

**PERCEIVED STRESS OF FIRST YEAR NURSING STUDENTS ASSOCIATED WITH
THE FIRST OBJECTIVE STRUCTURED CLINICAL EXAMINATION AT A
UNIVERSITY IN THE WESTERN CAPE**

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ABSTRACT

The Objective Structured Clinical Examination (OSCE) is widely accepted as an effective means of assessing clinical competence and nursing skills. However, little is known the stress amongst first year nursing students associated with the first OSCE in all universities. In view of the paucity of literature available on stress associated with the OSCE, this study determined the perception of stress by the first year nursing students' associated with their first OSCE at this university.

A quantitative, descriptive survey design is employed. The instrument used is an adapted form of an existing self-administered Perceived Stress Scale (PSS) questionnaire. This measures perception of stress, factors causing stress and the incidence of stress. Of the total of 213 first year nursing students who were invited to be part of the study, 82 completed the questionnaires. This represents a response rate of 38%. The data was analysed using *Statistica 13*. Descriptive statistics are used do the calculations. The results are presented in percentages and tables.

The findings indicate that more than half (n=54), of the respondents experienced moderate stress levels. For these respondents, the most prevalent factor causing stress was the insufficient time to complete the OSCE. Ninety three percent (93%) (n=74) of the respondents perceived the incidence of stress at a moderate level. There was a statistically significant difference between those who perceived factors causing stress at a low level and those who perceived factors causing stress at a moderate level.

Based on the findings of the study on perception of stress during the OSCE, it is recommended that practice session assessments should be conducted throughout the year to help to reduce stress for students during the OSCE. A follow-up qualitative research study should also be

conducted in the same setting so the students' experiences of stress during the first OSCE can be explored in depth.

Although the relatively small sample of this study (38%) means the results cannot be generalised, this study does contribute to the literature on the stress experienced during the OSCE.

KEYWORDS:

Experience, Nursing Students, Objective Structured Clinical Examination (OSCE), Perception, Stress, Stressor



DECLARATION

I, **Dorothee Line Adibone Emebigwine** declare that the study, *Perceived stress of first year nursing students associated with the first Objective Structured Clinical examination at a university in the Western Cape* is my original work and that it has not been submitted for any degree or examination at any other University. All the sources used or quoted in this study have been indicated and acknowledged by complete references.

Date: DECEMBER 2016.

DEL Adibone

Dorothee Line Adibone Emebigwine



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“I can do all things through Christ who strengthens me.” Philippians 4:13.

Though challenging, this thesis was possible because of the divine strength I received from God. I want to thank the Holy Spirit, my companion, teacher, helper, extraordinary strategist. Thanks to my mum, Mrs Honorine Amabikouine who has been my rock throughout this journey. Thank you for all the scriptures and encouraging words; thank you for your prayers. I truly appreciate you, Mum. My heartfelt gratitude goes to my elder sister Christelle Atibia Emebigwine for her support and patience throughout the writing of this thesis. I love you. Thanks to my Dad, Mr Justin Amabikouine and my siblings Martine Nina Oteta Emebigwine and Gaetan Akwana Emebigwine your encouraging words.

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I want to thank my friends Ada Ama-Njoku and Jeanne-Louise Ridge, so much. Those chats, late nights, the egusi soups, chocolates and cookies made this possible. This is only the beginning. We journey on towards the PhD.

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LIST OF ABBREVIATIONS

OSCE – Objective Structured Clinical Examination

PSS – Perceived Stress Scale

SANC – South African Nursing Council

SPE – Standardized Patient Encounters

UK – United Kingdom



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CHAPTER ONE

AN OVERVIEW OF THE STUDY

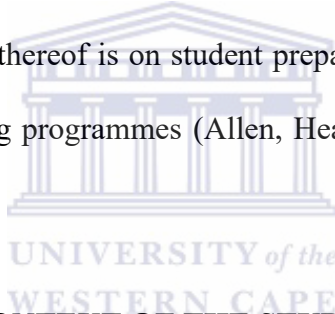
1.1 INTRODUCTION

The Objective Structured Clinical Examination (OSCE) was developed in Scotland by Harden and colleagues (1975) to evaluate medical students' clinical competencies (McWilliam & Botwinski, 2013). According to Alinier (2003), it has been adapted and applied to other disciplines in health care and is now internationally recognized as a model for evaluating clinical competencies in medicine and nursing. The Objective Structured Clinical Examination (OSCE) approach has proved to be a useful method of assessing students' psychomotor performance, cognitive and affective skills globally (Barry, Noonan, Bradshaw & Murphy-Tighe, 2012; Brosnan, Evans, Brosnan & Brown, 2006; Small, Pretorius, Walters, Ackerman & Tshifugula, 2013). The OSCE also allows students to learn techniques and skills needed for their future careers (Brosnan *et al.*, 2006).

Stress during the OSCE is acknowledged in the literature. In a comparative study between test anxiety in objective structured clinical examinations (OSCEs) and traditional assessment methods involving undergraduate midwifery students in Iran, Faramarzi, Pasha, Bakhtiari, Salmalian, Delavar, Amiri & Nikpour (2013) found that a small amount of stress acts as a motivator, enhancing performance and encouraging the student to try harder. However, these researchers also found that too much stress has the opposite effect: it can disrupt mental processes that are needed for the student to perform well (Faramarzi *et al.*, 2013).

According to Brosnan *et al.* (2006), nursing courses globally emphasize critical thinking, problem solving, decision-making, and clinical skills. These researchers add that the courses focus on the health needs of patients at all age levels in a variety of health care settings, and that clinical experiences are provided in hospitals area and community health care centre (Brosnan *et al.*, 2006). Given the increase in the first year nursing student population and the decline in the number of clinical teaching staff (i.e. supervisors) at the site where the study was conducted, it safe to assume that the first year nursing student population find their first Objective Structured Clinical Examination (OSCE) stressful.

There is limited information on first year nursing students' perception of stress during the first OSCE in South Africa. The focus thereof is on student preparation for, performance on, the use and evaluation of OSCE in nursing programmes (Allen, Heard, Savidge, Bittingle, Cantrell, & Huffmaster, 1998).



1.2 BACKGROUND AND CONTEXT OF THE STUDY

Stress has been identified as a common phenomenon amongst the university student population (McWilliam & Botwinski, 2013), particularly during the assessments and examinations that are an integral part of nursing education programmes. Accordingly, this research set out describe the perceived stress of first year nursing students' associated with their first OSCE.

1.2.1 Background

According to Brand and Schoonheim-Klein (2009), assessment is an essential means of assessing students' knowledge or mastery of a subject. The OSCE is one of the methods that have proved to be an effective means of assessing students' ability to integrate theory and practice (Mahmoud & Mostafa, 2011). During the OSCE examination, students are observed while they demonstrate

a multitude of clinical behaviours in standardized patient encounters (SPEs) (McWilliam & Botwinski, 2013). The use of Objective Structured Clinical Examination (OSCE) to assess clinical competence of nursing students has been widely discussed as an effective means of assessing attained nursing skills (Barry *et al.*, 2012; Small, Pretorius, Walters, Ackerman, & Tshifugula, 2013). However, Barry *et al.* (2012) acknowledge that while the OSCE can promote better performance and prepare students for the reality of clinical practice, it does cause stress. Brand and Schoonheim-Klein (2009) conducted a study to examine whether the level of stress of dental students induced by an OSCE was higher than that induced by a written examination and a preclinical crown and bridge preparation. The third year dental students involved found the OSCE much more stressful than a written examination. These authors argue that the results of their study can be explained as follows: a written examination is carried out in relatively anonymous manner, while an OSCE is performed under continual monitoring and direct observation which may increase anxiety levels in students (Brand & Schoonheim-Klein, 2009). In another study, involving nursing students in Egypt, El-Nemer and Kandeel (2009) found that OSCE was stressful for first year students.

At the participating university, the OSCE is conducted once in the first year programme towards the end of the academic year. Success in the OSCE is one of the requirements for promotion to the second year level. At the School of Nursing where the study was conducted, the OSCE is used to assess students' psychomotor performance, cognitive and affective skills during each year of study.

The Bachelor of Nursing programme can be done over four or five years. The main stream is the four year programme. This is offered to students who meet the entrance requirements. The five

year programme or the Extended Curriculum Programme (ECP) is offered to students who do not meet the entrance requirements for the main stream programme.

According to the SON Annual Report (2015), the student-clinical supervisor ratio increased to more than 1:35 (University of the Western Cape, 2015). The report further states that the supervisors found it difficult to provide dedicated clinical skills development and support to students. This left them with no option but to focus primarily on clinical evaluations at the expense of facilitating learning of clinical skills (University of the Western Cape, 2015).

1.2.2 Context

Because of a shortage of staff, the burden is on students to master clinical skills during a few practice sessions. This may contribute to a lack of confidence in performing required nursing skills. The researcher was unable to find a study which provided specific information on the effects of such learning condition from the student point of view or their experience of the OSCE in such teaching-learning conditions.

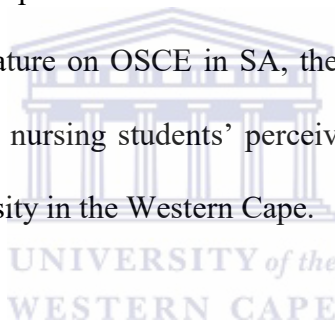
Stress is viewed as a common life experience that can affect individuals positively or negatively by either motivating or hindering achievement (Maville, Kranz, & Tucker, 2004). Studies have reported that no matter how high the students' confidence is when they prepare for the clinical examination, they experience stress during the OSCE (Barry *et al.*, 2012; Fidment, 2012; McWilliam & Botwinski, 2013; Newble, 2004; Rushforth, 2006). The core intent of OSCE is to evaluate students' ability to transfer classroom learning into clinical experience using simulated clinical encounters that depict nursing practice in the cognitive, affective and psychomotor nursing domains (McWilliam & Botwinski, 2013; Newble, 2004; Rushforth, 2006).

The OSCE has been found to be beneficial for students as it is associated with the sense of achievement which prepares students for their subsequent nursing clinical placement. Furthermore, it increases the confidence of students in their learning ability by helping them to identify areas of weakness and gaps in their competencies (Ali, Mehdi & Ali, 2012; Fidment, 2012; Small, Pretorius, Walters, Ackerman, & Tshifugula, 2011). Despite the beneficial aspect of the OSCE, however, the literature suggests that OSCE is also associated with high levels of stress and anxiety. It reduces the academic performance of about 10% to 30% of students (Barry *et al.*, 2012; Faramarzi, Pasha, Bakhtiari, Salmalian, Delavar, Amiri, & Nikpour, 2013). High stress levels may affect not only academic performances, but also the other aspects of student's health such as the possible development of hypertension, heart disease, and immune deficiency disorders (Lee, Holzemer, & Faucett, 2007). Undergraduate students including first year nursing students frequently experience high levels of stress during clinical skill training that may result in psychological or emotional disturbances (Shaban, Khater, & Akhu-Zaheya, 2012). According to these researchers, such disturbances may affect the professional life of these students ultimately affecting the quality of patient care they provide (Shaban *et al.*, 2012). Leodoro (2004) found that during nursing education and training, nursing students are frequently exposed to various stresses which may directly or indirectly hamper their learning and clinical performance.

The first year nursing students in this study have to demonstrate their ability to apply theory as well as their clinical skills in order to promote to the second year level. Thus both the final written examination and the OSCE are compulsory. The OSCE is the method used to assess students' clinical or practical capabilities and offers students the opportunity to demonstrate interpersonal and interview skills, problem-solving abilities, assessment skills, and the application of basic clinical knowledge (McWilliam & Botwinski, 2013). However the OSCE

has been identified as being more stressful than a written examination (Brand & Schoonheim-Klein, 2009).

