Care nurses who were approached to complete the questionnaire, 52 (36.4%) completed the questionnaires. Thirty-nine (38.6% response rate) were from Hospital 1 and 16 (33.3% response rate) were from Hospital 2.

### 6.3.1 Demographics

The participants were predominantly female 41 (78.8%), with only 11(21.2%) being males. Their ages ranged from 25 to 62 years (mean 38.1 years, ±8.2%). The majority of the participants had one post-graduate qualification, 24 (46.2%), while 15 (28.8%) participants had two post-graduate qualifications and 13 (25.0%) had more than two post-graduate qualifications. Most participants were junior professional nurses 31 (59.6%), 14 (26.9%) were Chief professional nurses, and 7 (13.5%) were senior professional nurses.

Most participants had more than 6 years nursing profession experience, 34 (65.0%), 15 (28.8%) had 2-4 years' experience, and only three (5.8%) had less than 2years' experience (mean 2.6 years, ± 0.6). All 52 participants had previous experience of OSCEs (either by conducting them or participating in them) with an average of 2.2 (±0.8) OSCE's per participant. Twenty (38.5%) respondents reported having more than three OSCE exposures, 21 (40.4%) had two exposures and 11 (21.2%) were exposed to an OSCE for the first time during the Critical Care course

### 6.3.2 Perceptions of usefulness of OSCE

In asking what their perceptions of the use of OSCES were in terms of the objectives for Critical Care outcomes for which OSCES can be used to evaluate students, 47(90.2%) agreed that OSCES were appropriate for Knowledge and Understanding Critical Care objectives, 43(82.7%) agreed they were useful for intellectual Critical Care objectives and

45(86.5%) for practical Critical Care objectives. Forty-four (84.6%) agreed that OSCES were appropriate for evaluation of all three kinds of Critical Care objectives, namely practical, intellectual and knowledge.

Half of the participants (26, 50%) reported that they felt that there was no need to change the OSCE for the assessment of Critical Care nurses in the ICU. Of the 35(67%) participants who preferred the OSCE to be changed, 13 of the 35 suggested the use of comprehensive assessments and four suggested any other type of assessment.

## 6.3.3. Perceptions of relevance of using OSCE to evaluate specific Critical Care competencies or skills

The researcher identified a total of 23 Critical Care skills/competencies central to Critical Care training and asked staff to agree to the relevance of these skills for assessment using an OSCE as the assessment tool. The number of agreements for each skill was quantified and if relevant was rated using the framework of OSCE level of Assessment and whether real or simulated patients were appropriate.

Out of 23 skills suggested by the researcher, participants agreed that most of the skills (n=19/23, 82.6%) were relevant for assessment using OSCE in a Critical Care course. Agreement levels for individual skills ranged from 65.4% to 96.2% (Table 8), with the highest level of agreement for *Interpretation of diagnostic test* (96.2%), followed by *Cardiopulmonary resuscitation* (94.2%), *Performing neurological observation*(90.4%),*Nursing care of patient with raised ICP* (90.4%) and *Applying laboratory results method* (90.4%).

**Table 9: Ranking of Relevance of Critical care Competencies for OSCE Assessment**

| Competencies | Number (% Agree) |
|---|---|
| 1. Interpretation of diagnostic test(ECG) | 50(96.2%) |
| 2. Cardiopulmonary resuscitation | 49(94.2%) |
| 3. Performing neurological observation | 47(90.4%) |
| 4. Nursing care of patient with raised ICP | 47(90.4%) |
| 5. Applying laboratory results method | 47(90.4%) |
| 6. Obtaining information from clinical history | 46(88.5%) |
| 7. Monitoring intake and output | 45(86.5%) |
| 8. Performing of cardioversion | 44(84.6%) |
| 9. Assessment and arriving at nursing diagnosis | 44(84.6%) |
| 10. Knowledge of basic mechanisms | 44(84.6%) |
| 11. Monitoring the cardiac output | 42(80.8) |
| 12. Education pt. for peritoneal dialysis | 41(78.8%) |
| 13. Measuring abdominal distension | 40(76.9%) |
| 14. Nursing care of ventilated patient | 38(73.1%) |
| 15. Detecting pacemaker dysfunction | 35(67.3%) |
| 16. Communication with patients | 34(65.4%) |
| 17. Professional relationship with patient | 31(59.6%) |
| 18. Knowledge of special topics | 31(59.6%) |
| 19. Professional development of self & others | 27(51.9%) |
| 20. Physical examination | 22(42.3%) |
| 21. Relationship building and professionalism | 21(40.4%) |
| 22. Nursing patient on haemodialysis | 20(38.5%) |
| 23. Contributing to research-based practice | 13(25.0%) |

Only four skills were identified by participants as not relevant, namely *Physical examination, Relationship building and professionalism, Nursing patient on haemodialysis* and *Research* with agreement levels below 50%, with *Research* being the lowest (25%). Each of the 23 skills evaluated are reported on separately below in order of relevance.

## 6.3.4. Types of skills, levels of assessment and types of patients that can be used for assessment.

### 6.3.4.1. Interpretation of diagnostic test (ECG)

Nearly all of the participants (50, 96.2%) agreed that the *Interpretation of diagnostic tests (ECG)* in Critical Care is a valid skill which can be assessed using an OSCE (Table 9).

Most of the participants agreed it was valid to use the OSCE to test knowledge of *Interpretations of a diagnostic tests* (ECG) (46, 88.5%), knowledge of *How to Interpret a diagnostic test (ECG)* (45,86.5%) and how to *Demonstrate the interpretation of a diagnostic test (ECG)* (44, 84 6%). However, just over half (30, 57.7%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform interpret an ECG in a real life situation (Table 10).

In recording participants' choice between using real and simulated patients during an OSCE for the *interpretation of a diagnostic test* (ECG), 42 (80.2%) indicated the choice of real patients compared to 33 (63.5%) who indicated they would prefer to use simulated patients, while 28 indicated the use of both (Table 10).

Table 10: Levels of assessment and types of patient- Interpretation of diagnostic test (ECG)

| Levels of Assessment | No. (% Agree) |
| --- | --- |
| Interpretation of diagnostic test(ECG) KNOWS | 50(96.2%) |
| Interpretation of diagnostic test(ECG) KNOWS HOW | 45(86.5%) |
| Interpretation of diagnostic test(ECG)SHOWS HOW | 44(84.6%) |
| Interpretation of diagnostic test(ECG) DOES | 30(57.7%) |
| **Real or simulated patients** | |
| Interpretation of diagnostic test(ECG) SIMULATED | 33(63.5%) |
| Interpretation of diagnostic test(ECG) REAL PATIENT | 42(80.2%) |

### 6.3.4.2. Cardiopulmonary Resuscitation

*Cardiopulmonary resuscitation*: Of the participants, 49 (94.2%) felt that *cardiopulmonary resuscitation* is a valid skill which be assessed using an OSCE (Table 9). Most of the participants felt that using the OSCE to test whether a student can perform *cardiopulmonary resuscitation* was valid for assessing knowledge, 48(92.3%), knowledge of how to *perform a cardiopulmonary resuscitation,* 46(88.5%), how to demonstrate the *performance of a cardiopulmonary resuscitation,* 46(88.5%), but only 21 (40.4%) felt that

passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 11).

In recording participants' choice between using real and simulated patients during an OSCE for *performing a cardiopulmonary resuscitation,* 15 (28.8%) indicated a preference for the use of real patients compared to 44 (84.6%) who indicated they would use simulated patients, while 11 indicated the use of both (Table 11).

Table 11: Levels of assessment and types of patients: cardiopulmonary resuscitation

| Levels of Assessment | No(%)Agree |
|---|---|
| Cardiopulmonary resuscitation KNOWS | 48(92.35) |
| Cardiopulmonary resuscitation KNOWS HOW | 46(88.5%) |
| Cardiopulmonary resuscitation SHOW HOW | 46(88.5%) |
| Cardiopulmonary resuscitation DOES | 21(40.4%) |
| **Real or simulated patients** | |
| Cardiopulmonary resuscitation SIMULATED | 44(84.6%) |
| Cardiopulmonary resuscitation REAL PATIENT | 15(28.8%) |

### 6.3.4.3. Performing neurological observation

*Performing neurological observation*: Of the participants, 47 (90.4%) felt that *performing a neurological observation* is a valid skill which can be assessed using an OSCE (Table 9). Most of the participants felt that using the OSCE to test for *performing a neurological observation* on a patient was valid for assessing knowledge, 45 (86.5%), knowledge of how to *perform a neurological observation* on a patient, 45(86.5%), how to demonstrate the *performance of a neurological observation* on a patient, 41 (78.8%), but only 30 (57.7%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 12).

In recording participants' choice between using real and simulated patients during an OSCE for *performing a neurological observation,* 40 (76.9%) indicated they would choose

real patients compared to 35 (67.3%) who indicated they would use simulated patients,

while 28 indicated the use of both (Table 12).

**Table 12: Levels of assessment and types of patients: performing neurological observation**

| Levels of Assessment | No(%) Agree |
| --- | --- |
| Performing neurological observation KNOWS | 45(86.5%) |
| Performing neurological observation KNOWS HOW | 45(86.5%) |
| Performing neurological observation SHOW HOW | 41(78.8%) |
| Performing neurological observation DOES | 30(57.7%) |
| **Real or simulated patients** | |
| Performing neurological observation SIMULATED | 35(67.3%) |
| Performing neurological observation REAL PATIENT | 40(76.9%) |

### 6.3.4.4. Nursing care of patient with raised ICP

*Nursing care of patient with raised ICP*: Of the participants, 47 (90.4%) felt that *nursing care of a patient with raised ICP* is a valid skill which can be assessed using an OSCE (Table 9).  Most of the participants felt that using the OSCE to test for *nursing care of a patient with raised ICP* was valid for assessing knowledge, 44(84.6%), knowledge of how to *nurse a patient with raised ICP,* 44(84.6%), how to demonstrate the *nursing care of a patient with raised ICP,* 42(80.8%) but only 28 (53.8%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 13).