In addition to the literature cited above, the researcher's own experience of the OSCE as a student played a role in the decision to conduct this study. Over and above personal experience as a first year nursing student, the researcher had observed the effect of the OSCE-related challenges on her peers and heard them articulate their experiences. They spoke about having a mental block, feeling overwhelmed and finding it difficult to speak during the OSCE. This fuelled her desire to conduct this study. The researcher could find no studies that had been done on first year nursing students' perception of stress associated with OSCE in South Africa (SA). In view of the paucity of the literature on OSCE in SA, the researcher undertook this study to explore and describe the first year nursing students' perceived stress associated with their first experience of an OSCE at a university in the Western Cape.



1.3 RESEARCH PROBLEM

According to Brink, Van der Walt and Van Rensburg (2012), a good research plan commences with a problem. A research problem raises the issue(s) to be addressed and validates the need for a study through the development of a convincing argument about the phenomenon at issue (Polit & Beck, 2011).

Despite the growing literature on perceptions of stress amongst undergraduate nursing student internationally and elsewhere (Small, et al.2013; Barry et al., 2011), little was found on the literature to highlight their stress during their first OSCE in South Africa.

Given the context of the university where the study is conducted, with an increase first year nursing students population is confronted with shortage of staff; the available staff are burdened to guide and

support the students before their clinical examination. In addition, the researcher experience of blackout, feeling overwhelm, inability to speak then failure during her first OSCE as a first year nursing student as well as the paucity of literature forms the foundation of this study. Further, with the increase first year nursing students' population little is known about stress amongst them during their first OSCE at a particular University in the Western Cape.

1.4 SIGNIFICANCE OF THE STUDY

The findings of this study contribute to the body of knowledge about the perception of stress by the first year nursing students' associated with their first experience of an OSCE at a university in the Western Cape. This knowledge provides the community of nurse educators in a university nursing school where the study was undertaken with relevant information on factors that cause stress during OSCE. The findings may assist the staff to decrease the level of stress experienced by first year students during their first OSCE. May assist policy makers in the development of guidelines to support students during OSCE.

1.5 RESEARCH QUESTION

The research question focuses on the concept(s) to be examined and the theoretical foundation of the research study and is used to guide the research (Haber, 2010; Polit & Beck, 2011).

In this study, the following research question was posed: "What is the perceived stress of first year nursing students associated with the first OSCE at a university in the Western Cape". Based on the research question the following main questions were asked:

1. What are the perceptions of stress amongst first year nursing students associated with the first OSCE at a university in the Western Cape?

2. What are the perceived factors causing stress amongst first year nursing students associated with the first OSCE at a university in the Western Cape?
3. What is the perceived incidence of stress amongst first year nursing students associated with the first OSCE at a university in the Western Cape?

1.6 AIM OF THE STUDY

Polit and Beck (2011) affirm that formulating the aim or purpose of a study allows the researcher to conceptualise and summarise the overall goal of a study.

The aim of this study was to determine the perceived stress of first year nursing students associated with the first OSCE at a university in the Western Cape.

1.7 RESEARCH OBJECTIVES

A research objective refers to definite actions or activities the researcher engages in the hope of finding answers to a problem or arriving at solutions to the challenges by conducting the study (Polit & Beck, 2011).

The objectives of this study were to:

- Determine the perceived stress amongst first year nursing students associated with their first experience of an OSCE at a university in the Western Cape;
- Determine the perceived factors causing stress amongst first year nursing students associated with the first OSCE at a university in the Western Cape;

- Determine the perceived incidence of stress amongst first year nursing students associated with their first experience of an OSCE at a university in the Western Cape.

1.8 OPERATIONAL DEFINITIONS

- **Nursing student:** An individual undergoing training and education in nursing (South African Nursing Council, 2005). In this study, a nursing student refers to a student who is registered for a first year of study in the Bachelor of Nursing degree programme at the participating university in 2015.
- **OSCE:** Performance-based examination in which nursing students are observed whilst they demonstrate a multitude of nursing clinical skills or behaviours within simulated environment with or without standardized patients (McWilliam & Botwinski, 2013). In this study, the OSCE is the performance-based examination which first year students do at the end of the year as a means of demonstrating their nursing clinical skills within a simulated environment.
- **Perception:** The ability to see, hear, or become aware of something through the senses (Oxford Dictionary, n.d.). This study refers to the way in which the nursing students in question consciously and unconsciously perceive comfortable and uncomfortable stimuli during OSCE.
- **Stress:** “a state of mental or emotional strain or tension resulting from adverse or demanding circumstances” (Oxford Dictionary, n.d.). In this study stress can be defined as a feeling of being upset, nervousness, unable to remember information or procedures or to cope during OSCE.

- **Stressor:** “a factor or phenomenon external to the individual that causes stress” (Oxford Dictionaries, n.d.). In this study a stressor is any factor such as the lack of enough time, time spent waiting for the examination or a part of it, or making mistakes during the OSCE which may cause the student nurse to experience stress.

1.9 RESEARCH METHODOLOGY

According to Burns and Grove (2012), a research design is a blueprint to guide the planning, implementation and control of a research study. The current research study employed a quantitative, descriptive survey design. In this section, the research design and methods that were used in this study are described briefly. A detailed discussion of the methodology and procedures is provided in Chapter Three.

1.9.1 Research setting

The research setting refers to geographical, political and other factors that influence the environment where a research study is conducted (Burns & Grove, 2012). The current research study was conducted in the School of Nursing at a university in the Western Cape. Further details concerning the research setting are provided in Chapter Three.

1.9.2 Population

A population consists of all of the individuals or elements to be considered for a research project (Burns & Grove, 2012). The population for this study is all first year nursing students in BN programme in all universities in South Africa. The target population for this study is all first year nursing students in the BN main stream programme at the participating university in 2015. This population was selected because they would be exposed to the OSCE for the first time in their

final examinations at the end of their first year. The OSCE is used to assess their clinical nursing skills. A detailed discussion of the population is provided in Chapter Three.

1.9.3 Sampling

According to Polit and Beck (2011), sampling involves selecting a portion of the population to represent the entire population. In this study the researcher used a convenience sampling strategy.

Burns and Grove (2012) define a sample as a subset of members who traditionally belong to the population and are selected by the researcher for the purpose of a study. The sample in this study consisted of all BN students registered for the first time in 2015 at the selected university. A detailed discussion of the sampling, sample and sample size is provided in Chapter Three (3.5).

1.9.4 Description of the research instrument and the data collection

A research instrument is defined as a tool to collect data on a specific topic (Burns & Grove, 2012). Polit and Beck (2011) define data collection as the process of gathering information to address a research problem. The existing, self-administered Perceived Stress Scale (PSS) developed by Cohen (1994) was adapted for use in this study. A detailed description of the instrument, adaptation and the data collection process is provided in Chapter Three (3.6.1).

1.9.5 Reliability

Reliability means that the measuring instrument will produce consistent results when different researchers undertake similar research in similar circumstances (Delpont, 2011). The reliability of this study was established by using the Cronbach's Alpha coefficient. The reliability of the instrument used was assessed by the supervisors in consultation with a statistician, who tested the reliability of the questionnaires. Further detail is provided in Chapter Three.

1.9.6 Validity

Validity refers to the extent to which the measuring instrument measures the concepts of the research study (Burns & Grove, 2012). The questionnaire was reviewed by a statistician, the research ethics committee and the supervisor who all submitted their input. The questionnaire was pre-tested on ten participants that helped to refine the questions for improved meaning, clarity and conceptualisation.

Further discussion of the different types validity used in this study is provided in Chapter Three (3.6.5).

1.9.7 Data Analysis

The computer programme *Statistica 13* was used to do the data analysis. The statistician assisted with the calculation of descriptive statistics and the presentation of the findings in percentages and tables. The data analysis process and procedure are discussed in detail in Chapter Three.

1.9.8 Ethical considerations

Approval to conduct this study was obtained from the Research Committee at a university in the Western Cape (Appendix 1). Permission to have access to potential student respondents was obtained from the Head of the School of Nursing at that university (Appendix 3). Participation in this study was purely voluntary. Further details on the way in which the ethical requirements were met are provided in Chapter Three.

1.10 CHAPTER OUTLINE

Chapter 1: Overview of the Study. This presents the background of the study, the research problem, purpose of the study, research objectives, significance of the study and a brief description of the research method and design.

Chapter 2: Literature Review. This discusses the literature review on the perceptions of stress, factors causing stress and the incidence of stress.

Chapter 3: Research Methodology. This chapter discusses the research design and methodology, including the selection of the data-collection instrument. The data analysis is also discussed.

Chapter 4: The Results and Discussion. This chapter presents an in-depth discussion of the research findings.

Chapter 5: Conclusion and Recommendations. This chapter concludes this research study, briefly discusses its limitations and makes recommendations for practice and further research.

1.11 CONCLUSION

This chapter introduced the study and provided the background to it. The theoretical framework, aim, and objectives of the study were also outlined, as were the research methodology employed and the ethical considerations for this study.

Chapter Two provides a detailed discussion of the literature that was reviewed as part of this study. It informs the framework of the study and is used to support the results of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents a review of the existing literature on the topic of perceived stress of first year nursing students during the OSCE. According to Brink *et al.* (2012), a literature review should provide an overview of current or available knowledge of the research problem. The researcher reviewed articles that were published between 1998 and 2015 that were relevant to the research objective and the research question in order to gather information on existing knowledge about perceived stress of first year nursing students associated with the first OSCE. The researcher selected literature published during this particular time period (from 1998 to 2015), because this captures the shift in the focus of research to more specific aspects such as student attitudes, confidence levels, communication skills, stress and learning especially during an OSCE assessment (Allen *et al.*, 1998). Before 1998, the focus was on stress in general during the OSCE itself or while preparing for it.

The following databases were used to do the literature search: EBSCOhost, Google scholar, Medline, and CINAHL. The researcher used terms, such as perception of stress, anxiety, assessment, student nurses, experience, undergraduate, first year and OSCE to do the literature search. The review revealed a number of gaps in the literature. Much of the literature focuses on stress in nursing in general, rather than on stress in specific contexts. Presently there is paucity of literature on first year nursing students' perception of stress associated with the first OSCE in South Africa. Most studies on this topic were conducted in Egypt.

This literature review is presented under the following sub-headings: Demography of the population on the topic of study, Perception of stress, Factors causing stress, and Incidence of stress during OSCE. The Conceptual framework of this study is also discussed.

2.2 DEMOGRAPHY OF THE POPULATION ON THE TOPIC OF STUDY

Globally, nursing is a profession dominated by females. According to the South African Nursing Council (SANC), there were 15 508 female and 1 193 male registered nurses in the Western Cape Province in 2015 (South African Nursing Council/Stats, 2015). At the time, there were 2 633 student nurses of whom 2 118 were female and 515 were male in the Western Cape. The predominance of females seems to be the pattern internationally. In a study comparing test anxiety during the OSCE with test anxiety during traditional (non-standardized clinical skills examination) assessment methods in undergraduate midwifery students in Iran, all (n=52) of the students were female (Faramarzi et al., 2013).

According to SANC, the youngest students who commenced the four year programme in 2015 were 17 years old and the oldest student was 56 years; the mean age was 24 years (South African Nursing Council, 2016). The situation is much the same internationally. In a study comparing test anxiety in OSCE and traditional assessment methods in undergraduate midwifery students, the mean age was 23.1 (SD ±0.7) (Faramarzi et al., 2013). Another study, conducted in Egypt about the Egyptian Nursing Student's Perceptions of an OSCE, indicated that the mean age of the nursing students was 20.92 (SD±0.69) years (Mahmoud & Mostafa, 2011).

2.3 PERCEPTION OF STRESS DURING OSCE

Several studies have confirmed the value of the OSCE method which is considered an essential way of evaluating medical and nursing students' clinical capabilities during their

years of training (McWilliam & Botwinski, 2013; Mahmoud & Mostafa, 2011; Small et al., 2011). The OSCE has been found effective in preparing students for clinical placement. It increases their ability to think critically, as well as their self-confidence, and provides a learning opportunity in that it makes provision for faculty feedback (Fidment, 2012; Small et al., 2011). Despite the positive value of the OSCE, several studies have indicated that the OSCE greatly elevates the stress levels of the students, regardless of the year level of study (Fidment, 2012; Mahmoud & Mostafa, 2011; Small et al., 2011).

Studies conducted in Africa produced similar findings to studies conducted elsewhere. Mahmoud and Mostafa (2011) found that the OSCE caused emotional stress. In this study, 77% (n=77) of the students perceived this method of assessment stressful. In a study conducted by Small *et al.* (2011) in Africa, the researchers found that 36% (n=73) of the respondents had experienced stress and or had felt extremely anxious during the OSCE.

Similar findings were reported by international studies. For example, in a study conducted in Iran, Faramarzi et al., (2013) found that more than half of the respondents (56.9%) experienced moderate anxiety during the OSCE assessment. Of these, 37.3% experienced low anxiety during assessment, and 3.9% experienced severe anxiety during assessment. Similarly in a qualitative study conducted in the United Kingdom (UK), about nursing students' experience of the OSCE, Fidment (2012) found that all the respondents that were interviewed reported feelings of anxiety experienced either before and or during the OSCE. The highest anxiety levels during the OSCE were those revealed in a study conducted in Amsterdam by Brand and Schoonheim-Klein (2009). These authors examined whether the level of stress of dental students induced by an OSCE was higher than by a written examination and a preclinical crown and bridge preparation among third year dental students. In a study conducted by Allen *et al.*, (1998) in the United States of America (USA), the

authors reported that 37% of the respondents stated that they were more anxious during the OSCE than they would normally be during an assessment. However, it should be noted that the students in this study also pointed out that although they had experienced a high level of anxiety, they had gained incalculably in self-confidence, knowledge and skills (Allen et al., 1998).

It appears that the stress experienced by students during the OSCE is a global phenomenon. Most of the students reported experiencing anxiety, elevation of stress levels and emotional stress at a much higher level than they would do in an assessment.

2.4 FACTORS CAUSING STRESS DURING THE OSCE

The literature identifies several factors as causing stress during the OSCE. One of these is time pressure. In Africa a study by Mahmoud and Mostafa (2011) reported that more than half of the students (55%) had difficulties with time management during the OSCE. Another study conducted in Egypt found that 97.3% of students reported stressors such as lower grades than they hoped for, not enough sleep, too many things required at the same time (Eswi, Radi & Youssri, 2013). It is interesting that in the Egyptian study the students with lower grade point averages (GPA) experienced more moderate to high anxiety than their peers (Ali *et al.*, 2012).

Other international studies (in UK, Ireland, Netherland, Iran and USA) reported other factors as causing stress during the OSCE. Many of the interviewees in a study conducted in the UK reported the lack of familiarity with the OSCE assessment and a concomitant fear of the unknown, inadequate preparation, and the simulation and role playing required during the OSCE as causes of anxiety during the OSCE (Fidment, 2012). In the same study, the

interviewees reported feelings of being shy and being uncomfortable during the OSCE (Fidment, 2012).

In a study on the evaluation of the implementation of the OSCE in nurse registration programmes in a centre in Ireland, the students stated that the highest stress was experienced in the corridor prior to entering the assessment room (Brosnan *et al.*, 2006). In the USA scholars found that doing the OSCE for the first time generated anxiety among students, because their clinical performance was being observed and graded for the first time in a standardized manner (Allen *et al.*, 1998). In contrast, researchers in Amsterdam found that the respondents who reported having done more preparation had a high anxiety level (Brand & Schoonheim-Klein, 2009).

It should be noted that high levels of anxiety do not necessarily have a negative effect on performance. In the study done in Amsterdam, the respondents with higher anxiety levels obtained better grades (Brand & Schoonheim-Klein, 2009).

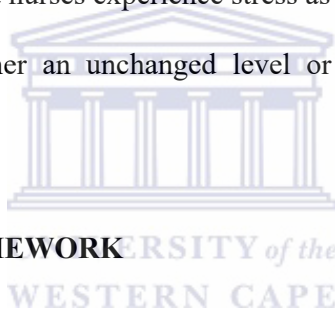
It can be concluded that the waiting time in the corridor prior to entering the assessment room, time management, lower grades, lack of sleep, inadequate preparation, fear of the unknown, and personal discomfort such as shyness are some of the factors that are experienced as causing stress during the OSCE internationally.

2.5 THE INCIDENCE OF STRESS DURING THE OSCE

The OSCE was found to be a valuable tool for evaluating clinical skills and capabilities that are not easily evaluated by other testing methods (Ali *et al.*, 2012). In Africa, a study conducted in Namibia on the perception of first and third year nursing students of assessment involving the OSCE, showed that 36% (n=73) of the students had experienced stress and or had felt extremely anxious (Small *et al.*, 2013).

Internationally, similar findings were reported in a study conducted in the USA (Allen *et al.*, 1998). These scholars suggested that students' level of anxiety was unchanged as they proceeded through the OSCE examination (Allen *et al.*, 1998). The interviewees in a study conducted in the UK, reported experiences of anxiety before the OSCE while in the waiting area, as well as during the OSCE assessment (Fidment, 2012). Research done in the same field found that students experienced a substantial increase of anxiety compared to baseline levels, with the highest anxiety levels reported during an OSCE (Brand & Schoonheim-Klein, 2009). Similarly, in a study conducted in Ireland, 56.3% (n=49) of the students reported that the OSCE examination was more stressful than a written examination (Brosnan *et al.*, 2006).

It is evident that globally student nurses experience stress as they progress through the OSCE. Most students experienced either an unchanged level or higher anxiety levels of stress compared to the baseline.



2.6 CONCEPTUAL FRAMEWORK

A conceptual framework provides the theoretical foundation for a research study based on prior investigations about the phenomenon being studied, and certain assumptions and philosophies (Burns & Grove, 2012).

The conceptual framework of this study is based on the stress and coping theory of Lazarus and Folkman (1984). This theory was found a very useful means of identifying the presence or absence of stress experienced by the first year nursing student during OSCE in the current study. According to Lazarus & Folkman (1984) primary appraisal consists of a cognitive process in which a person asks questions like, “*What does this stressor and or situation mean?*” and “*How can it influence me?*” The three typical answers to these questions are “*This is not important*”, “*This is good*”, and “*This is stressful*” (Lazarus & Folkman, 1984).

Secondary appraisal comprises those feelings related to dealing with the stressor or generated stress (Lazarus & Folkman, 1984). The person makes statements like *“I can do it if I do my best”*, *“I will try whether my chances of success are high or not”*, and *“If this way fails, I can always try another method”* which indicate positive secondary appraisal (Lazarus & Folkman, 1984). In contrast to these, statements like, *“I can’t do it, I know I will fail”*, *“I will not do it because no one believes I can”* and, *“I won’t try because my chances are low”* indicate negative secondary appraisal (Lazarus & Folkman, 1984).

Primary appraisal suggests that the individual considers the stressor as a threat that will cause harm either in the present or in the future, such as failure in the OSCE (Lazarus & Folkman, 1984). On the other hand, secondary appraisal occurs simultaneously with primary appraisal and is concerned with the feelings produced by the stressor or the stress produced (Lazarus & Folkman, 1984). Lazarus and Folkman (1984) assert that when the stressor is perceived as a challenge, a positive stress response is developed. An example of this is that if there is an expectation of a positive outcome, for example passing the OSCE, the stress has a positive effect (Lazarus & Folkman, 1984). Therefore, one can manage to endure an overwhelming situation, yet be able to acknowledge that the situation was stressful (Lazarus & Folkman, 1984). In Lazarus and Folkman’s study, the first year nursing students found the situation stressful and then decided how they could navigate through it. This present study describes first year nursing students’ perception of stress associated with their first OSCE and their suggestions on how to deal with it.

2.7 CONCLUSION

This chapter discussed the literature in relation to the phenomenon of perception of stress by first year nursing students during OSCE and described the conceptual framework of Lazarus and Folkman (1984) that was used to guide the empirical process of the study. Globally the

nursing profession is dominated by females. It is evident that student nurses throughout the world experience stress during OSCE, with most students experiencing an elevation of stress levels and emotional stress to a far greater extent than they would in traditional forms of assessment. It seems that time management, lower grades, lack of sleep, inadequate preparation, fear of the unknown, as well as feeling shy and uncomfortable are some of the factors causing stress during OSCE, globally. In conclusion, student nurses experience stress as they progress through the OSCE; with most students experiencing either unchanged levels or high anxiety levels of stress compared to the baseline.

Chapter Three provides a detailed discussion of the methodology that was used in this study.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the methodology employed in this study to achieve the research objectives. It discusses the research approach, the design and study setting, the population and sampling, the data collection instrument, the reliability and validity of the data collection instrument and the data collection process. The method of data analysis is also outlined as are the steps taken to ensure that the ethical requirements for this study were met.

3.2 RESEARCH METHOD

This section describes in detail the research approach and design used for this study in order to answer the research question.



3.2.1 Research Approach

According to Burns and Grove (2012), quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. A quantitative approach was used in this study because of its appropriateness for a survey of the variables concerned, and the relationships between variables of stress such as perception of stress, factors that induce stress, and the incidence of stress as perceived by the first year nursing student during their first OSCE.

3.2.2 Research Design

According to Burns and Grove (2012), a research design is a blueprint to guide the planning and the systematic implementation of a research study. This research study employed a

quantitative, descriptive survey design. A descriptive research design describes variables with the intention of answering the research question (Brink *et al.*, 2012). According to Polit and Beck (2011), the purpose of descriptive studies is to observe, describe, and document aspects of a situation in its natural setting. In this study the descriptive research design was employed to determine first year nursing students' perception of stress during their first OSCE.

3.3 RESEARCH SETTING

The research setting refers to geographical, political and other factors that influence the research site (Burns & Grove, 2012). The setting of this study was a university in the Western Cape, which is situated approximately 24km from Cape Town City Centre. In 2015 it had an enrolment of approximately 25 000 students. This university has various faculties, including the Faculty of Arts, Science, Law, Economics and Management Science and Community and Health Sciences. In the Community and Health Science Faculty (CHS), there are six departments and three schools, one of which is the School of Nursing (SON) where the study was conducted. The SON offers education and training opportunities to nurses at both under and post graduate level. The student nurses who participated in this research were all enrolled for the core undergraduate nursing programme, the Bachelor of Nursing (BN). SON also offers postgraduate programmes such as the Master's and PhD programmes.

The BN programme can be done over four or five years. The four year programme is the main stream programme and the five year programme is the Extended Curriculum Programme (ECP) for those that do not meet the entrance requirements for the four year programme. In 2015, 800 students in total were registered for the BN core programme from first to fourth year. In that year, there were 225 registered students for BN I (first year). This includes students who were repeating the year.

3.4 POPULATION

A population consists of all the types of individuals or elements to be considered for a research project (Burns & Grove, 2012). The population for this study was all the first year nursing students in BN programme in all universities in South Africa. The target population for this study was all first year nursing students in the BN main stream programme at the participating university. This population was accessed because it was exposed to the OSCE which was a core component of the study.

3.5 SAMPLING, SAMPLE AND SAMPLE SIZE

Sampling, sample and sample size are discussed next.

3.5.1 Sampling

According to Burns and Grove (2012), sampling refers to the selection of a group of people, events, behaviours or elements on which to conduct a study. In this study the researcher used a convenience sampling strategy. Burns and Grove (2012) explain that convenience samples make it possible to conduct studies on topics that cannot be examined through the use of probability sampling. They add that in convenience sampling the subjects are included in the study because they are available and have first-hand experience of the phenomenon under investigation (Burns & Grove, 2012). The researcher utilised convenience sampling because first year nursing students experienced the OSCE for the first time thus they had first-hand experience. To ensure that the convenience sampling was consistent, the researcher used inclusion and exclusion criteria which were refined as follows:

3.5.1.1 Inclusion Criteria

- All nursing students who registered for the first year level of the Bachelor of Nursing Programme for the first time in 2015 at the selected university. Their inclusion was based on the assumption that they had no prior experience of stress associated with the phenomenon in question, the OSCE. This would be their first experience of the OSCE.
- Students who had obtained entry to the clinical examination during October and November 2015 through obtaining a continuous assessment mark of 40%, as stipulated by the participating university.