In recording participants' choice between using real and simulated patients during an OSCE for *nursing care of a patient with raised ICP,* 40 (76.9%) indicated the use of real patients compared to 37 (71.2%) who indicated they would prefer to use simulated patients, while 28 indicated the use of both (Table 13).

| Levels of Assessment | No(%)Agree |
|---|---|
| Nursing care of patient with raised ICP KNOWS | 44(84.6%) |
| Nursing care of patient with raised ICP KNOWS HOW | 44(84.6%) |
| Nursing care of patient with raised ICP SHOWS HOW | 42(80.8%) |
| Nursing care of patient with raised ICP DOES | 28(53.8%) |
| **Real or simulated patients** | |
| Nursing care of patient with raised ICP SIMULATED | 37(71.2%) |
| Nursing care of patient with raised ICP REAL PATIENT | 37(71.2%) |

## *6.3.4.5. Applying laboratory results method:*

Of the participants, 47 (90.4%), felt that *applying the laboratory results method* is a valid skill to be assessed using an OSCE (Table 9).  Most of the participants felt that using the OSCE to test *applying the laboratory results method* correctly was valid for assessing knowledge, 46(88.5%), knowledge of how to apply the laboratory results method correctly, 44(84.6%), how to demonstrate the application of the laboratory results method correctly, 43(82.7%),while only 28 (53.8%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 14)

In terms of an assessment of *applying laboratory results correctly* 36 (69.2%) of the participants preferred exhibiting this skill on simulated patients, whereas 36 (69.2%) preferred the skill to be performed on real patients, while only 28 indicated the use of both (Table 14).

Table 14: Levels of assessment and types of patients: Applying laboratory results.

| Levels of Assessment | No (%)Agree |
|---|---|
| Applying laboratory results method KNOWS | 46(88.5%) |
| Applying laboratory results method KNOWS HOW | 44(84.6%) |
| Applying laboratory results method SHOW HOW | 43(82.7%) |
| Applying laboratory results method DOES | 28(53.8%) |
| **Real or simulated patients** | |
| Applying laboratory results method SIMULATED | 36(69.2%) |
| Applying laboratory results method REAL PATIENT | 36(69.2%) |

### 6.3.4.6. Obtaining information from clinical history

*Obtaining information from clinical history and notes:* Of the participants, 46 (88.5%) felt that *obtaining information from clinical history and notes* is a valid skill which can be assessed using an OSCE (Table 9). Most of the participants felt that using the OSCE to test *obtaining information from clinical history and notes* was valid for assessing knowledge, 45(86.5%), knowledge of how to obtain information from clinical notes, 45 (846.5%), how to demonstrate *obtaining information from clinical history and notes,*41 (78.8%), however only 28 (53.8%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 15).In recording participants' choice between using real and simulated patients during an OSCE for *obtaining information from clinical notes,* 39 (75%) indicated a preference for using real patients compared to 37 (71.2%) who indicated they would choose simulated patients, with 30 who indicated the use of both (Table 15).

Table 15: Levels of assessment and typed of patients: obtaining information from clinical history and notes

| Levels of Assessment | No(%)Agree |
|---|---|
| Obtaining information from clinical history KNOWS | 45(86.5%) |
| Obtaining information from clinical history KNOWS HOW | 45(86.5%) |
| Obtaining information from clinical history SHOW HOW | 41(78.8%) |
| Obtaining information from clinical history DOES | 28(53.8%) |
| **Real or simulated patients** | |
| Obtaining information from clinical history SIMULATED | 37(71.2%) |
| Obtaining information from clinical history REAL PATIENT | 39(75.0%) |

### 6.3.4.7. Monitoring intake and output

*Monitoring intake and output*: Of the participants, 45 (86.5%) felt that *monitoring intake and output* is a valid skill which can be assessed using an OSCE (Table 9). Most of the participants felt that using the OSCE to test students for *monitoring intake and output* was valid for assessing knowledge, 43(82.7%), knowledge of how to *monitor intake and output*

of a patient, 43(82.7%), how to demonstrate the *monitoring of intake and output*,

43(82.7%), but only 34 (65.4%) felt that passing this skill in an OSCE examination would

mean that a person would be able to perform the same skill in a real life situation (Table 16).

In recording participants' choice between using real and simulated patients during an

OSCE for *monitoring intake and output,* 39 (75%) indicated a preference for using real

patients compared to 31 (59.6%) who indicated they would prefer to use simulated patients,

while 28 indicated the use of both (Table 16).

Table 16: Levels of assessment and types of patients monitoring of intake and output

| Levels of Assessment | No (%)Agree |
|---|---|
| Monitoring intake and output KNOWS | 43(82.7%) |
| Monitoring intake and output KNOWS HOW | 43(82.7%) |
| Monitoring intake and output SHOWS HOW | 43(82.7%) |
| Monitoring intake and output DOES | 34(65.4%) |
| **Real or simulated patients** | |
| Monitoring intake and output SIMULATED | 31(59.6%) |
| Monitoring intake and output REAL PATIENT | 39(75.0%) |

## 6.3.4.8. Performing a cardioversion

*Performing a cardioversion*: Of the participants, 44 (84.6%) felt that *performing a*

*cardioversion* is a valid skill which can be assessed using an OSCE (Table 9).  Most of the

participants felt that using the OSCE to test for *performance of a cardioversion* was valid for

assessing knowledge, 41 (78.8%), knowledge of how to *perform a cardioversion*, 40 (76.9%),

how to demonstrate the *performance of a cardioversion*, 38 (73.1%), but only 17 (32.7%) felt

that passing this skill in an OSCE examination would mean that a person would be able to

perform the same skill in a real life situation (Table 17).

In recording participants' choice between using real and simulated patients during an

OSCE for *performing a cardioversion,* 12(23.1%) indicated that they would use real patients

compared to 39 (75%) who indicated a preference for using simulated patients, while 7

indicated the use of both (Table 17).

| Levels of Assessment | No(%)Agree |
|---|---|
| Performing of cardioversion KNOWS | 41(78.8%) |
| Performing of cardioversion KNOWS HOW | 40(76.9%) |
| Performing of cardioversion SHOW HOW | 38(73.1%) |
| Performing of cardioversion DOES | 17(32.7%) |
| **Real or simulated patients** | |
| Performing of cardioversion SIMULATED | 39(75.0%) |
| Performing of cardioversion REAL PATIENT | 12(23.1%) |

### *6.3.4.9. Assessment and arriving at a nursing diagnosis*

Of the participants, 44 (84.6%) felt that *assessment of and arriving at a nursing diagnosis*

of a critically ill patient is a valid skill which can be assessed using an OSCE (Table 9).  Most

of the participants felt that using the OSCE to test for *assessment and arriving at a nursing*

*diagnosis* was valid for assessing knowledge, 43 (82.8%), knowledge of how to do the

assessment and how to arrive at a nursing diagnosis, 42 (80.8%), how to demonstrate doing

an assessment, 38(73.1%), however only 19 (36.5%) felt that passing this skill in an OSCE

examination would mean that a person would be able to perform the same skill in a real life

situation (Table 18).

In recording participants' choice between using real and simulated patients during an

OSCE for *assessment and arriving at a nursing diagnosis,* 35 (67.3%) indicated the choice of

real patients compared to 37 (71.2%) who indicated they would choose simulated patients,

while 28 indicated the use of both (Table 18).

| Levels of Assessment | No (%) |
|---|---|
| Assessment and arriving at nursing diagnosis KNOWS | 43(82.7%) |
| Assessment and arriving at nursing diagnosis KNOWS HOW | 42(80.8%) |
| Assessment and arriving at nursing diagnosis SHOW HOW | 38(73.1%) |
| Assessment and arriving at nursing diagnosis DOES | 19(36.5%) |
| **Real or simulated patients** | |
| Assessment and arriving at nursing diagnosis SIMULATED | 37(71.2%) |
| Assessment and arriving at nursing diagnosis REAL PATIENT | 35(67.3%) |

## 6.3.4.10. Knowledge of basic mechanisms

*Knowledge of basic mechanisms:* Of the participants, 44 (84.6%), felt that *knowledge of basic mechanisms* is a valid skill which can be assessed using an OSCE (Table 9). Some participants felt that using the OSCE to test *knowledge of basic mechanisms* was valid for assessing knowledge, 42 (80.8%), how to *knowledge of basic mechanisms* can be used 40(76.9%), how to demonstrate the *knowledge of basic mechanisms,* 37 (71.2%), but only 32 (61.5%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table19).

In recording participants' choice between using real and simulated patients during an OSCE for *knowledge of basic mechanisms,* 37 (67.3%) indicated they would choose real patients compared to 37 (71.2%) who indicated the use of simulated patients, while 30 indicated the use of both (Table 19.

Table 19: Levels of assessment and types of patients: Knowledge of basic mechanism (anatomy, immunology and microbiology, physiology and patho-physiology in relation to illness

| Levels of Assessment | No(%)Agree |
|---|---|
| Knowledge of basic mechanisms KNOWS | 42(80.8%) |
| Knowledge of basic mechanisms KNOWS HOW | 40(76.9%) |
| Knowledge of basic mechanisms SHOWS HOW | 37(71.2%) |
| Knowledge of basic mechanisms DOES | 32(61.5%) |
| **Real or simulated "patients** | |
| Knowledge of basic mechanisms SIMULATED | 37(71.2%) |
| Knowledge of basic mechanisms REAL PATIENT | 35(67.3%) |

### 6.3.4.11. Monitoring the cardiac output

*Monitoring the cardiac output*: Of the participants, 40 (80.8%) felt that *monitoring the cardiac output* is a valid skill which can be assessed using an OSCE (Table 9).  Most of the participants felt that using the OSCE to test for *monitoring the cardiac output* was valid for assessing knowledge, 41 (76.9%), knowledge of how to *monitor the cardiac output,*40 (76.9), how to demonstrate the *monitoring of the cardiac output,* 38 (73.1), but only 24 (46.2%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 20).

In recording participants' choice between using real and simulated patients during an OSCE for *monitoring the cardiac output,* 31 (59.1%) indicated they would use real patients compared to 28 (53.6%) who indicated they would prefer to use simulated patients, while 20 indicated the use of both (Table 20).

**Table 20: Levels of assessment and types of patients: monitoring the cardiac output**

| Levels of Assessment | No(%)Agree |
|---|---|
| Monitoring the cardiac output KNOWS | 41(78.8%) |
| Monitoring the cardiac output KNOWS HOW | 40(76.9%) |
| Monitoring the cardiac output SHOW HOW | 38(73.1%) |
| Monitoring the cardiac output DOES | 24(46.2%) |
| **Real or simulated patients** | |
| Monitoring the cardiac output  SIMULATED | 28(53.8%) |
| Monitoring the cardiac output REAL PATIENT | 31(59.1%) |

### 6.3.4.12. Education of patient re - peritoneal dialysis

*Education of patient for peritoneal dialysis*: Of the participants, 41 (78.8%), felt that *health education of a patient regarding peritoneal dialysis* is a valid skill which can be assessed using an OSCE (Table 9).  Some participants felt that using the OSCE to test for the provision of *health education to a patient regarding peritoneal dialysis* was valid for

assessing knowledge, 37 (71.2%), knowledge of how to provide *health education to a patient regarding peritoneal dialysis,* 38 (73.1%), how to demonstrate the provision of *health education to a patient regarding peritoneal dialysis,* 36 (69.28%) however32 (61.5%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 21).

In recording participants' choice between using real and simulated patients during an OSCE for providing *health education to a patient regarding peritoneal dialysis*, 35 (67.3%) indicated they would use real patients compared to 31 (59.6%) who indicated they would prefer to use simulated patients, while 24 indicated the use of both (Table 21).

Table 21: Levels of assessment and types of patients: health education of a patient for peritoneal dialysis

| Levels of Assessment | No(%)Agree |
|---|---|
| Education pt. re peritoneal dialysis KNOWS | 37(72.7%) |
| Education pt. re peritoneal dialysis KNOWS HOW | 38(73.1%) |
| Education pt. re peritoneal dialysis SHOWS HOW | 36(69.2%) |
| Education pt. re peritoneal dialysis DOES | 32(61.5%) |
| **Real or simulated patients** | |
| Education pt.re peritoneal dialysis SIMULATED | 31(59.6%) |
| Education pt.re peritoneal dialysis REAL PATIENT | 35(67.3%) |

### 6.3.4.13. Measuring Abdominal distension

*Measuring abdominal distension:* Of the participants, 40 (76.9%), felt that *measuring abdominal distension* is a valid skill which can be assessed using an OSCE (Table 9).  Most of the participants felt that using the OSCE to test for *measuring abdominal distension* was valid for assessing knowledge, 38 (73.1%), knowledge of how to *measure abdominal distension* of a patient, 38 (73.1%), how to demonstrate *measuring abdominal distension* of a patient, 39 (75%), however only 30 (57.7%) felt that passing this skill in an OSCE

examination would mean that a person would be able to perform the same skill in a real life situation (Table 22).

In recording participants' choice between using real and simulated patients during an OSCE for *measuring abdominal distension,* 33 (53.8%) indicated they would choose real patients compared to 28 (53.8%) who indicated they would use simulated patients, while 21 indicated the use of both (Table 22).

Table 22: Levels of assessment and types of patients measuring: abdominal distension

| Levels of Assessment | No(%)Agree |
|---|---|
| Measuring  abdominal distension KNOWS | 38(73.1%) |
| Measuring  abdominal distension KNOWS HOW | 38(73.1%) |
| Measuring  abdominal distension SHOW HOW | 39(75.0%) |
| Measuring  abdominal distension DOES | 30(577%) |
| **Real or simulated "patients** | |
| Measuring  abdominal distension SIMULATED | 28(53.8%) |
| Measuring  abdominal distension REAL PATIENT | 33(63.5%) |

### 6.3.4.14. Nursing care of ventilated patient

*Nursing care of ventilated patient:* Of the participants, 38 (73.1%) felt that *nursing care of a ventilated patient* is a valid skill which can be assessed using an OSCE (Table 9). Most of the participants felt that using the OSCE to test for *nursing care of a ventilated patient* was valid for assessing knowledge, 35 (67.3%), knowledge of how to *nurse a ventilated patient,* 34(65.4%), how to demonstrate the *nursing care of a ventilated patient,*33(63.5),however only 19 (36.5%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 23).

In recording participants' choice between using real and simulated patients during an OSCE for *nursing care of a ventilated patient,*25 (48.1%) indicated a preference for using

real patients while an equal amount, 25 (48.1%) indicated they would choose simulated patients, and 14 indicated the use of both (Table 23).

| Levels of Assessment | No(%) |
|---|---|
| Nursing care of ventilated patient KNOWS | 35(67.3%) |
| Nursing care of ventilated patient KNOWS HOW | 34(65.4%) |
| Nursing care of ventilated patient SHOW HOW | 33(63.4%) |
| Nursing care of ventilated patient DOES | 19(36.5%) |
| **Real or simulated patients** | |
| Nursing care of ventilated patient SIMULATED | 25(48.1%) |
| Nursing care of ventilated patient REAL PATIENT | 25(48.1) |

### 6.3.4.15. Detecting pacemaker dysfunction

*Detecting pacemaker dysfunction*: Of the participants, 35 (67.3%) felt that *detecting pacemaker dysfunction* is a valid skill which can be assessed by using an OSCE (Table 9). Most of the participants felt that using the OSCE to test whether a student can *detect pacemaker dysfunction* was valid for assessing knowledge, 30 (57.7%), knowledge of how to *detect pacemaker dysfunction*, 30 (57.7%), how to demonstrate the *detecting of pacemaker dysfunction,* 26 (50%), while only 16 (30.8%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 24).

In recording participants' choice between using real and simulated patients during an OSCE for, *detecting pacemaker dysfunction,* 17 (32.7%) indicated they would use real patients compared to 22 (42.3%) who indicated they would choose simulated patients, while 8 indicated the use of both (Table 24).

**Table 24: Levels of competencies and types of patients- detecting pacemaker dysfunction**

| Levels of Assessment | No(%)Agree |
|---|---|
| Detecting pacemaker dysfunction KNOWS | 30(57.7%) |
| Detecting pacemaker dysfunction KNOWS HOW | 30(57.7%) |
| Detecting pacemaker dysfunction SHOW HOW | 26(50.0%) |
| Detecting pacemaker dysfunction DOES | 16(30.8%) |
| **Real or simulated patients** | |
| Detecting pacemaker dysfunction SIMULATED | 22(42.3%) |
| Detecting pacemaker dysfunction REAL PATIENT | 17(32.7%) |

## 6.3.4.16. Effective communication with patients and colleagues

*Effective communication with patients and colleagues*: Of the participants, 34 (65.4%) felt that *effective communication with patients and colleagues* is a valid skill which can be assessed using an OSCE (Table 9).

Most participants felt that using the OSCE to test for *effective communication with patients and colleagues* was valid for assessing knowledge, 33 (63.5%), knowledge of how to have effective *communication with patients and colleagues*, 30 (57.7%), how to demonstrate *effective communication with patients and colleagues,* 32 (61.5%), but only 21 (40.4%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 25).

In recording participants' choice between using real and simulated patients during an OSCE for *effective communication with patients and colleagues* 26 (50%) indicated they would use real patients compared to 24 (46.2%) who indicated they would rather use simulated patients, with 18 indicating the use of both (Table 25).

**Table 25: Levels of assessment and types of patients: Effective communications with the patient and colleagues**

| Levels of Assessment | No(%)Agree |
|---|---|
| Communication with patients KNOWS | 33(63.5%) |
| Communication with patients KNOWS HOW | 30(57.7%) |
| Communication with patients SHOW HOW | 32(61.5%) |
| Communication with patients DOES | 21(40.4%) |

| Real or simulated patients | |
|---|---|
| Communication with patients SIMULATED | 24(46.2%) |
| Communication with patients REAL PATIENT | 26(50.0%) |

### 6.3.4.17. Respectful and professional relationship with patient and colleagues

*Respectful and professional relationship with patient and colleagues in provision of care*: Of the participants, 31 (59.6%) felt that a *respectful and professional relationship with patient and colleagues in provision of care* is a valid skill which can be assessed using an OSCE (Table 9).

Some participants felt that using the OSCE to test *respectful and professional relationship with patient and colleagues in provision of care* was valid for assessing knowledge, 29 (55.8%), knowledge of how to develop a *respectful and professional relationship with patient and colleagues in provision of care*, 27 (51.9%), how to demonstrate a *respectful and professional relationship with patient and colleagues in provision of care,* 25 (48.1%), but only 15 (28.8%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 26).

In recording participants' choice between using real and simulated patients during an OSCE for *respectful and professional relationship with patient and colleagues in provision of care*, 22 (42.3%) indicated the choice of real patients while an equal number, 22 (42.3%) indicated the choice of simulated patients and 5indicated the use of both (Table 26).

Table 26: Levels of Assessment and Types of Patients: Respectful and professional relationships with patient and colleagues in provision of cares

| Levels of Assessment | No(%)Agree |
|---|---|
| Professional relationship with pt. KNOWS | 29(55.8%) |
| Professional relationship with pt. KNOWS HOW | 27(51.9%) |

| | |
|---|---|
| Professional relationship with pt. SHOW HOW | 25(48.1%) |
| Professional relationship with pt. DOES | 15(28.8%) |
| **Real or simulated patients** | |
| Professional relationship with pt. SIMULATED | 22(42.3%) |
| Professional relationship with pt. REAL PATIENT | 22(42.3%) |

### 6.3.4.18. Knowledge of special topics

*Knowledge of special topics*: Of the participants, 31 (59.6%) felt that *knowledge of special topics* is a valid skill which can be assessed using an OSCE (Table 9). Some participants felt that using the OSCE to test for *knowledge of special topics* was valid for assessing knowledge, 29 (55.8%), how *knowledge of special topics* can be applied, 26(50%), how to demonstrate the *knowledge of special topics,* 26(50%), but only 17 (32.7%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 27).