3.5.1.2 Exclusion Criteria

- All repeating students who were registered in the first year level of the Bachelor of Nursing Programme in 2015 academic year were excluded based on the assumption that they had prior exposure to the OSCE.
- Students who were in the Foundation Five Year Nursing Programme. They were excluded because they would be exposed to their first OSCE at a much later stage in the programme. Students in the Foundation Programme do the first year nursing content over two years.
- Students who were previously exposed to the OSCE during prior academic tertiary courses (other than nursing) were excluded for the same reason as repeating students.

3.5.2 Sample

A sample is a subset of members who traditionally belong to the population and are selected by the researcher for the purpose of a study (Burns & Grove, 2012). The sample of this study consisted of all BN students registered for the first time in 2015 at the selected university. The students were chosen as they provide information necessary to meet the aim of the study.

3.5.3 Sample size

The sample size is the actual number of people taking part in the study (Burns & Grove, 2012). The sample size for this study was the 213 BN students registered in 2015 at the selected university for the first time who met all the inclusion criteria.

3.6 DATA COLLECTION METHOD

Polit and Beck (2011) define data collection as the gathering of information to address a research problem. In this study, a descriptive survey using the self-administered questionnaire as a tool to collect the required information from the respondents was undertaken. The self-administered questionnaire and the data collection process that were used in this study are discussed below.

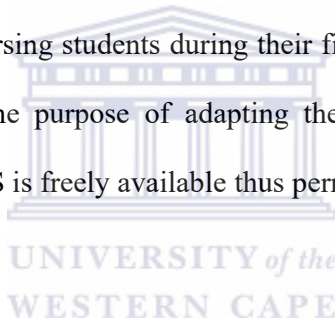
3.6.1 Description of the research instrument

Burns and Grove (2012) define instrumentation as the application of specific rules to develop a measuring device or tool. This device or tool is used to grade specific variables in a research study. An adapted form of an existing self-administered Perceived Stress Scale (PSS) (Cohen, 1994) questionnaire was used for this study. Since the research design is a descriptive survey, the use of a questionnaire as a data-collection method was deemed appropriate as it facilitated the collection of varied viewpoints on a phenomenon of inquiry. According to Delpont (2011), questionnaires can be used to collect information from individuals who are informed about a particular subject.

The PSS was adapted to meet the objectives of this study. The PSS is the most widely used psychological instrument for measuring the perception of stress (Cohen, 1994). It is designed to measure the degree to which situations in one's life are judged as stressful (Cohen, 1994). Furthermore, it addresses a number of direct queries about current levels of experienced

stress and asks questions about feelings and thoughts of the respondents during the last month prior to the time of the study (Cohen, 1994). The original PSS consisted of ten questions relating to feelings and thoughts that an individual might have had in the past six months prior to a person being interviewed. It is arranged in domains. However, the instrument as adapted for this study arranged the domains differently as is described below. The questions in the original PSS were scored using a five-point *Likert scale* ranging from “0 to 4”; with “0” indicating *the absence of stress* whilst “1” indicating *a low level of stress* and “4” indicating *a high level of stress*. Items were designed to tap into experiences of how unpredictable, uncontrollable, and overloaded respondents find their lives (Cohen, 1994).

The aim of this study was to determine the perception, factors and incidence of stress experienced by the first year nursing students during their first OSCE. The PSS was adapted as depicted in Appendix 6. The purpose of adapting the tool was to achieve the three objectives of this study. The PSS is freely available thus permission to use it in this study was not required.



Drawing on the original ten questions of the PSS, the researcher devised thirty-nine questions that were aligned with the research objectives after consulting the literature. Three criteria domains were created into which the questions from the original PSS were fitted after being rephrased and restructured. These questions were then arranged in sections and domains as shown in the study data collection tool (Appendix 6). Below a description and explanation is provided of the adaptations made to the original PSS data collection tool. The tool has three domains: (i) *Perception of stress*; (ii) *Factors causing stress*; and (iii) *Incidence of stress*. Each of these domains will be described individually to their role in the study.

3.6.1.1 Section A: Demographic information

This section comprised nine questions. The respondents were asked to fill in demographic information by simply writing or ticking the relevant block that matched their responses. The demographic information obtained was needed to identify the characteristics of the sample. Demographic information collected included age in years, gender, marital status, race, and place of residence. It also asked respondents whether nursing was their first post school tertiary education and whether they had previously been assessed by the OSCE. This question represented a second level exclusion as opposed to the first level exclusion described in paragraph 3.5.1. As the researcher had no personal information about the respondents, this question identified and excluded any potential respondents who might have done the OSCE in another tertiary course other than nursing. If the answer to that question was “yes”, the respondent was instructed not to continue with the questionnaire; but if it was “no”, they were instructed to continue with the questionnaire. The assumption was that respondents had to apply only if the current OSCE would not be their first experience of that kind of assessment.

3.6.1.2 Section B Domain: Perception of stress

This section consisted of ten questions designed to determine the first year nursing students' current levels of perceived stress during the first OSCE. The following change was effected by the researcher; instead of “how often” as in the original questionnaire the respondents were asked “have you”. This reconstruction of the questions changed the nature of the questions from being general statements to being statements specific to a first experience of OSCE. The questions were scored using a five-point *Likert scale* ranging from “0 to 4”; with “0” indicating *the absence of stress*, “1” indicating *a low level of stress* and “4” indicating *a high level of stress*”.

3.6.1.3 Domain: *Factors causing stress*

This section consisted of ten questions designed to determine the first year nursing students' current perceived factors causing stress during the first OSCE. The following change was effected by the researcher; instead of "how often" as in the original questionnaire the respondents were asked "have you". This reconstruction of the questions changed the nature of the questions from being general statements to being statements specific to perceived factors causing stress during a first experience of OSCE. Similar to the other domain, the questions were scored using a five-point *Likert scale* ranging from "0 to 4"; with "0" indicating *the absence of stress*, "1" indicating *a low level of stress* and "4" indicating *a high level of stress*".

3.6.1.4 Domain: *Incidence of stress*

This section consisted of ten questions designed to determine the first year nursing students' perceived incidence of stress during their first OSCE. In this section the focus is on the intensity of the OSCE experience. The following change was effected by the researcher; instead of "how often" as in the original questionnaire the respondents were asked "have you". This reconstruction of the questions changed the nature of the questions from requiring general information to being specific about the incidence of stress during a first experience of the OSCE. Similar to the other domains, the questions were scored using a five-point *Likert scale* ranging from "0 to 4"; with "0" indicating *the absence of stress*, "1" indicating *a low level of stress* and "4" indicating *a high level of stress*".

3.6.2 Data collection process

Polit and Beck (2011) define data collection as the gathering of information to address a research problem. After approval had been obtained from the Research Ethics Committee (Appendix 1), the researcher obtained permission from the Head of the School of Nursing

(Appendix 3) to have access to students and to invite them to participate in the study. Data collection was undertaken from October to November 2015 during the first year clinical examination at the selected university.

Prior data collection

Prior to the data collection, the researcher contacted the clinical coordinator who is responsible for planning the OSCE of the first year students. This was done to arrange a date and time for an information session with the proposed respondents.

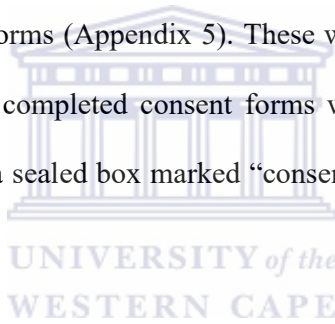
Three weeks prior to the OSCE an information session was conducted in each of the four first year classes. This was done to give potential respondents information pertaining to the study, to alleviate any fears and to answer possible questions. During the information session the researcher gave a detailed explanation of the purpose of the study, the reasons for selecting the first year nursing students and the possible risks of the study. At that point, the information sheets (Appendix 4) were handed out so that they could go through the information again and have enough time to consider the information before signing. The researcher also assured the potential respondents that their participation in the study was voluntary, that they could withdraw from the study at any stage without negative consequences. Particular care was taken to emphasise that their participation would not affect their examination results. Potential respondents were also assured that their information would be treated as strictly confidential and that anonymity would be ensured by not requiring them to give their names.

The researcher explained the entire data collection process beforehand. Potential respondents were informed that data collection would occur on the day they would do the OSCE. The researcher also explained that after the OSCE, she would be in a room close to the OSCE venue so that they could come and complete the questionnaire once they had left the

examination venue. The researcher provided all these details in order to relieve any potential anxiety, and to allow the students the opportunity to ask any questions. Additional information sheets were left with the class coordinators to hand to students who were not present during the information session.

On the day of data collection

The researcher conducted the data collection. On the data collection day, the researcher put the necessary signage on the door of the venue that was to be used and ensured that the venue was quiet and conducive to filling in forms. When the students entered the venue (for data collection) in groups of eight, they were encouraged to sit and relax for a few minutes before coming up to sign the consent forms (Appendix 5). These were on a desk in the front of the room with pens available. The completed consent forms were inserted into a self-sealing, opaque envelope and placed in a sealed box marked “consent forms”. The envelopes and the box were prepared beforehand.



The researcher invited respondents to ask any questions they had before completing the questionnaires. Because the respondents were first year students, the researcher allowed sufficient time for them to think about any questions they might have and to have sufficient time to express what they wanted to say. Thereafter, each respondent was provided with a questionnaire and requested to put the completed questionnaire in a sealed box marked “questionnaires” once they had completed them. Respondents completed the questionnaires in the presence of the researcher. There was no time pressure.

3.6.3 Reliability

Reliability means that the measuring instrument will produce consistent results when used in similar circumstances or by different researchers (Delpont, 2011). The Cronbach Alpha is the

measure that was used to assess the reliability of this instrument. The adapted PSS used achieved a Cronbach Alpha of 0.6 which is acceptable for an exploratory research study of this kind (Hair, Black, Babin, Anderson & Tatham, 2006). For this study the Cronbach Alpha for each domain was calculated on ten items (Table 3.1). The instrument was deemed reliable because the score was influenced by reverse coding.

Table3.1 Reliability score of the adapted PSS

RELIABILITY STATISTIC		
DOMAINS	CRONBACH ALPHA	No OF ITEMS
PERCEPTION OF STRESS	0.60	10
FACTORS CAUSING STRESS	0.65	10
INCIDENCE OF STRESS	0.64	10

3.6.4 Pre-testing of the instrument

The researcher pre-tested the questionnaire with the intention of determining the accuracy of the information it elicited, the time required to complete the questionnaire, whether the questions could be readily understood, and also to ensure that it would elicit the required data. The questionnaire was pre-tested on three first year nursing students, who were repeating their previous year. They had therefore been assessed by the OSCE in the previous year. The results of this pre-testing were excluded as these students had previous exposure to OSCE.

The students found that the questionnaire was easy to answer and clear. It took 15 minutes for the students to complete all of the questions in the questionnaire. It seemed that the questionnaire would be an appropriate instrument for the planned research.

3.6.5 Validity

Validity of an instrument defines the degree to which the instrument truly reflects the abstract construct being investigated (Burns & Grove, 2012). This section discusses face validity, construct validity, and the content validity as related to this study.

3.6.5.1 Face validity

Face validity refers to the ability of the instrument to look (appear) as if it is measuring the content it is supposed to measure (Burns & Grove, 2012). Although it is considered the least scientific measure of validity, it is important to participants and it could positively or negatively influence the completion of the questionnaire (Delpont, 2011). Face validity was established in this study by consulting the experts in nursing science and requesting the supervisors to provide feedback on the face validity of the instrument.

3.6.5.2 Content validity

Content validity represents the extent to which the method of measurement includes all the major variables in the questionnaire (Burns & Grove, 2012). The content of the instrument is influenced by the research objectives which in turn influence the content validity of the instrument. In this case, content validity was established in the following way. After conducting a detailed literature review, the researcher presented the questionnaire to the supervisors and requested them to provide input. They were chosen because of their experience in quantitative research. All the changes they suggested were duly made.