In recording participants' choice between using real and simulated patients during an OSCE for *knowledge of special topics,* 20 (38.5%) indicated the use of real patients compared to 24 (46.2%) who indicated a preference for simulation, while 16 indicated the use of both (Table 27).

**Table 27:  Levels of assessment and types of patients: Knowledge of special topics (ethics, spirituality, economics in relation to the profession**

| Levels of Assessment | No(%)Agree |
|---|---|
| Knowledge of special topics KNOWS | 29(55.8%) |
| Knowledge of special topics KNOWS HOW | 26(50.0%) |
| Knowledge of special topics SHOW HOW | 26(50.0%) |
| Knowledge of special topics DOES | 17(32.7%) |
| **Real or simulated patients** | |
| Knowledge of special topics SIMULATED | 24(46.2%) |
| Knowledge of special topics REAL PATIENT | 20(38.5%) |

### 6.3.4.19. Professional development of the self and others

*Professional development of the self &others*: Of the participants, 27 (51.9%), felt that *professional development of the self & others* is a valid skill which can be assessed using an OSCE (Table 9). Some participants felt that using the OSCE to test *professional development of the self & others* was valid for assessing knowledge, 23 (44.2%), knowledge of how to *develop the self & others professionally*, 21 (40.4%), how to demonstrate the *professional development of the self &others*, 18 (34.6%), but only 15 (28.8%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 28) .

In recording participants' choice between using real and simulated patients during an OSCE for *professional development of the self & others,* 18 (34.6%) indicated they would use real patients compared to 17 (32.7%) who indicated they would use simulated patients, while 13 indicated the use of both (Table 28).

**Table 28: Levels of assessment and types of patients: Acts to enhance professional development of self and others**

| Levels of Assessment | No. (%)Agree |
|---|---|
| Professional development of self & others KNOWS | 23(44.2%) |
| Professional development of self & others KNOWS HOW | 21(40.2%) |
| Professional development of self & others SHOWS HOW | 18(34.6%) |
| Professional development of self & others DOES | 15(28.8) |
| **Real or simulated "patients** | |
| Professional development of self & others SIMULATED | 17(32.7%) |
| Professional development of self & others REAL PATIENT | 18(34.6%) |

### 6.3.4.20. Physical examination

Of the participants, only 22 (42.3%) felt that the *Physical examination* of a critically ill patient is a valid skill which can be assessed using an OSCE (Table 9). Just over half of the participants agreed that using the OSCE was valid for assessing *Physical examination*

knowledge (27, 51.9%) and knowledge of *How to do physical examinations* (27, 51.9%).

However less than half agreed that the OSCE can be used to assess how to *Demonstrate doing a physical examination* (24, 46.2%);and only 14 (26.9%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform a *physical examination* in a real life situation (Table 29).

In recording participants' choice between using real and simulated patients during an OSCE for the assessment of *physical examination*, 23 (44.3%) indicated a choice of real patients compared to 21 (40.4%) who indicated they would choose simulated patients, while 14 indicated the use of both (Table 29).

Table 29: Levels of assessment and types of patients: Physical examination

| Levels of Assessment | No. (% Agree) |
| --- | --- |
| Physical examination KNOWS | 27{51.9%) |
| Physical examination KNOW HOW | 27(51.9%) |
| Physical examination SHOW HOW | 24(46.2%) |
| Physical examination DOES | 14(26.9%) |
| **Real or simulated patients** | |
| Physical examination SIMULATED | 21(40.4%) |
| Physical examination REAL PATIENT | 23(44.2%) |

### 6.3.4.21. Relationship building and professionalism

*Relationship-building and professionalism*: Of the participants, 21 (40.4%) felt that *relationship- building and professionalism* is a valid skill which can be assessed using an OSCE (Table 9).  Just below half of the  participants felt that using the OSCE to test *relationship-building and professionalism* was valid for assessing knowledge, 20 (38.5%), knowledge of how *relationship-building and professionalism* function can be assessed in OSCE, 19(36.5%), how to demonstrate *relationship-building and professionalism,* 16 (30.8%),

but only 11 (21.2%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 30).

In recording participants' choice between using real and simulated patients during an OSCE for *relationship-building and professionalism,* 16 (30.8%) indicated they would use real patients compared to 14 (26.9%) who indicated a preference for simulation, while 10 indicated the use of both (Table 30).

**Table 30: Levels of assessment and types of patients: Relationship building and professionalism**

| Levels of Assessment | No. (%)Agree |
|---|---|
| Relationship-building and professionalism KNOWS | 20(38.5%) |
| Relationship-building and professionalism KNOWS HOW | 19(36.5%) |
| Relationship-building and professionalism SHOWS HOW | 16(30.8%) |
| Relationship-building and professionalism DOES | 11(21.2%) |
| **Real or simulated patients** | |
| Relationship-building and professionalism SIMULATED | 14(26.9%) |
| Relationship-building and professionalism REAL PATIENT | 16(30.8%) |

### 6.3.4.22. Nursing patient on haemodialysis

*Nursing care of the patient on haemodialysis:* Of the participants, 20 (38.5%) felt that *nursing a patient on haemodialysis* is a valid skill which can be assessed using an OSCE (Table 9).  Below half of the participants felt that using the OSCE to test for *nursing a patient on haemodialysis* was valid for assessing knowledge, 17 (32.7%), knowing how to *nurse a patient on haemodialysis,* 15(28.8%), while only 9 (17.3%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 31).

In recording participants' choice between using real and simulated patients during an OSCE for *nursing a patient on haemodialysis,* 13 (25 %) indicated a preference for using

real patients compared to 11 (21.2%) who indicated they would use simulated patients, while 13 indicated the use of both (Table 31).

**Table 31: Levels of assessment and types of patients: nursing care of patient on hemodialysis**

| Levels of Assessment | No. (%)Agree |
|---|---|
| Nursing patient on haemodialysis KNOWS | 17(32.7%) |
| Nursing patient on haemodialysis KNOWS HOW | 15(28.8%) |
| Nursing patient on haemodialysis SHOW HOW | 15(28.8%) |
| Nursing patient on haemodialysis DOES | 9(17.3%) |
| **Real or simulated patient** | |
| Nursing patient on haemodialysis SIMULATED | 11(21.2%) |
| Nursing patient on haemodialysis REAL PATIENT | 13(25.0%) |

### 6.3.4.23. Engages in and contributes in to research based practice

*Engages in and contributes in to research based practice*: Out of all the skills selected for this research, only 13 (25%) felt that *engages in and contributes in to research-based practice* is a valid skill which can be assessed using an OSCE (Table 9). Few participants felt that using the OSCE to *test engages in and contributes to research-based practice* was valid for assessing knowledge, 11 (21.2%), *knowledge of how to engage in and contribute to research-based practice,* 8 (15.4%), how to demonstrate *engagement in and contribution to research-based practice,* 8(15.4%), but only 7 (13.5%) felt that passing this skill in an OSCE examination would mean that a person would be able to perform the same skill in a real life situation (Table 32).

In recording participants' choice between using real and simulated patients during an OSCE for *engages in and contributes to research-based practice,*9 (17.3%) indicated a preference for using real patients compared to 11 (21.2%) who indicated they would use simulated patients, while 6 indicated the use of both (Table 32)

**Table 32: Levels of Assessment and Types of Patients: Engages in and contributes in to research based practice**

| Levels of Assessment | No.(%)Agree |
|---|---|

| | |
|---|---|
| Contributes in to research-based practice KNOWS | 11(21.2%) |
| Contributes in to research-based practice KNOWS HOWS | 8(15.4%) |
| Contributes in to research-based practice SHOWS HOW | 8(15.4%) |
| Contributes in to research-based practice DOES | 7(13.5%) |
| **Real or simulated "patients** | |
| Contributes in to research-based practice SIMULATED | 11(21.2%) |
| Contributes in to research-based practice REAL PATIENT | 9(17.3%) |

## 6.3.5 Overall level of Agreements on Relevance of OSCE

### 6.3.5.1. Assessment of Practical Knowledge ("Knows how")

Looking at the assessment of Practical Knowledge using OSCE as an assessment tool; the highest agreement level was 46 (88.5%) for *Cardiopulmonary resuscitation*. Most of the skills scored above 60% (14/23, 60.9%). Four skills had a below 50% level of agreement. They were *Professional Development of Self and Others; Relationship building and professionalism, Nursing patient on haemodialysis* and *Contributing to research-based practice* (Table 33).