3.7 DATA ANALYSIS METHOD

Data analysis is the method used to categorise order, manipulate and summarise, and then described raw data in meaningful terms (Brink *et al.*, 2012). Data analysis was conducted using *Statistica version 13*. This included calculating the mean for the items in each scale.

The information from section A and B on each questionnaire was captured and the raw data were entered on an Excel spread sheet. The columns of the spread sheet contained the variables (items of each domain) and the rows represented each respondent (Kruger, De Vos, Fouché & Venter, 2011). The individual responses from each questionnaire were entered by the researcher and checked twice to ensure accuracy. In the case of missing data, the cell on the spread sheet was left blank. Although Burns and Grove (2012) indicate that incomplete questionnaires should be excluded, the incomplete questionnaires in this study were processed. This is because the information on the participants' age, place of residence, and whether the participants had written the OSCE before was considered sufficient for analysis. It is important to note that only some of the information was missing. For instance a respondent's age might be all that was missing.

Positively stated items (items 4, 5, 7 and 8) from each domain were marked with an "r" to indicate that their responses needed to be reversed (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0). Data were analysed by scoring items in each domains from "0 to 4"; with "0" indicating *the absence of stress*, "1" indicating *a low level of stress* and "4" indicating *a high level of stress*". The following scores were given: (i) A total scoring ranging from 0-13 was considered low stress; (ii) Scores ranging from 14 to 26 was considered moderate stress; and (iii) Scores ranging from 27 to 40 was considered high stress as indicated by the PSS.

In this study, descriptive statistics were used to analyse and describe first year student nurses' perceptions of stress during their first OSCE. According to Brink *et al.*, (2012), descriptive statistics are used to describe and summarise numerical data. They can convert and condense

a collection of data into an organised, visual representation or picture, in a variety of ways, so that the data are more meaningful for the reader of the research report (Brink *et al.*, 2012). The measures to describe the data include means and standard deviations for continuous data and frequency distributions for categorical data elicited by Questions 1 to 6, Questions (a) and (b) (Appendix 6), and ordinal data Questions 1 to 10 of each domain (Appendix 6). As a measure of central tendency, the mean is the mathematical average of all the scores in this survey (Brink *et al.*, 2012). Standard deviation is a measure of variability and refers to the variation of the scores in relation to the mean score (Brink *et al.*, 2012). Descriptive statistics on this study are presented in the form of tables in Chapter Four.

Inferential statistics are applied to determine statistical differences between groups or relationships between variables (Burns & Grove, 2012). In this study, the Pearson's correlation was used to examine the relationship between demographic variables and each domain. The Kruskal-Wallis ANOVA or One-Way ANOVA was used to determine whether there was a significant difference between two groups, for example male and female, a perception of stress during the OSCE, and/or an incidence of stress among males and females during the OSCE. A p-value of $p < 0.05$ represented a statistically significant difference between variables with 95% confidence levels.

3.8 ETHICAL CONSIDERATIONS

Certain ethical considerations needed to be addressed in order to protect the human rights of individuals during their participation in a research study (Burns & Grove, 2012). The first step was to obtain approval to conduct this research from the Research Ethics Committee of the selected university in the Western Cape and to obtain the research project registration number 15/4/56 (Appendix 1). Formal permission to approach the students was obtained from the Head of the School of Nursing at the same university (Appendix 3).

3.8.1 Right to privacy, anonymity and confidentiality

Each respondent must have the right to privacy with respect to anonymity and confidentiality. Anonymity requires that the individual respondents in a research study are not identified by name (Brink *et al.*, 2012). In this study, in the interests of anonymity respondents were not required to write their names on their questionnaires. Anonymity was further guaranteed by the placement of the signed consent form in a sealed envelope in a separate box. Hence, the consent forms could not be matched to the questionnaires.

Confidentiality means that the individual responses of the respondents are kept private and not disclosed without the authorisation of the respondent (Burns & Grove, 2012). In this instance, confidentiality was ensured by storing each questionnaire in a sealed box. Access to the information provided by the respondents was restricted to the researcher, the researcher's supervisor, the researcher's co-supervisor and a statistician. The questionnaires and results have been stored in the researcher's cloud account and will remain there for five years. After that time, the data will be destroyed.

3.8.2 Informed consent

Consent is considered informed if the researcher has fully explained the details of the research project to the potential respondents or participants and if their consent to participate is given only once they have fully comprehended the information (Burns & Grove, 2012). After each OSCE session, the potential respondents were allowed to ask questions to clarify any aspect they did not fully understand or raise any concerns. The researcher emphasised that participation was entirely voluntary that those who agreed to participate would have the right to withdraw from the study at any time without being penalised in any way. To further allay any fears related to the study, the potential participants were also informed that their

participation or non-participation would not influence their OSCE marks in any way. Only at that point were they asked to sign the consent form.

3.8.3 Beneficence

The ethical principle of beneficence is “the duty to do or to promote good” (Muller, 2009). This study meets this requirement in that the data generated during the study should benefit both nursing educators and students by contributing to improved preparation of students for the OSCE examination.

3.8.4 Non-maleficence

The principle of non-maleficence is “the duty not to inflict harm” (Muller, 2009). In this research study the respondents were not coerced to participate and had the right to withdraw from the study at any time without any penalty. Informed written consent was obtained from the respondents. The respondents were asked to complete the questionnaires just after their OSCE session while their experience of the event was still fresh. In anticipation of potential risks, such as feeling of uneasiness or anxiety or emotional discomfort or hurt, each participant was offered counselling by a professional counsellor, which the researcher had prearranged. However, none of the participants made use of this offer. The information session three weeks before the OSCE, as well as just before the OSCE were designed to alleviate any concerns that the respondents might have had.

3.9 CONCLUSION

This study employed a quantitative, descriptive survey design using an existing self-administered Perceived Stress Scale (PSS) questionnaire that had been adapted to measure the perception of stress, factors causing stress and the incidence of stress of first year nursing students associated with their first OSCE. The adapted PSS was used for this study because it

is designed to measure the degree to which situations in one's life are judged as stressful and poses a number of direct questions on current levels of experienced stress. A total of 213 first year nursing students were invited to be part of the study. Data were collected following a standardized process and adhering to requirements of ethical research.

The next chapter, Chapter Four, presents the findings of the study and discusses the results



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

In this chapter, the results of descriptive and inferential analysis are presented. The results of the study are presented under the following headings: Demographic data; Perception of stress during OSCE; Factors causing stress during OSCE; and Incidence of stress during OSCE. A discussion of the key findings is provided after the analysis.

4.2 PRESENTATION OF THE RESULTS

Out of two hundred and thirteen (213) first year nursing students who were invited to participate in the study, only eighty two (82) completed the questionnaires, resulting in a response rate of 38% (n=82). The limitation thereof is alluded to in chapter five.

The completed questionnaires were checked for missing values and or omission. They were also examined carefully to identify any misinterpretations or inconsistencies in the responses. For example, in Section A: Demographic information the respondents were asked to state their age in years. However, 13 respondents did not indicate their age. As a result, the researcher was not able to associate perceptions of stress with age in the case of these respondents. In Question (b), the respondents were asked if they had ever been assessed by the OSCE method before. The respondents were instructed to continue with the questionnaire only if their response was “no”. Four of the respondent did not tick either box. The missing responses (words) were later categorised as “no” at the researcher’s discretion, because these respondents had continued answering their questionnaires. Three respondents ticked “yes”, when this could have been “no”, because they continued with the questionnaires. Confusion was also noted in Question (a) where the participants were asked to indicate if nursing was

their first post school/tertiary education. One respondent circled tertiary education instead of ticking either the “yes” or “no” box (Appendix 6). These errors, the researcher used her discretion in each case were.

In addition, some of the respondents did not complete all of the questions in Section B. A possible explanation might be they somehow missed seeing those questions. This is reflected in the varying total number of respondents.

Once errors had been identified and where possible rectified, further inspection was conducted to confirm if the entire batch of distributed questionnaires was valid and usable.

4.3 DEMOGRAPHIC PROFILE

This section presents the following demographic variables: age, gender, marital status, race, place of residence, whether or not nursing was the first post matric tertiary education, and lastly if the respondents had been assessed by the OSCE method before the data collection day. It should be noted that racial designations are used as per South African Nursing Council practice. Table 4.1 depicts the demographic characteristics of the study sample.

Table 4.1: Demographic characteristics

Item	Groups	Number (%)
Age	18-20 (Adolescent)	36 (43.9)
	21-34 (Young Adult)	29 (35.3)
	35-45 (Middle-aged)	4 (4.8)
	No response	13 (15.8)
Gender	Male	18 (22)
	Female	64 (78)
Marital status	Married	5 (6)

	Single	76 (93)
	Separated	1 (1)
	Cohabiting	0
	Widow	0
Race	Black	58 (71)
	White	6 (7)
	Coloured	17 (21)
	Other	1 (1)
	Indian	0
Place of residence	Off-campus	76 (94)
	On-campus	5 (6)
Is nursing your first post Matric/tertiary education?	Yes	65 (79)
	No	17 (21)
Have you ever been assessed by the OSCE method before?	No	77 (94)
	No response	5 (6)

4.3.1 Age of the respondents

The demographic results of this study show that the age groups of the respondents ranged from 18 to 45 with almost half, 43.9% (n=36) of the respondents being between the ages of 18 and 20 years. They are classified as adolescents using Erickson's development stages (McLeod, 2013). More than a third 35.3% (n=29) of the respondents were young adults aged between 21 and 34 years. Middle-aged adults between the ages of 35 and 45 years accounted

for 4.8% (n=4) however 15.8% (n=13) of the respondents did not indicate their age as explained above.

Table 4.2: Mean age and SD

N	Median	Mean	SD	Min	Max
82	20.0	22.3	5.14	18	43

Table 4.2 shows the mean age of the respondents. The results indicated that the mean age of the respondents in this study was 22.3±5.14 with a standard deviation of 5.14.

4.3.2 Gender of the respondents

The gender distribution of this study is presented in Table 4.1. The results of this study show that the sample in this study consisted of 78% (n=64) females and 22% (n=18) males. More female nursing students participated in this study than male nursing students.

4.3.3 Marital Status of the respondents

The results of the study show that 6% (n=5) of the respondents were married, 93% (n=76) were single, and 1% (n=1) were separated. There were neither cohabitants nor widows amongst the respondents (Table 4.1).

4.3.4 Race of the respondents

The results of the study show that more than half, 71% (n=58) of the respondents were Black; 21% (n=17) were Coloured and 7% (n=6) were White. One percent (n=1) of the respondents indicated other. None of the respondents indicated that they were Indian (Table 4.1).

4.3.5 Place of residence of the respondents

The majority of the respondents, 94% (n=76) indicated that they were not residing in the university residential facilities. However, according to the Residence and Catering Services of the participating university, 309 nursing students (from first to fourth year, including the

foundation students) were being accommodated in the university residential facilities in 2015. Amongst these were 60 first year nursing students. This suggests that amongst the respondents who indicated that they were not living in the university residential facilities, there might have been some who were staying on site or within the campus area at the selected university's residential system.

4.3.6 Post matric/tertiary education

Table 4.1 shows the respondents answers to the question: "Is nursing your first post Matric/Tertiary education?" The results show that the majority of the respondents, 79% (n=65), indicated that nursing was their first post matric/tertiary education, and 20% (n=17) of the respondents indicated that nursing was not their first post matric/tertiary education.

4.3.7 Have you ever been assessed by OSCE method before?

Table 4.1 shows the response of the respondents to the question "Have you ever been assessed by the OSCE method before?" The results show that 94% (n=77) respondents indicated that had never been assessed by the OSCE method before the data collection day. Another 6% (n=5) of the respondent did not answer that question. However, they continued with the rest of the questionnaire. Since these respondents met the inclusion criteria, it was assumed that they had not been assessed by the OSCE method previously.

4.4 THE PSS AND INDICATORS PER DOMAIN

This section provides the rating of each item of the PSS per domain.