Table 33: Skills relevant for Assessment of Practical Knowledge

| Practical Knowledge Assessment | No (%)Agree |
|---|---|
| 1. Cardiopulmonary resuscitation | 46(88.5%) |
| 2. Obtaining information from clinical history | 45(86.5%) |
| 3. Performing neurological observation | 45(86.5%) |
| 4. Interpretation of diagnostic test(ECG) | 45(86.5%) |
| 5. Applying laboratory results method | 44(84.6%) |
| 6. Nursing care of patient with raised ICP | 44(84.6%) |
| 7. Monitoring intake and output | 43(82.7%) |
| 8. Assessment and arriving at nursing diagnosis | 42(80.8%) |
| 9. Performing of cardioversion | 40(76.9%) |
| 10. Monitoring the cardiac output | 40(76.9%) |
| 11. Knowledge of basic mechanisms | 40(76.9%) |
| 12. Measuring abdominal distension | 38(73.1%) |
| 13. Education pt. for peritoneal dialysis | 38(73.1%) |
| 14. Nursing care of ventilated patient | 34(65.4%) |
| 15. Communication with patients | 30(57.7%) |

| | |
|---|---|
| 16. Detecting pacemaker dysfunction | 30(57.7%) |
| 17. Physical examination | 27(51.9%) |
| 18. Professional relationship with patient | 27(51.9%) |
| 19. Knowledge of special topics | 26(50.0%) |
| 20. Professional development of self & others | 21(40.2%) |
| 21. Relationship building and professionalism | 19(36.5%) |
| 22. Nursing patient on haemodialysis | 15(28.8%) |
| 23. Contributing to research-based practice | 8(15.4%) |

### 6.3.5.2. Assessment of Demonstration ("Shows how")

Looking at the assessment of Demonstrations using OSCE as an assessment tool; the highest agreement level was 46 (88.5%) for *Cardiopulmonary resuscitation*. Most of the skills (15/23, 65.2%) scored above 60%.Six skills that scored below 50%, namely *Physical examination, Communication with patients, Professional relationship with patient, Relationship building and professionalism* and *Nursing on haemodialysis and Contributing to research-based practice patient* (Table 34)*.*

| Demonstration of Skill Assessment | No (%)Agree |
|---|---|
| 1. Cardiopulmonary resuscitation | 46(88.5%) |
| 2. Interpretation of diagnostic test(ECG) | 44(84.6%) |
| 3. Monitoring intake and output | 43(82.7%) |
| 4. Applying laboratory results method | 43(82.7%) |
| 5. Nursing care of patient with raised ICP | 42(80.8%) |
| 6. Obtaining information from clinical history | 41(78.8%) |
| 7. Performing neurological observation | 41(78.8%) |
| 8. Measuring abdominal distension | 39(75.0%) |
| 9. Assessment and arriving at nursing diagnosis | 38(73.1%) |
| 10. Performing of cardioversion | 38(73.1%) |
| 11. Monitoring the cardiac output | 38(73.1%) |
| 12. Knowledge of basic mechanisms | 37(71.2%) |
| 13. Education pt. for peritoneal dialysis | 36(69.2%) |
| 14. Nursing care of ventilated patient | 33(63.4%) |
| 15. Communication with patients | 32(61.5%) |
| 16. Knowledge of special topics | 26(50.0%) |
| 17. Detecting pacemaker dysfunction | 26(50.0%) |
| 18. Professional relationship with patient | 25(48.1% |
| 19. Physical examination | 24(46.2%) |
| 20. Professional development of self & others | 18(34.6%) |
| 21. Relationship building and professionalism | 16(30.8%) |
| 22. Nursing patient on haemodialysis | 15(28.8%) |
| 23. Contributing to research-based practice | 8(15.4%) |

## 6.3.5.3. Assessment of Transferability of Skills ("Does")

Looking at the transferability of skills tested using OSCE as an assessment tool compared to a real life situation; the highest agreement level was 65.5% for *Monitoring Intake and Output*. Overall very low agreement scores were reported. *Providing health education to the patient regarding peritoneal dialysis* and the *Monitoring of intake and output* were the only skills that scored above 60% (Table 35).

| Transferability to real life situations | No (%)Agree |
|---|---|
| 1. Monitoring intake and output | 34(65.4%) |
| 2. Knowledge of basic mechanisms | 32(61.5%) |
| 3. Education of pt. re peritoneal dialysis | 32(61.5%) |
| 4. Interpretation of diagnostic test(ECG) | 30(57.7%) |
| 5. Performing neurological observations | 30(57.7%) |
| 6. Measuring abdominal distension | 30(577%) |
| 7. Nursing care of patient with raised ICP | 28(53.8%) |
| 8. Obtaining information from clinical history | 28(53.8%) |
| 9. Applying laboratory results method | 28(53.8%) |
| 10. Monitoring the cardiac output | 24(46.2%) |
| 11. Communication with patients | 21(40.4%) |
| 12. Cardiopulmonary resuscitation | 21(40.4%) |
| 13. Nursing care of ventilated patient | 19(36.5%) |
| 14. Assessment and arriving at nursing diagnosis | 19(36.5%) |
| 15. Knowledge of special topics | 17(32.7%) |
| 16. Performing cardioversion | 17(32.7%) |
| 17. Detecting pacemaker dysfunction | 16(30.8%) |
| 18. Professional development of the self & others | 15(28.8) |
| 19. Professional relationship with pt. | 15(28.8%) |
| 20. Physical examination | 14(26.9%) |
| 21. Relationship building and professionalism | 11(21.2%) |
| 22. Nursing patient on haemodialysis | 9(17.3%) |
| 23. Contributes in to research-based practice | 7(13.5%) |

## 6.3.6. Overall level of Agreements on Simulated or Real Patients

### 6.3.6.1. OSCE Assessments for specific Critical Care Skills

On the selection of the type of patients to be used during an OSCE assessment, the highest level of agreement was *Monitoring intake and output* for the use of **Real patients** (39, 75%), and *Cardiopulmonary resuscitation* for s**imulated patients (**44, 84.6%).

*Contributes in to research-based practice* had the lowest levels of agreement with 9 (17.3%) for real patients and 11 (21.2%) for simulated patients (Table 36).

| Skill or Competency | Real Patients No (%) | Simulated Patients No (%) |
|---|---|---|
| 1.   Monitoring intake and output | 39(75.0%) | 31(59.6%) |
| 2.   Knowledge of basic mechanisms | 35(67.3%) | 37(71.2%) |
| 3.   Education of pt. re peritoneal dialysis | 35(67.3%) | 31(59.6%) |
| 4.   Interpretation of diagnostic test(ECG) | 42(80.2%) | 33(63.5%) |
| 5.   Performing neurological observations | 40(76.9%) | 35(67.3%) |
| 6.   Measuring abdominal distension | 33(63.5%) | 28(53.8%) |
| 7.   Nursing care of patient with raised ICP | 37(71.2%) | 37(71.2%) |
| 8.   Obtaining information from clinical history | 39(75.0%) | 37(71.2%) |
| 9.   Applying laboratory results method | 36(69.2%) | 36(69.2%) |
| 10. Monitoring the cardiac output | 31(59.1%) | 28(53.8%) |
| 11. Communication with patients | 26(50.0%) | 24(46.2%) |
| 12. Cardiopulmonary resuscitation | 15(28.8%) | 44(84.6%) |
| 13. Nursing care of ventilated patient | 25(48.1%) | 25(48.1%) |
| 14. Assessment and arriving at nursing diagnosis | 35(67.3%) | 37(71.2%) |
| 15. Knowledge of special topics | 20(38.5%) | 24(46.2%) |
| 16. Performing cardioversion | 12(23.1%) | 39(75.0%) |
| 17. Detecting pacemaker dysfunction | 17(32.7%) | 22(42.3%) |
| 18. Professional development of the self & others | 18(34.6%) | 17(32.7%) |
| 19. Professional relationship with pt. | 22(42.3%) | 22(42.3%) |
| 20. Physical examination | 23(44.2%) | 21(40.4%) |
| 21. Relationship building and professionalism | 16(30.8%) | 14(26.9%) |
| 22. Nursing patient on haemodialysis | 13(25.0%) | 11(21.2%) |
| 23. Contributes in to research-based practice | 9(17.3%) | 11(21.2%) |

# CHAPTER 7

## DISCUSSION

### 7.1 Introduction

This chapter focuses on a discussion of the findings of the assessment of the perceptions of students and qualified ICU trained nurses on the use of the OSCE. It also includes a brief discussion on the limitations of this study.

### 7.2. Perceptions of students regarding the use of OSCE as a clinical tool

After a decade of experience with OSCE as assessment tool, this study revealed that OSCE is still a credible tool accepted by students as is portrayed by the positive response in the general evaluation of OSCE. A major limitation of this section was the low number of participants, though it is believed that even if the data cannot be generalised, it does present a credible perspective of students' experiences with OSCEs.

The students' attitudes towards the use of OSCE as a tool to assess their clinical skills were measured using four factors describing four major factors that impact on the usefulness of OSCES, namely content, organisational, process and individual factors.

Overall, the Critical Care students agreed that the use of the OSCE as a tool in testing knowledge and skills in ICU training was positive, with an overall mean level of agreement of 71 ±14.4. The highest level of agreement was for Content factors with an agreement level of 81.8±26.1. Students overwhelmingly expressed positive attitudes about the use of the

OSCE to assess their competencies in the ICU, with the ratings of agreements being as high as 81.8% in the content construct, at which the highest level of agreement for OSCE's relevance to their level of training was 90.9%. These findings are similar to those reported in a study done by Imani and Hosseini Tabatabaie (2005) on paediatric students which maintains that 85% of the students agreed that OSCE was comprehensive and covered a wide range of knowledge, while 80% agreed that clinical competencies in paediatrics were covered. Similar results on the suitability of OSCE to assess the content factor have been reported in a survey by Bagri et al. (2009) on the geriatric medicine fellows' experience and attitude towards an OSCE, where most participants agreed that OSCE tested skills relevant to their practice, with a mean score 0f 4.75/5. This is also consistent with other findings in the literature; for example, Jay (2007) states that in the qualitative study done on student midwives to measure their perceptions of OSCE, to check how valid the assessment tool was, all students agreed that the OSCE workstations were relevant to practice.

In light of these findings, various authors have suggested that, when setting up for OSCE, the faculty must ensure that the clinical tasks chosen for the OSCE are mapped onto the learning objectives of the course and the candidates' level of learning. This is referred to as blue-printing (Boursicot and Roberts 2005; Gupta, Dewan et al. 2010).

In this study, some students raised concerns at the range of knowledge, as students felt that the knowledge gained when using OSCE was not wide enough, this meant that OSCE did not cover all of the discipline as expected.

Regarding the individual factor, students' findings indicated that students were positive about the ability of OSCE as an assessment tool which helped them to incorporate what had been learned into clinic practice. This meant that students felt that the transferability of skills to real practice was possible when using OSCE as an assessment

method. Most students expressed a positive response regarding the fact that they had

learned a lot from having OSCE as a tool to assess their clinical competencies.