4.4.1 Domain: Perception of stress

As explained in Chapter Three (section 3.6), the data generated by Section B of the questionnaire were analysed according to the psychometrics of the Perceived Stress Scale

(PSS) developed by Cohen (1994) that was adapted for this study. Table 4.3 shows the mean and standard deviation of each item.

Table 4.3 Perception of stress during OSCE

ITEMS	Mean	SD
1. Being upset because of something that happened unexpectedly during OSCE	19.99	4.72
2. Inability to remember the important things during OSCE	19.51	5.03
3. Felt nervous and stressed during the OSCE	18.41	4.98
4. Felt confident about ability to perform during the OSCE	18.77	5.24
5. Felt at ease that things were going well during the OSCE	19.00	5.36
6. Unable to cope with all the required activities during the OSCE	20.05	5.05
7. Ability to control irritations in your life	18.65	5.29
8. Felt on top of things during the OSCE	19.19	5.32
9. Felt angry because of things that were outside of your control during the OSCE	19.81	4.97
10. Faced difficult challenges during an OSCE and could not overcome them	19.77	4.88

The questions related to the domain of perception of stress during the OSCE required the respondents to rate their perception of the frequency of stress during OSCE from ‘never’ to ‘very often’. The responses to question 6, which related to feeling unable to cope with all the required activities during the OSCE, had the highest mean of 20.05, while question 3, feeling nervous and stressed during the OSCE, had the lowest mean of 18.41 (Table 4.3).

Table 4.4 Categories of PSS Scores for Perception of Stress

Categories	Numbers (%)
High stress	2 (2)
Moderate stress	54 (66)
Low stress	26 (32)

The responses in Table 4.4 show that the majority 66% (n=54) of respondents indicated having experienced a moderate level of stress during their first OSCE, whilst 32% (n=26) of respondent indicated having experienced a low level of stress during their first OSCE and 2% (n= 2) of respondents indicated having experienced a high level of stress during their first OSCE.

4.4.1.1 Mean of nursing students' perception of stress

The students were asked whether they had experienced certain feelings: upset, inability to remember, nervous, stressed and angry during their first OSCE. The respondents were asked to rate the frequency of these feelings from "0=never" to "4=very often". Table 4.5 depicts the mean of nursing students' perception of stress.

Table 4.5: Mean of nursing students' perception of stress

Scale	N	M	Range		SD
			Min.	Max.	
Perception of stress	82	2.14	0.6	3.5	0.55

The results shown indicate that the mean response was 2.14 ± 0.55 and that the mean responses ranged from a minimum of 0.6 to a maximum of 3.5.

4.4.2 Domain: Factors causing stress

This section provides the rating on the PSS items. As explained in Chapter Three (3.6), this section was analysed according to the psychometrics of the adapted form of the PSS developed by Cohen (1994). Table 4.6 shows the mean and standard deviation of each item.

Table 4.6 Factors causing stress during OSCE

ITEMS	Mean	SD
1. Felt that there was insufficient time to complete OSCE	22.04	6.21
2. Found the OSCE waiting time in the corridor was too long and stressful	22.03	6.06
3. Felt anxious while waiting for OSCE	20.61	5.95
4. Felt familiar with the simulation manikin used for the OSCE	20.95	6.24
5. Felt shy about having to perform in front of the other students during practical sessions	21.68	5.88
6. Felt shy about having to perform in front of an evaluator during the OSCE	21.69	6.03
7. Found the OSCE environment stressful	21.05	5.84
8. Made mistakes during the OSCE that would not normally happen	20.84	6.15
9. Had an OSCE practice session before the actual OSCE	21.09	6.47
10. Felt well prepared before the OSCE	20.53	6.65

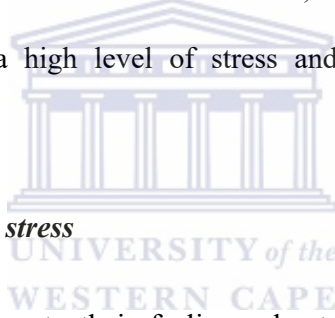
Question 1 (Appendix 6) required the respondents to rate the frequency with which they experienced factors causing stress from 'never' to 'very often'. *Whether they felt that there was insufficient time to complete the OSCE* had the highest mean rating of 22.04. Similarly, Question 10 (Appendix 6) required the respondents to rate the frequency with which they

perceived factors causing stress from ‘never’ to ‘very often’. In this case, *whether they felt well prepared before the OSCE* had the lowest mean rating of 20.53 (Table 4.6).

Table 4.7: Categories of PSS scores for Factors causing stress

Categories	Numbers (%)
High level of stress	2 (2)
Moderate level of stress	75 (93)
Low level of stress	4 (5)

The responses shown indicate that the majority of respondents 93% (n=75) experienced certain factors causing stress at moderate levels. However, these factors also caused 2% (n=2) of respondents to experience a high level of stress and 5% (n= 4) of respondents to experience a low level of stress.



4.4.2.1 Mean of factors causing stress

The respondents were asked to rate their feelings about the factors causing stress from “0=never” to “4=very often”. The students were asked about various situations during their first OSCE that caused them to experience a certain emotion. Table 4.8 depicts the mean of the factors causing stress.

Table 4.8 Mean of factors causing stress

Scale	N	M	Range		SD
			Min.	Max.	
Factors causes of stress	82	2.36	0.9	3.5	0.67

The responses indicate that the mean response was 2.36±0.67, with a range in the mean responses from a minimum of 0.9 to a maximum of 3.5.

4.4.3 Domain: Incidence of stress

This section provides the rating on the PSS items. As explained in Chapter Three (section 3.6), this section was analysed according to the psychometrics of the PSS developed by Cohen (1994). Table 4.9 shows the mean and standard deviation of each item.

Table 4.9 Incidence of stress during OSCE

ITEMS	Mean	SD
1. Felt certain about what the evaluator was looking for during the OSCE	20.29	5.43
2. Felt certain of the rules and how to perform during the OSCE	19.61	5.76
3. Felt overwhelmed during the OSCE	19.48	5.49
4. Felt prepared for the OSCE but was unable to remember	19.39	5.57
5. Failed to remember to talk while performing the procedure during the OSCE	19.94	5.43
6. Felt unprepared for the OSCE	20.90	5.58
7. Felt unsure about how to perform during the OSCE	20.56	5.37
8. Felt familiar with the expectations of the evaluator during the OSCE	19.65	5.83
9. Felt familiar with the process of the OSCE	19.48	5.91
10. Felt that the OSCE expectations were met	19.62	6.18

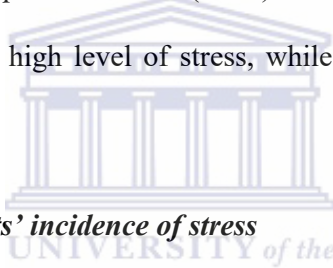
Question 6 (Appendix 6) required the respondents to rate their perceived incidence of stress from 'never' to 'very often'. *Feeling unprepared for the OSCE* had the highest mean rating of 20.90. Question 4 (Appendix 6) required the respondents to rate their perceived incidence of

stress from ‘never’ to ‘very often’. In this case, *Feeling prepared for the OSCE but unable to remember* had the lowest mean rating of 19.39 (Table 4.9).

Table 4.10 Categories of PSS scores for Incidence of stress

Categories	Numbers (%)
High level stress	3 (4)
Moderate level stress	74 (93)
Low level of stress	3 (4)

The responses shown indicate the degree to which the respondents perceived the first OSCE as stressful. The majority of respondents 93% (n=74) indicated a moderate level of stress. However, 4% (n=3) indicated a high level of stress, while 4% (n=3) indicated a low level stress during the first OSCE.



4.4.3.1 Mean of nursing students’ incidence of stress

The respondents were asked to rate the extent to which they perceived stress from “0=never” to “4=very often”. Table 4.11 depicts the mean of nursing students’ incidence of stress.

Table 4.11 Mean of nursing students’ incidence of stress

Scale	N	M	Range		SD
			Min.	Max.	
Incidence of stress	82	2.21	0.8	3.8	0.62

The results showed that the mean response was 2.21±0.62. The responses ranged from a minimum of 0.8 to a maximum of 3.8.

4.5. CORRELATION AMONGST VARIABLES PER DOMAIN

This section presents the results of the correlation between study variables per domain.

4.5.1 Domain: Perception of stress

The results of the correlation of perception of stress and study variables are presented in this section.

4.5.1.1 Age and perception of stress

The relationship between the respondents' age and the perception of stress was calculated using the Pearson correlation coefficient (r). The result was $r=0.05$, which indicated a weak positive linear correlation between these variables. The p value was 0.63 ($p=0.63$) which was above the acceptable 0.05. This means the correlation was not statistically significant.

4.5.1.2. Gender and perception of stress

The mean difference between the variable gender (female and male) and the perception of stress was calculated. Table 4.12 depicts the results.

Table 4.12 Gender and perception of stress

Gender	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Female	60	2.21	0.49	2.08	2.33
Male	18	1.93	0.70	1.58	2.28
Total	78	2.14	0.55	2.02	2.27

The mean perception of stress of female students was higher than of the male students, 2.21 ± 0.49 and 1.93 ± 0.70 respectively. However the significance level was 0.06 (p value = 0.06) which was above 0.05. Therefore there was no statistically significant difference between the means for male and female perception of stress.

4.5.1.3 Race and perception of stress

The mean difference between the study variables for race (Black, Coloured and White) and the perception of stress is depicted in Table 4.13.

Table 4.13 Race and perception of stress

Race	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Black	55	2.10	0.57	1.94	2.25
Coloured	17	2.25	0.53	1.98	2.53
White	5	2.20	0.44	1.64	2.75
Total	77	2.14	0.55	2.01	2.26

The results show that the mean perception of stress by Coloured students is higher (2.25 ± 0.53) than those for White students (2.20 ± 0.44) and Black students (2.10 ± 0.57), respectively. However, the significance level was 0.58 (p value= 0.58), which is above 0.05. Therefore there was no statistically significant difference between the means for race and perception of stress.

4.5.1.4 Post matric/tertiary education and perception of stress

The mean difference between the study variable “Is nursing the first post matric/tertiary education?” and perception of stress was calculated and depicted in Table 4.14.

Table 4.14 Post matric/tertiary education and Perception of stress

Post matric/tertiary education	N	Mean	SD	95% Confidence interval	
				Lower	Upper
No	16	1.97	0.43	1.74	2.20
Yes	62	2.19	0.57	2.04	2.33
Total	78	2.19	0.55	2.02	2.27

The mean perception of stress of respondents for whom nursing was the first post matric/tertiary education was higher (2.19 ± 0.57) than those for whom it was not (1.97 ± 0.43). However, the significance level was 0.17 (p value= 0.17), which is above 0.05. Therefore there is no statistically significant difference between the means for these variables.

4.5.1.5 Perception of stress and factors causing stress

The relationship between the respondents' perception of stress and factors causing stress was determined by calculating the Pearson correlation coefficient (r). The result, where $r=0.45$, indicated a weak positive linear correlation between these variables. The p value was 0.00009 ($p=0.00009$), which was below the acceptable 0.05. This means that the correlation was statistically significant.

4.5.1.6 Perception of stress and the incidence of stress

The relationship between the respondents' perception of stress and the incidence of stress was determined by calculating the Pearson correlation coefficient (r). The result was $r=0.36$, which indicated a weak positive linear correlation between these two variables. The p value of 0.0014 ($p=0.0014$). Since this was below the acceptable 0.05 the correlation was statistically significant.

4.5.1.7 Levels of stress and perception of stress

The mean difference between levels of stress (low level and moderate level of stress) and perception of stress is shown in Table 4.15.

Table 4.15 Levels of stress and perception of stress

Level of stress	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Low level of stress	25	1.76	0.32	1.62	1.89
Moderate level of stress	51	2.32	0.56	2.16	2.48
Total	76	2.14	0.56	2.01	2.27

The results show that the mean perception of stress was higher for moderate level of stress (2.32 ± 0.56) than low level of stress (1.76 ± 0.32). However, the significance level was below 0.01 (p value < 0.01) which was below 0.05. This means that there was statistically significant difference between those who have a lower level of stress and those who have a moderate level of stress.

4.5.2 Domain: Factors causing stress

The results of the correlation of factors causing stress and study variables are presented in this section.

4.5.2.1 Age and factors causing stress

The relationship between the respondents' age and factors causing stress was evaluated. The Pearson correlation coefficient (r) was $r = -0.09$, and indicated a very weak negative linear

correlation between these variables. Therefore there was no relationship between the variables. The p value was 0.44 ($p=0.44$) which was above the acceptable 0.05. This means that the correlation was not statistically significant.

4.5.2.2 Gender and factors causing stress

The mean difference between the study variable for gender (female and male) and factors causing stress was calculated. Table 4.16 depicts the results.

Table 4.16 Gender and factors causing stress

Gender	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Female	60	2.42	0.64	2.26	2.59
Male	15	2.10	0.76	1.67	2.52
Total	75	2.36	0.67	2.20	2.51

The results show that the mean factors causing stress were higher for female (2.42 ± 0.64) than for male (2.10 ± 0.76). However, the significance level was 0.09 (p value = 0.09) which was above 0.05. Therefore there is no statistically significant difference between the respective means for male and female nursing students and factors causing stress.

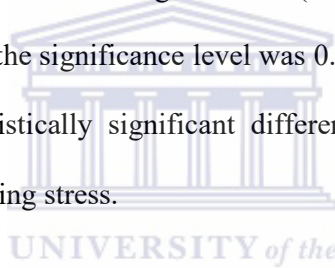
4.5.2.3 Race and factors causing stress

The mean difference between the study variable for race (Black, Coloured and White) and the factors causing stress are depicted in Table 4.17.

Table 4.17 Race and factors causing stress

Race	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Black	51	2.33	0.67	2.14	2.52
Coloured	17	2.46	0.70	2.10	2.82
White	6	2.41	0.58	1.80	3.03
Total	74	2.37	0.67	2.21	2.52

The results show that the mean factors causing stress were higher for Coloured nursing students (2.46 ± 0.70) than for White nursing students (2.41 ± 0.58) and for Black nursing students (2.33 ± 0.67). However, the significance level was 0.79 (p value= 0.79). This is above 0.05 therefore there is no statistically significant difference between the means for the respective races and factors causing stress.



4.5.2.4 Post matric/tertiary education and factors causing stress

The mean difference between the study variables in the question: “Is nursing the first post matric/tertiary education?” and factors causing stress is depicted in Table 4.18.

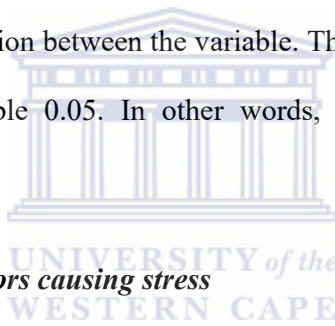
Table 4.18 Post matric/tertiary education and factors causing stress

Post matric/tertiary education	N	Mean	SD	95% Confidence interval	
				Lower	Upper
No	16	2.26	0.69	1.89	2.63
Yes	59	2.38	0.67	2.21	2.56
Total	75	2.36	0.67	2.20	2.51

The results show that mean factors causing stress among respondents for whom nursing was the first post matric/tertiary education was higher (2.38 ± 0.67) than those for whom it was not (2.26 ± 0.69). However, the significance level was 0.51 (p value= 0.51), which was above 0.05. Therefore there is no statistically significant difference in the mean level of stress variables between those for whom nursing was the first post matric/tertiary education and those for whom it was not.

4.5.2.5 Factors causing stress and incidence of stress

The relationship between the factors causing stress and the incidence of stress was evaluated. The Pearson correlation coefficient (r) was calculated. The result, $r=0.64$, indicated a moderate positive linear correlation between the variable. The p value was 0.0000 ($p=0.0000$) which was below the acceptable 0.05. In other words, the correlation was statistically significant.



4.5.2.6 Levels of stress and factors causing stress

The mean difference between levels of stress (low level and moderate level of stress) and factors causing stress was calculated. This is depicted in Table 4.19.

Table 4.19 Levels of stress and factors causing stress

Level of stress	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Low level	22	1.90	0.67	1.60	2.20
Moderate level	51	2.53	0.58	2.37	2.70
Total	76	2.34	0.67	2.18	2.50

The results show that the mean factors causing stress were higher for a moderate level of stress (2.53 ± 0.58) than for a low level of stress (1.90 ± 0.67). However, the significance level was below 0.01 (p value < 0.01), which was below 0.05. This means that there was a statistically significant difference between those who perceived factors causing stress at a low level and those who perceived them at a moderate level.

4.5.3 Domain: Incidence of stress

The results of the correlation of incidence of stress and study variables are presented in this section.

4.5.3.1 Age and incidence of stress

The relationship between the respondents' age and incidence of stress was evaluated. The Pearson correlation coefficient (r) was calculated at $r = -0.14$. This indicates a very weak negative linear correlation between the variables. In other words, there is no significant relationship between the variables. The p value was 0.24 ($p = 0.24$) which is above the acceptable 0.05. This means that the correlation was not statistically significant.

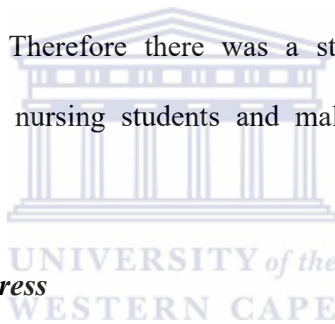
4.5.3.2 Gender and incidence of stress

The mean difference between the study variable of gender (female and male) and the incidence of stress was calculated. Table 4.20 depicts the results.

Table 4.20 Gender and incidence of stress

Gender	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Female	62	2.29	0.59	2.14	2.44
Male	17	1.90	0.64	1.56	2.23
Total	79	2.21	0.62	2.07	2.34

The results show that the mean factors causing stress were higher for female students (2.29 ± 0.59) than for male students (1.90 ± 0.64). The significance level was 0.02 (p value = 0.02) which was below 0.05. Therefore there was a statistically significant difference between the means for female nursing students and male nursing students for and the incidence of stress.



4.5.3.3 Race and incidence of stress

The mean difference between the study variables for race (Black, Coloured and White) and the incidence of stress was calculated and the results are depicted in Table 4.21.

The results show that the mean of factors causing stress was higher for Coloured student nurses (2.30 ± 0.63) than for Black student nurses (2.18 ± 0.65) and White student nurses (2.10 ± 0.24). However, the significance level was 0.75 (p value= 0.75) which is above 0.05. Therefore there was no statistically significant difference between the means for race and the incidence of stress.

Table 4.21 Race and incidence of stress

Race	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Black	55	2.18	0.65	2.01	2.36
Coloured	17	2.30	0.63	1.97	2.62
White	6	2.10	0.24	1.84	2.35
Total	78	2.20	0.62	2.06	2.34

4.5.3.4 Post matric/tertiary education and incidence of stress

The mean difference between the study variable “nursing as the first post matric/tertiary education” and the incidence of stress is depicted in Table 4.22.

Table 4.22 Post matric/tertiary education and incidence of stress

Post matric/tertiary education	N	Mean	SD	95% Confidence interval	
				Lower	Upper
No	17	2.27	0.40	2.06	2.48
Yes	62	2.19	0.66	2.02	2.36
Total	79	2.21	0.62	2.07	2.34

The results indicate that the mean incidence of stress of respondents for whom nursing was not the first post matric/tertiary education was higher (2.27 ± 0.40) than for those whom it was the first post matric/tertiary education (2.19 ± 0.66). The significance level was 0.62 (p value= 0.62) which was above 0.05. Therefore there was no statistically significant difference between the means for these variables.

4.5.3.5 Levels of stress and incidence of stress

The mean difference between levels of stress (low level and moderate level of stress) and the incidence of stress is depicted in Table 4.23.

Table 4.23: Levels of stress and incidence of stress

Level of stress	N	Mean	SD	95% Confidence interval	
				Lower	Upper
Low level	23	1.87	0.52	1.64	2.10
Moderate level	54	2.33	0.61	2.17	2.50
Total	77	2.20	0.62	2.05	2.34

The results indicate that the mean incidence of stress was higher for a moderate level of stress (2.33 ± 0.61) than for a low level of stress (1.87 ± 0.52). The significance level was below 0.01 (p value < 0.01) which is below 0.05. This means there was a statistically significant difference between those who perceived the incidence of stress at a low level and those who perceived the incidence of stress at a moderate level.

4.6 DISCUSSION OF FINDINGS

This study investigated the first year nursing students' perception of stress during their first OSCE at a selected university. This section discusses the key findings of the study under the following headings; Perception of stress, Factors causing stress, and Incidence of stress.

4.6.1 Perception of stress

The results of this study reveal that the perceived level of stress in first year nursing students was considered moderate stress. When El-Nemer and Kandeel (2009) conducted a study in Egypt on nursing students' feedback on the OSCE as an assessment tool for their clinical

skills, they found that the OSCE was generally stressful for first year students. The current study found that more than half of the respondents, 66% (n=54), experienced a moderate level of stress, just under one third, 32% (n=26), experienced a low level of stress and 2% (n=2) experienced a high level of stress. Similar findings were reported by Farmarzi et al. (2013) who found that most of the respondents (56.9%) experienced moderate test anxiety. More than a third (37.3%) of the respondents experienced low test anxiety and 3.9% severe test anxiety. In a study on Egyptian nursing students' perception of OSCE, more than two thirds of the students (77%) found this method of assessment stressful (Mahmoud & Mostafa, 2011). Several studies conducted on dental and nursing students have found the OSCE considerably more stressful than other forms of assessments (Ali *et al.*, 2012; Allen *et al.*, 1998; Brand & Schoonheim-Klein, 2009; Mahmoud & Mostafa, 2011).

4.6.1.1 Age and perception of stress

The results of this study revealed that there was no statistically significant difference between the respondents' age and their perception of stress. In other words, the respondents' age did not influence their perception of stress. These findings are consistent with the published findings of a study on undergraduate midwifery students which compared test anxiety in the OSCE with traditional assessment methods (Farmarzi *et al.*, 2013). These researchers found a negative correlation between test anxiety and students' ages (Farmarzi *et al.*, 2013).

4.6.1.2 Gender and Perception of stress

The results of this study showed that 79.2% (n=65) of the respondents were females and 23.1% (n=19) were males. In comparing the mean difference between each gender and the perception of stress, the researcher found that the mean for the female students' perception of stress (2.21 ± 0.49) was higher than that of the male students (1.93 ± 0.70). However, the statistical difference between the two genders (female and male) and perception of stress was

not statistically significant. This was consistent with the findings of a study conducted by Brand and Schoonheim-Klein (2009) amongst dental students, no difference were found between male and female on the perception of stress. They found no significant gender effect on the level of anxiety among these third year dental students (Brand & Schoonheim-Klein, 2009).

The researcher suggests that the reason for the difference between the statistical mean for male respondents and that for female respondents might be the result of the cultural and social differences between the respondents. This finding is consistent with the findings of Brand and Schoonheim-Klein (2009).

4.6.1.3 Post matric/tertiary education and perception of stress

The results of this study show that there is no statistical difference between the perception of stress by those for whom nursing was their first post matric/tertiary education and by those for whom it was not. There may be a parallel between this finding and that of studies that found that previous exposure to the OSCE was not a guarantee that stress would be reduced or even eliminated in future OSCE evaluations (Brand & Schoonheim-Klein, 2009; Fidment, 2012). In a qualitative study conducted in the UK about nursing students' experience of OSCE, the researchers found that even if a student has been exposed to the OSCE process, this kind of assessment causes anxiety (Fidment, 2012). In addition, a study conducted in Amsterdam amongst third year dental students, the participants had previous exposure to an OSCE during their second year however experience significantly lower level of state anxiety in their third year (Brand & Schoonheim-Klein, 2009).