Most students reflected that OSCE provides a useful learning experience and that

the content reflected real life situation though only 68.2% students believed that passing or

failing an OSCE examination was a true reflection of their performance.  Nearly half of the

students expressed concern over potential bias due to inter-patient and inter-evaluator

variability during the use of OSCE.  This is in line with the results of the survey done by Bagri

et al. (2009) where some students expressed concerns that inter-patient variability and

inter-evaluator variability might affect their score. The study by Imani and Hosseini

Tabatabaie (2005) revealed that students also expressed concern and were uncertain that

the results were a true reflection of their clinical skills (Imani and Hosseini Tabatabaie 2005).

Although this issue is not seen by all students as a major problem, further studies are

necessary to investigate it.

Another concern raised by the students was that OSCE produces more anxiety than

other methods of assessment.  Many studies surveying student attitudes towards the use of

OSCE have documented that the OSCE can be a strong anxiety-producing experience and

some believe that the level of anxiety changes little as each student progresses through the

examination.  Marshall and Jones (2006) contend that OSCE is undeniably anxiety-

provoking, but that seminars provoke more stage anxiety.  Other authors believe that rating

nursing skills using assessment methods that stress the functional characteristics of practice

may lead to interfering too greatly with performance, and losing the ability to differentiate

between nurses with functional skills and those with deeper personal qualities (Cowan,

Norman et al. 2005).  Brand and Schoonheim-Klein (2009) assert that there is a general

belief that students with higher levels of stress tend to achieve lower marks than students

with lower stress levels (Brand and Schoonheim-Klein 2009).  Therefore, examiners use different types of assessment because most assessment strategies will suit certain types of learners better than others (Garside, Nhemachena et al. 2009).

Regarding the organisational/environmental factors, the level of agreement was positive concerning the structure of OSCE as well as the instructions given at the OSCE stations.  Most students expressed satisfaction about the manner in which OSCE is structured, and were also satisfied with the instructions given at the stations because these were clear.  On this construct, some students were not satisfied with the standardised patients, so this had the lowest level of agreement for this construct.

Out of the four factors used to measure the attitudes and perceptions of the use of OSCE to assess clinical skills, the process factor showed the lowest level of agreement.  The findings of this study revealed that students identified the need for the faculty to give feedback which would help them in highlighting areas of weakness; however there was a general concern that the faculty was not giving detailed feedback. Carr (2006) believes that if feedback is interactive it helps the students to progress in their studies and to grow professionally.  In the cross-sectional study done by Awaisu et al. (2009), about 80% of students in this study believed that OSCE was useful in discovering the areas of weakness and strength in their clinical skills.

To address validity and reliability, the results revealed that 15 (68.2%) of the students in the study believed that the pass score is true measure of clinical skills. This is in line with the results of the study by Imani and Hosseini Tabatabaie (2005)-on the use of OSCE in paediatrics;  half of the students believed that the scores were standardized, they were unsure whether their scores were an actual reflection of  their pediatric clinical skills.

Students overwhelmingly perceived that the OSCE in Pediatric had good construct validity (Imani and Hosseini Tabatabaie 2005). Several studies have shown that the OSCE provides a valid and reliable assessment of the roles.

The study also revealed that there was a significant difference between people with exposure to OSCE and people with no exposure to OSCE due to the low levels of agreement on the processes of managing an OSCE. There were no significant differences in any of the mean standard scores by gender, qualification, experience with OSCE and years of experience.

## 7.3. Perceptions of the staff regarding the use of OSCE as a clinical tool

Even though the study had a low response rate, overall, the perceptions of staff members regarding the use of OSCE as an assessment tool were positive. Out of 23 skills identified, participants agreed that most of these skills were relevant for assessment using OSCE in a Critical Care course. The highest level of agreement was for *Interpretation of diagnostic test* (ECG), *Cardiopulmonary resuscitation, performing neurological observation, nursing care of patient with raised ICP* and Applying *laboratory results method*. These skills showed the highest level of agreement probably because they can be easily simulated.

In this study only four skills were identified by participants as not so relevant for assessment using OSCE in a Critical Care course, namely *Physical examination, Relationship-building, Professionalism, Nursing patient on haemodialysis* and *Research* skill. All these skills had a level of agreement that was below 50%, with *Research* skills being the lowest, scoring 25%.

These results pose a major concern about the use of OSCE to assess the clinical competencies of Critical Care nurses, since the level of agreement for physical examination was very negative at 42.3%. Every Critical Care nurse should be able to perform physical examinations, and students should be able to demonstrate their abilities to perform physical examinations during assessment. A contributory factor to these perceptions may be due to the use of low models congruent with the students' perceptions that the standardised patients were not realistic., McWilliam and Botwinski's study (2010) shows that students appreciated the authenticity and valued the OSCE experience in their education (McWilliam and Botwinski 2010). Jeffries (2006) stated that it is necessary for the faculty to make decisions about implementing assessment instruments so that the instrument is not only desirable and appropriate (reliability and validity), but also considers factors that make the instrument practical and achievable, such as cost, easy administration and acceptability to candidates and examiners (Jeffries 2006).

A second concern is the low rating for Professional and Interpersonal Skill with the lowest level of agreement on the "Knows" level was in respect of the use of OSCE to assess research skills which was 21.2%. Salwa et al. (2011) highlighted that the tools for competence assessment are too task-orientated, while concepts of caring, interpersonal interactions and decision-making are known as competencies that cannot easily be measured quantitatively (Salwa, Samah et al. 2011). This means that although all the learning objectives of the course can be mapped in blueprinting, it is not feasible to measure all the skills that are necessary in an ICU environment using the OSCE method.

The analysis of the results revealed that all Critical Care nurses agreed that OSCE was a helpful exercise to assess the level of knowledge and the level of practical knowledge. The

"**Knows"** level of assessment had the highest level of agreement with the average level of agreement being 16.7(±4.4.). However, as the main purpose of the OSCE is to rate skills this is a concern in either how the OSCE is used or how the staff understand its purpose.

With regard to OSCE's positioning on the "**Show how level"**, most participants agreed that OSCE can be used to assess how the student actually performs a required skill in the Critical Care course. For the transferability of skills tested using OSCE as an assessment tool to real life situations; the highest score for "**Does**" was 65.5%which was achieved for *Monitoring intake and output*, overall, the level of agreement on the "**Does**" was 9.9 (±6.01). *Providing health education to the patient regarding peritoneal dialysis* and *Monitoring of intake and outp*ut were the only skills that scored above 60%. These results indicate that OSCE is not a good guide for determining how the student will actually perform in a real situation. However, this view is opposite to the perceptions of students regarding the transferability of skills from OSCE to real situation, where student's level of agreement score was 90.9%.

To assess the attitudes of CCNs towards the use of OSCE as assessment tool, the results obtained reveals that forty –four (84.6%) agreed that OSCE was appropriate for evaluation of knowledge, practical and intellectual skills. When comparing the level of agreement on the use of OSCE alone as assessment tool or changing to other method of assessment, about half of the participants (26.5%) felt there was no need to change the use of OSCE to another method of assessment. Many authors believe that OSCE is the most reliable assessment tool, although the cost of carry out an OSCE can seem overwhelming, it must be remembered that it can form one of the most instinctive and memorable teaching experiences for the student.(Brannick, Erol-Korkmaz et al. 2011)

Regarding the selection of the type of patients to be used in OSCE assessment, the analysis revealed that the participants who preferred the use of **simulated patients were similar to those who** preferred the use of real patients in OSCE.  Many authors pointed out that there is no evidence that the use of simulation is transferable to real clinical practice (McCaughey and Traynor 2010), although Battles et al.(2004) believe that SP-based OSCEs are valid and reliable tools for assessing competency continuity(Battles, Wilkinson et al. 2004).  Use of simulation in the health profession is gaining interest, because it increases patient safety(Bearnson and Wiker 2005).  This meant that the participants differed in their view about the use of patients during the OSCE assessment and this needs further investigation.

What has also emerged from data is the evidence that only 50% of the participants felt that OSCE should be changed to another form of assessment and only 13(25%) suggested the use of a comprehensive assessment, while only four were not specific regarding the type of assessment to be used.  This may be due to the fact that OSCE has been used for a very long time and most of these participants are familiar with OSCE as the major method of assessment in the Critical Care course, while comprehensive assessment of students doing Critical Care nursing only began towards the end of 2011.

## 7.4. Limitations

A major limitation of the study is that the group of students represented a very small number of students who were doing the Critical Care course and who had been exposed to OSCE. Similarly, a very low response rate from staff may also present a bias in the findings.

For this study it was impossible to include all the competencies that are expected of the Critical Care nurse expert in order for him/her to be able to function adequately in the Critical Care environment, due to time constraints. Since critical nursing practice is multifaceted and varied, to explain it methodically is difficult, so common areas were identified and grouped together which leads to reduction in the scope(Dunn, Lawson et al. 2000).

This study was confined to eThekwini Metropolitan area, and the results cannot be generalised because the study was conducted in one province only, however the information discovered does raise issues which researchers have identified elsewhere. More researchers would be required to study this issue, since Critical Care nurses are highly skilled nurses who have a broad  knowledge about Critical Care nursing and important information gleaned from other disciplines (Moola 2004).

# CHAPTER 8

# CONCLUSIONS AND RECOMMENDATIONS

## 8.1. Introduction

This study highlighted that OSCE was still overwhelmingly accepted as a relevant tool for assessing clinical competencies in Critical Care courses by both students and staff. It was also clear that not all the competencies required in the ICU environment can be assessed using the OSCE method, therefore it is unnecessary to assume that OSCE can assess personal qualities such as caring, interpersonal relationships and psychological disorders, since these are difficult to quantify. In addition to the OSCE method, there must be some additional methods to assess these skills.

Most authors agreed that OSCE is labour-intensive and that it is the most anxiety-provoking method of assessment. Lastly, and considered to be the most important finding in this study, was the issue of feedback. Most studies revealed that students felt that the feedback given was not adequate. Therefore, the following recommendations are made:

## 8.2. Recommendations

- Firstly, the most important drawback of OSCE, as reflected in this study, is the lack of formative and interactive feedback. Unless students are given interactive feedback and an opportunity to review their work, it is impossible for learning and

improvement of students' performance to take place. Feedback should be valued by educators because it is an important teaching tool. Feedback on performance and assessment is a prerequisite at all levels of education and it involves clarification and descriptions of the competencies being assessed(Nelson and Schunn 2009). Feedback should thus be part of the structure on which an OSCE is based, and the means by which feedback is prepared and presented to students should be thoroughly researched and considered.

- Secondly, the factor of anxiety requires attention, since it is clear that some people have a higher state of anxiety than others. It is thus important for the faculty to employ measures to reduce anxiety during examinations, for instance, by giving students adequate time to practice their skills in a simulated environment before the actual examination. Street & Hamilton( 2010)believe that OSCE can be very stressful on students who are exposed to it for the first time, therefore students should be exposed to simulated environments in the clinical laboratories first to ensure that all students are exposed to this type of assessment before their evaluation (Rushforth 2007). To achieve this, the preparation of the OSCE examination is important.

Lastly, to ensure the reliability and validity of the OSCE examination, it is important to train the SPs/standardised patients so that they can be consistent in their performance. Boursicot and Roberts (2005) assert that it is necessary to have trained standardised patients across a range of ages and ethnicities, as well as a balanced gender mix.

## 8.3. Conclusion

In conclusion, OSCE use in the health profession for the assessment of clinical skills remains popular; however the preparation of OSCE differs in each institution. The results of this study reveal that the students as well as staff in Critical Care settings still favour the use of OSCE in the assessment of clinical care. However, it should be noted that not all the procedures conducted in this setting can be assessed using OSCE. The literature also reveals that to ensure the reliability and validity of OSCE as an assessment method, there are key issues that need to be identified and carefully considered when planning for an OSCE. Many authors agree that OSCE can be regarded as the gold standard in the health profession provided that there is intensive preparation for an OSCE, which should include the preparation of scenarios that are close to real life situations, marking tools that consider the level of training of the student, the means by which feedback will be given to students to improve learning, the availability of resources, the training of examiners and standardised patients and the availability of time, space, and finance. In view of this study, the nursing faculty should ensure that the knowledge and experience gained in the OSCE will be transferable to real life situations. Further studies, however, are necessary to ensure that more innovative assessment strategies are developed, and also to improve the use of the OSCE assessment method.

# CHAPTER 9

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16 November 2011

**Mrs WT Maphumulo (210519745)**
**School of Nursing**

Dear Mrs Maphumulo

**PROTOCOL REFERENCE NUMBER: HSS/1193/011M**
**PROJECT TITLE:  Perceptions and attitudes of critical care nurses about the use and effectiveness of OSCE as a tool for measuring clinical competence in critical care course in KZN selected institutions**

In response to your application dated 18 Augustus 2011, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.
PLEASE NOTE:  Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

..................................................................................
**Professor Steven Collings (Chair)**
**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE**

cc. Supervisor – Ms J Chipps
cc. Ms S van der Westhuizen
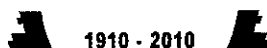
## APPENDIX 1-B: INFORMATION DOCUMENT

*Study title: "Perceptions and attitudes of critical care nurses about the use of OSCE as a tool for measuring their clinical competence in critical care course in UKZN selected institutions."*
***Researcher:*** *Winnie Thembisile Maphumulo, Student at Howard College Campus*

*School of Nursing, University of KwaZulu-Natal.*

*Dear colleagues,*

*I, Winnie Thembisile Maphumulo, Master student in Nursing Education at UKZN, Howard College. You are being invited to consider participating in a study that involves research on "Perceptions and attitudes of critical care nurses about the use of OSCE as a tool for measuring their clinical competence in critical care course in selected UKZN selected institutions."*

*This study selected all qualified critical care nurses and critical care student nurses who are still in training in two selected institutions where the majority of these nurses are working, in order to identify issues around the used of OSCE as assessment method.*

*Although, the study will not benefit you directly, but will provide necessary information about the importance of assessment to nursing practice and to understands factors that contributes to quality nursing care. Participation will only inconvenient your time during lunch breaks when completing the questionnaire that can take around 20 minutes. There is no harm or discomfort expected in this research. Your participation in this study is voluntary. You are under no obligation to participate. If you consent to participate, you have the right to withdraw any time if you feel uncomfortable to continue.*

*Your responses will be kept with the highest confidentiality, and they will not be linked with your identification, as well as the questionnaire doesn't require you to mention your name. The confidentiality will be maintained by not writing your name anywhere, and by using a coding system on the questionnaire, in such a way that it will not be possible to connect participant's responses to their identification during data collection, data analysis and findings dissemination. In the event of any problems or concerns/questions you may contact the researcher or supervisor or the UKZN Biomedical Research Ethics Committee at the following.*

*Thank you,*                 _____

*Winnie Thembisile Maphumulo   Signature          Date        **Supervisor:***

*Howard College Campus, UKZN                          Ms Jennifer Chipps*

*School of Nursing*

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To: The C.E.O.

King Edward VIII Hospital

P.O.  Box Congela.


From: Mrs W.T. Maphumulo

Master`s student

University of KwaZulu Natal

P.O. Box 4014

Durban, South Africa


Dear Mr Khoza

**Request for letter of support for the request research  project**

I am a student at the Nursing School of the University of KwaZulu Natal in Durban, studying for a master`s Degree in Nursing Education for Health professionals. As a requirement for the degree I have to conduct a research project, my title is "**Perceptions and Attitudes of Critical care Nurses about the Use and Effectiveness of OSCE as a tool for Measuring Clinical Competence in a Critical care Course in KZN Selected Institutions".**

I therefore request a letter that will state that my study will be supported by the gatekeepers in your institution, which is the requirement of the Ethical Committee of UKZN before they issue the ethical clearance certificate.

I trust my application will receive your favourable consideration as the information obtained in this study will be relevant to the assessment of Critical Care Program in King Edward hospital.

Yours truly

Mrs W.T. Maphumulo

Email:thembimap@gmail.com

Cell: 084316408

Supervisor: Ms J. Chipps

To: The Principal

King Edward VIII Hospital

P.O.BOX Congela


From: Mrs W.T.Maphumulo

Master`s student

University of KwaZulu Natal

P.O. Box 4014

Durban, South Africa


Dear Principal

**Request for letter of support for the request research project**

I am a student at the Nursing School of the University of KwaZulu Natal in Durban, studying for a master`s Degree in Nursing Education for Health professionals. As a requirement for the degree I have to conduct a research project, my title is "**Perceptions and Attitudes of Critical care Nurses about the Use and Effectiveness of OSCE as a tool for Measuring Clinical Competence in a Critical care Course in KZN Selected Institutions"**.

I therefore request a letter that will state that my study will be supported by the gatekeepers, which is the requirement of the Ethical Committee of UKZN before they issue the ethical clearance certificate.

I trust my application will receive your favourable consideration as the information obtained in this study will be relevant to the assessment of Critical Care Program in King Edward hospital.

Yours truly

Mrs W.T. Maphumulo

Email:thembimap@gmail.com

Cell: 084316408

Supervisor: Ms J. Chipps

To: The Matron King Edward VIII  Hospital

P.O. Box  Congela


From: Mrs W.T. Maphumulo

Master`s student

University of KwaZulu Natal

P.O. Box 4014

Durban, South Africa


Dear Matron

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Supervisor: Ms J. Chipps

To: The C.E.O

Inkosi Albert Central Hospital

Mayville


From: Mrs W.T. Maphumulo

Master`s student

University of KwaZulu Natal

P.O. Box 4014

Durban, South Africa


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Mrs W.T. Maphumulo

Email:thembimap@gmail.com

Cell:0843168406

To: The Matron

Inkosi Albert Central Hospital

Mayville


From: Mrs W.T.Maphumulo

Master`s student

University of KwaZulu Natal

P.O. Box 4014

Durban, South Africa


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Yours truly

Mrs W.T.Maphumulo

Email:thembimap@gmail.com

Cell:0843168406

## *APPENDIX 3: INFORMED CONSENT*

## *DECLARATION*

I............ (Initials of the participant),

In signing this document, I am giving my consent to take part in the study titled "Perceptions and attitudes of critical care nurses about the use of OSCE as a tool for measuring their clinical competence in critical care course in UKZN selected institutions".

I have read the information document and understood the contents, and the nature of the research project, and I consent to participating in the Research Project.

Permission is granted freely and I was made aware that participation is voluntary.

I also understand that I can withdraw at any stage of the project if I do not feel comfortable to continue to participate.

It was agreed that my identification will not be linked to my responses, and to complete the questionnaire doesn't require me to put my name.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at (084 361 8406/031 240 2025).
If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

**HUMAN SCIENCES RESEARCH ETHICS ADMINISTRATION**
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: BREC@ukzn.ac.za
Signature …………………………..


Date…………………………………

Department:
Health
**PROVINCE OF KWAZULU-NATAL**

# OFFICE OF THE HOSPITAL CEO
**KING EDWARD VIII REGIONAL HOSPITAL**
Private Bag X02, CONGELLA, 4013
Corner of Rick Turner & Sydney Road
Tel.031-3603853/3015; Fax.031-2061457:
Email.rejoice.khuzwayo@kznhealth.gov.za:
www.kznhealth.gov.za

Ref.: KE 2/7/1/ (52/2011)
Enq.: Mrs. R. Sibiya
Research Programming

22 November 2011

Mrs. WT Maphumulo
School of Nursing
**UNIVERSITY OF KWAZULU-NATAL**

Dear Mrs. Maphumulo

Protocol : "Perceptions and attitudes of critical care nurses about the use and effectiveness of OSCE as a tool for measuring clinical competence in Critical Care Course in KZN selected institutions"

Permission to conduct research at King Edward VIII Hospital is provisionally granted, pending approval by the Provincial Health Research Committee, KZN Department of Health.

Kindly note the following:-

- The research will only commence once confirmation from the Provincial Health Research Committee in the KZN Department of Health has been received.

- Signing of an indemnity form at Room 8, CEO Complex before commencement with your study.

- King Edward VIII Hospital received full acknowledgment in the study on all Publications and reports and also kindly present a copy of the publication or report on completion.

*The Management of King Edward VIII Hospital reserves the right to terminate the permission for the study should circumstances so dictate.*
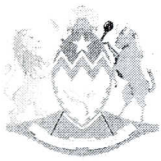
Yours faithfully

| SUPPORTED / ~~NOT SUPPORTED~~ |

--------------------------
**DR. O.S.B. BALOYI**
**ACTING CEO & MEDICAL MANAGER**

23/11/2011
--------------------------
**DATE**

Inkosi Albert Luthuli Central Hospital
Ethekwini Health District
Office of the Medical Manager
Private Bag X 03, Mayville, 4058
800 Bellair Road, Mayville, 4058
Tel.: 031 240 1059,
Fax.: 031 240 1050
Email.: ursulanun@ialch.co.za
www.kznhealth.gov.za

13 December 2011

Ms T W Maphumulo
ICU 3
IALCH

Dear Ms Maphumulo

**Re: Ref No: HSS/1193/011M: Perceptions and attitudes of critical care nurses about the use and effectiveness of OSCE as a tool for measuring clinical competence in critical care course in KZN selected institutions**

As per the policy of the Provincial Health Research Committee (PHRC), you are hereby granted permission to conduct the above mentioned research once all relevant documentation has been submitted to PHRC inclusive of Full Ethical Approval.

Kindly note the following.

1. The research should adhere to all policies, procedures, protocols and guidelines of the KwaZulu-Natal Department of Health.
2. Research will only commence once the PHRC has granted approval to the researcher.
3. The researcher must ensure that the Medical Manager is informed before the commencement of the research by means of the approval letter by the chairperson of the PHRC.
4. The Medical Manager expects to be provided feedback on the findings of the research.
5. Kindly submit your research to:

The Secretariat
Health Research & Knowledge Management
330 Langaliballe Street, Pietermaritzburg, 3200
Private Bag X9501, Pietermaritzburg, 3201
Tel: 033395-3123, Fax 033394-3782

Yours faithfully

**Dr M E L Joshua**
**Medical Manager**

**health**

Department:
Health
**PROVINCE OF KWAZULU-NATAL**

**Health Research & Knowledge Management sub-component**
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg
3200
Tel.: 033 – 3953189
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

| Reference | : HRKM 172/11 |
|---|---|
| Enquiries | : Mrs G Khumalo |
| Telephone | : 033 – 3953189 |

Dear Ms Maphumulo

**Subject: Approval of a Research Proposal**

1. The research proposal titled "**Perceptions and attitudes of critical care nurses about the use and effectiveness of OSCE as a tool for measuring clinical competence in critical care course in KZN selected institutions**" was reviewed by the KwaZulu-Natal Department of Health.
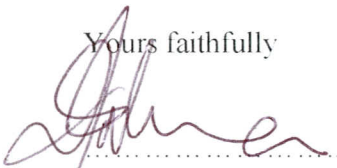
    The proposal is hereby **approved** for research to be undertaken at IALCH, King Edward VIII hospital.

2. You are requested to take note of the following:
    a. Make the necessary arrangement with the identified facility before commencing with your research project.
    b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mrs G Khumalo on 033-3953189.

Yours Sincerely

**Dr E Lutge**
**Chairperson, Health Research Committee**
**KwaZulu-Natal Department of Health**
**Date:** 21 / 14 / 2011 .

uMnyango Wezempilo . Departement van Gesondheid

*Fighting Disease, Fighting Poverty, Giving Hope*

## OSCE QUESTIONNAIRE FOR CRITICAL CARE STUDENT NURSES

**SECTION A: Demographic Data for critical care students.**

Instruction: Please mark your response with a cross X in an appropriate box.

1. What is your gender?

| Female | |
|--------|--|
| male | |

2. Age. Write the age on the space provided.

| |
|--|
| |

3. Qualification

| Post graduation qualification | |
|-------------------------------|--|
| Nil | |
| 1 Post graduation Q | |
| 2 Post graduation Q | |
| Above 2 | |

4. Years of experience in ICU

| Less than 2 yrs | |
|-----------------|--|
| 2 -6yrs | |
| 6-12YRS | |
| 12-18YRS | |
| Above 18 yrs | |

5. Any previous experience with OSCE before starting this course.

| Yes | |
|-----|--|
| No | |

6. If yes,

       A) Please specify the course…………………………………………………………

       b) Please specify how many OSCES you have done in the last 3 years………………

       c) Please specify how many OSCES you have done in your current course………………

**SECTION B: Perceptions on the use of OSCE as a tool to assess their clinical competence.**

INSTRUCTION: Drawing on your experiences of participating in an OSCE in this course, please indicate your level of agreement with the statement by ticking the number which best represent your answers.

| QUESTIONS | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| CONTENT | | | | | |
| 1.The content of the stations was relevant to level of training | | | | | |
| 2.Tasks reflected skills learned | | | | | |
| 3.Wide range of knowledge covered | | | | | |
| 4.OSCE had a good balances of subjects | | | | | |
| 5.Overall,OSCE was a worthwhile exercise | | | | | |
| ORGANIZATIONAL/ENVIRONMENTAL | | | | | |
| 6.Standardized patients were realistic | | | | | |
| 7.The OSCE exam was structured in a well-organized manner | | | | | |
| 8.Instructions in all stations were clear | | | | | |
| PROCESS OF OSCE | | | | | |
| 9.Passing or failing exam is a true measure of clinical skills | | | | | |
| 10.The faculty feedback has been helpful in highlighting the areas of weakness | | | | | |
| 11.Feedback could have been more detained | | | | | |
| 12.OSCE scores were standardized | | | | | |
| INDIVIDUAL | | | | | |
| 13. I will incorporate what I have learned in OSCE into my clinical practice/teaching practice. | | | | | |
| 14.I learned a great deal from the OSCE | | | | | |
| 15.The OSCE exam was most anxiety provoking than other methods of assessment | | | | | |
| 16.Gender,personality affected my scores | | | | | |
| 17.Interpatient and inter evaluator variability affect OSCE scores | | | | | |
| 18. Clinical assessment may be useful for critical care practice, but there are better methods available | | | | | |

## OSCE QUESTIONNAIRE for lecturers and qualified CCN`S

**SECTION A: Demographic Data.**

Instruction: Please mark your response with a cross X in an appropriate box.

1. State your age at the space provided…………………….

2. What is your gender?

| Female | |
|--------|--|
| male | |

3. Qualification

| Post graduation qualification | |
|-------------------------------|--|
| 1 post graduation | |
| 2 post graduation Q | |
| Above 2 | |

4. Hospital

| IALCH | |
|-------|--|
| King Edward | |

5. Years of experience

| Less than 2 year | |
|------------------|--|
| 2-5yrs | |
| 5-10yrs | |
| 10-15yrs | |
| 15-20yrs | |
| Above 20  yrs | |

6. Any previous experience with OSCE.

| Yes | |
|-----|--|
| No | |

7. If yes ,

A) Please specify the course………………………………………………………

6 .Specify your position (job description) in the nursing ……………………………………………………

**SECTION D: Competences that can be measured using OSCE as assessment tool in critical care environment.**

Using your previous experience with OSCE, to rate how the following skills can be best evaluated using the following instructions.

1. Indicate by X if you think the particular skill can be assessed by using OSCE tool.

2. If your answer is yes:

- Indicate by X at which level of assessment a particulate skill  can be  best assessed. You can choose more than one Level of Assessment
- Indicate by X your choice between simulated and Real Patients

| | YES | NO | Level of Assessment | | | | | Simulated patient | Real patient |
|---|---|---|---|---|---|---|---|---|---|
| | | | Knows | Know how | Show how | Does | | | |
| 1.Performing a focused physical examination of critical ill patient | | | | | | | | | |
| 2. Assessment  and arriving at nursing diagnosis | | | | | | | | | |
| 3.Utilizing and applying laboratory results method correctly | | | | | | | | | |
| 4. Obtaining sufficient information from clinical history and notes | | | | | | | | | |
| 5. Interpretation of diagnostic test(ECG) | | | | | | | | | |
| 6.Performing of cardio version | | | | | | | | | |
| 7.Detecting pacemaker dysfunction | | | | | | | | | |
| 8. Cardiopulmonary resuscitation skills | | | | | | | | | |
| 9. Monitoring the cardiac  output | | | | | | | | | |
| 10. Nursing care of ventilated patient | | | | | | | | | |
| 11. Performing neurological observation | | | | | | | | | |
| 12. Nursing care of patient with raised ICP | | | | | | | | | |

| | YES | NO | Level of Assessment | | | | | Simulated patient | Real patient |
|---|---|---|---|---|---|---|---|---|---|
| | | | Knows | Know how | Show how | Does | | | |
| 13. Nursing patient on haemodialysis. | | | | | | | | | |
| 14.Health Education of patient for peritoneal dialysis | | | | | | | | | |
| 15.Measuring abdominal distention | | | | | | | | | |
| 16.Monitoring intake and output | | | | | | | | | |
| 17. Effective communication with patients and colleges | | | | | | | | | |
| 18.Knowledge of special topics(spiritually, ethics ,economics in relation to the profession | | | | | | | | | |
| 19.Knowledge of basic mechanisms (anatomy ,immunology and microbiology, physiology and patho-physiology in relation to illness | | | | | | | | | |
| 20.Acts to enhance the professional development of self and others | | | | | | | | | |
| 21.Engages in and contributes in to research based practice | | | | | | | | | |
| 22.Respectful and professional relationship with patient colleagues in provision of care | | | | | | | | | |
| 23.Relationship building and professionalism | | | | | | | | | |

24. Please rate whether the following objectives  can be evaluated with OSCE

|  | Yes | No |
|---|---|---|
| Knowledge and understanding |  |  |
| Intellectual |  |  |
| Practical |  |  |
| Knowledge ,intellectual and practical |  |  |

25. Do you think the assessment of ICU student nurses need to be changed.     Yes          No

26. If yes state the type of assessment

…………………………………………………………………………………………………………………………………..