4.6.1.4 Levels of stress and perception of stress

The results of this study indicate that most respondents perceived a moderate level of stress during their first OSCE. The study done by Brand and Schoonheim-Klein (2009) produced a similar finding, also associated with the mean perception of stress, high for moderate level of stress (2.32 ± 0.56) and low for lower level of stress (1.76 ± 0.32). There was a statistically significant difference between the mean variables. It seems that the respondents' level of stress was consistent with their perception of stress. In a study conducted by Small *et al.* (2013) that explored and described the perceptions of first and third year student nurses with regard to the OSCE assessment approach, it appeared that 36% ($n = 73$) of the respondents had experienced stress and/or had felt extremely anxious during the OSCE. In another study on stress, stressors and stress responses in nursing students in government nursing school in the Philippines, Labrague (2013) found that stress is a common phenomenon in nursing education and that it might have an impact on the students' health. Even though the respondents in the study done at a university in the Western Cape found the OSCE stressful, other aspects like health or personal gains were not explored. Several other studies that found the OSCE to be an anxiety provoking experience nevertheless concluded that it was a beneficial, worthwhile experience that gave the students a sense of achievement, increased their level of self-confidence, improved their thinking skills and was good preparation for future stressful situations (Allen *et al.*, 1998; Farmarzi *et al.*, 2013; Fidment, 2012). Regardless of the high level of stress produced by the OSCE experience, the students reported learning a great deal (Allen *et al.*, 1998; Fidment, 2012).

4.6.2 Factors causing stress

The results of this study indicate that most of the respondents, 93% ($n=75$), experienced stress at a moderate level. The following factors seemed to cause stress: insufficient time to

complete the OSCE (22.04 ± 6.21); the time spent waiting in the corridor was long and stressful (22.03 ± 6.06); waiting for the OSCE (20.61 ± 5.95); and the OSCE environment (21.05 ± 5.84).

Several factors were found to be stress generators during the OSCE in various other studies. Small *et al.* (2013) study found that students experienced the atmosphere during the various OSCE assessments as stressful. Brand and Schoonheim-Klein (2009) found that the constant monitoring and observation during an OSCE could increase anxiety levels. In a qualitative study done in the UK on healthcare students' experience of OSCE, Fidment (2012) found that fear of the unknown caused the interviewees to experience anxiety. He concluded that adequate preparation and familiarisation of students with the OSCE process were an essential way of alleviating stress and eliminating the fear of the unknown from students. However, it is worth noting, that this study and others found that some students did not feel appropriately prepared; and thus they were anxious and stressed during the OSCE, despite their formal preparation (Fidment, 2012; Mahmoud & Mostafa, 2011; Small *et al.*, 2013). One of these studies, conducted in Ireland found that 56.3% ($n=49$) of the respondents perceived the OSCE examination to be more stressful than a written examination, even though the respondents had been prepared adequately for the OSCE (Brosnan *et al.*, 2006). Interviewees in Fidment's (2012) study described feeling shy and uncomfortable about having to perform in front of other students during practical sessions and they therefore avoided them. The students reported being unfamiliar with the simulation manikin used during the OSCE as it was their first experience of interacting with it (Fidment, 2012). A study by Brand and Schoonheim-Klein (2009) contradicts the above findings, attributing the high anxiety level during the OSCE to being very well prepared. This suggests that there is positive stress that helps students achieve good results and there is negative stress that bears bad results (Farmarzi *et al.*, 2013).

Mahmoud and Mostafa (2011) study on Egyptian nursing students' perception of OSCE revealed that more than half of the students (55%) had difficulties with time management during the OSCE, which was responsible for the high levels of stress. This therefore suggests the need for training in time management.

4.6.2.1 Age and factors causing stress

The results of this study indicate that there is no statistical correlation between age and factors causing stress. These findings are consistent with the published findings of a study which compared test anxiety in OSCE with traditional assessment methods in undergraduate midwifery students; the respondents' age was found to have no influence on the factors causing stress (Farmarzi et al., 2013).

4.6.2.2 Gender and factors causing stress

The results of this study found no statistical difference between male and female respondents in terms of the factors causing stress. These findings are consistent with the published findings of a study which compared anxiety in OSCE with traditional assessment methods in undergraduate midwifery students (Farmarzi et al., 2013).

4.6.2.3 Post matric/tertiary education and factors causing stress

The results of this study show no statistical difference between those for whom nursing was their first post matric/tertiary education and those for whom it was not in terms of the factors causing stress. In a study conducted in Amsterdam amongst dental students, the authors found no significant difference between first-time students undertaking an OSCE with those who had previous experience (Brand & Schoonheim-Klein, 2009).

4.6.3 Incidence of stress

The results of this study indicate that most of the respondents 93% (n=74) perceived the incidence of stress at a moderate level. In a study about students' attitudes during the OSCE by Allen *et al.* (1998), it was found that students normally experienced stress while progressing through the OSCE. However, although 26% of these students indicated they were normally nervous before an examination, they were far more nervous before the OSCE (Allen *et al.*, 1998). The study done by Small *et al.* (2013) on students' perceptions of the OSCE as an assessment tool found that students were anxious either before or after the assessment. These findings are similar to those of Fidment (2012) in which the students concerned compared their feelings during the OSCE to those experienced during a driving test.

4.6.3.1 Age and incidence of stress

The results of this study show there is no statistical significant correlation between age and the incidence of stress. These findings are consistent with the published findings of a study on midwifery students which compared test anxiety during the OSCE with that experienced during traditional assessment methods. In that study the respondents' age did not influence the factors causing stress (Farmarzi *et al.*, 2013).

4.6.3.2 Gender and incidence of stress

The results of this study showed statistical difference between male and female respondents and the incidence of stress. This finding is consistent with those of study comparing the test anxiety experienced by midwifery students in the OSCE with the test anxiety they experienced during traditional assessment methods (Farmarzi *et al.*, 2013).

4.6.3.3 Post matric/tertiary education and incidence of stress

The results of this study showed no statistical difference between those for whom nursing was their first post matric/tertiary education and those for whom it was not and the incidence of stress. In a study conducted in Amsterdam amongst dental students, the participants previously exposed to OSCE experience some level of stress (Brand & Schoonheim-Klein, 2009). Thus the authors found no significant difference between first-time students undertaking an OSCE with those who had previous experience of undertaking it (Brand & Schoonheim-Klein, 2009).

4.7 CONCLUSION

In this chapter, the results of the statistical analysis of the data obtained from the questionnaire were presented and discussed. The results of this study show that most of the respondents perceived stress at a moderate level. It seems that the most common factor causing stress was the insufficient time to complete the OSCE. Most respondents perceived the incidence of stress at a moderate level. There was a statistically significant difference between those who perceived factors causing stress at a low level and those who perceived factors causing stress at a moderate level.

In **Chapter Five**, conclusions will be drawn from the study in relation to its objectives. The limitations of the study will also be acknowledged. Finally, based on the findings of this study, some recommendations will be made.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter provides a summary of the study findings, limitations, conclusion, and recommendations. The purpose of this study was to explore and describe the perceived stress of first year nursing students during their first objective structured clinical examination at the participating university. After an extensive search of the literature, the researcher discovered that there had not yet been a study on the first year nursing students' perceptions of stress during their first OSCE at the institution in question. The researcher attempted to fill the gap in the literature by conducting a study with the following objectives: to explore the perceptions of stress amongst first year nursing students during their first OSCE; to explore the perceived factors causing stress amongst first year nursing students during their first OSCE; and to explore the perceived incidence of stress amongst first year nursing students during their first OSCE at a university in the Western Cape. Since there was a dearth of literature relevant to the study, the researcher employed a quantitative descriptive survey designed to address the research question.

5.2 SUMMARY OF FINDINGS

The summary of the findings of this study are provided under the following headings:

Perception of stress, Factors causing stress and Incidence of stress.

5.2.1 Perception of stress

In this study more than half, 66% (n=54), of the respondents perceived stress at a moderate level, nearly one third, 32% (n=26), of the respondents perceived a low level of stress and 2%

(n=2) of the respondents perceived a high level of stress during their first OSCE. Therefore, this study found the majority of the respondents' perceived stress at a moderate level. The study findings are supported by the findings of Farmarzi *et al.* (2013). In their study most of the respondents experienced moderate test anxiety (see the discussion in 4.6.1 and 4.6.1.1 in Chapter Four).

5.2.2 Factors causing stress

In this study, the findings indicated that 93% (n=75) of the respondents perceived factors causing stress at a moderate level, whilst 5% (n=4) of the respondents perceived factors causing stress at a low level and 2% (n=2) of the respondents perceived factors causing stress at a high level during their first OSCE. Therefore, this study found that the majority of respondents perceived factors causing stress at a moderate level. The respondents felt that the most common factor causing stress was insufficient time to complete the OSCE. The mean was 22.04 ± 6.21 . This finding is keeping with the findings on stress generators during the OSCE in various other studies (see 4.6.2).

5.2.3 Incidence of stress

In this study, the findings indicated that 93% (n=74) of the respondents perceived the incidence of stress at a moderate level; 4% (n=3) of the respondents perceived the incidence of stress at a low level; and 4% (n=3) of the respondents perceived the incidence of stress at a high level during their first OSCE. Therefore, this study found the majority of the respondents perceived the incidence of stress at a moderate level. According to Allen *et al.* (1998), students normally experience stress at a moderate level during the course of the OSCE (see 4. 6.3.1).

5.3 RECOMMENDATIONS

The recommendations of this study are provided in line with its findings and the literature that formed the theoretical framework in Chapter Two, which were cited in support of the study findings.

Most students were stressed due to insufficient time to complete the OSCE. OSCE practice session assessment throughout the year might help students understand OSCE process and marking criteria.

Waiting time in the corridor causes stress as indicated by the participants. The creation of more OSCE stations might help reduce waiting time.

The OSCE environment also caused stress. It remains difficult to produce an environment in a clinical skills laboratory that resembles the complexity of a clinical area. Collaboration with practice areas must be sought to keep simulation learning and assessment stress free.

Participants in this study also felt anxious, angry and uncomfortable during the OSCE. These students need careful support from academic staff.

A qualitative research study should be conducted as a follow-up study in the same setting to explore the students' lived experiences of stress during their first OSCE. This will create an opportunity for students to give voice to their experiences of stress and for an in-depth exploration to be done of the findings. The current study was not able to achieve this.

5.4 LIMITATIONS

The limitations of this study are addressed under the following headings: *Sample size issue*, *Time factors issue*, and *Misinterpretation of the questionnaire items "a" and "b"*.

5.4.1 Sample size issue

As the participation in this study was purely voluntary, less than half of the students completed the questionnaires. That means a great number of students did not take part in the study. This is particularly significant in light of the study by Reteguiz (2006) that suggests that highly anxious students may be reluctant to participate in this kind of study. For this reason and because of the relatively small sample (38%), the results cannot be generalised to the population (Burns & Grove, 2012). Nevertheless the results of this study will increase the body of knowledge about the first year nursing students' perception of stress during the first OSCE at a university in the Western Cape.

5.4.2 Timing factor

Another potential limitation of this study is that the data collection was done just after the first year students' first OSCE which occurred during their final examination period. This is widely acknowledged as an intensely stressful period and thus the level of stress experienced during the OSCE may have been affected by the stress of the examination period as a whole (Faramarzi *et al.*, 2013).

The students were asked to complete the questionnaire immediately after they had completed the OSCE. The rationale was that the experience of the phenomenon would still be fresh in their minds. However, the students may have been eager to leave the examination area. This may partly explain why a great number of students did not take part in the study. Had the students been asked to complete the same questions hours or days later when there was little or no stress, a greater number of students may have taken part in the study.

5.4.3 Misinterpretation of the questionnaire items “a” and “b”

The possible misinterpretation noted in the questionnaire items *(a)* and *(b)* (details in Chapter 4 section 4.2) could be associated with the presence of stress in students. They were not able to correctly read and interpret these instructions on the questionnaire.

5.5 CONCLUSION

The purpose of this study was to explore and describe the first year nursing students' perception of stress during their first OSCE. The results indicate that first year nursing students' perceived moderate stress during their first OSCE. OSCE practice assessment sessions throughout the year might help to reduce stress for students during the actual OSCE at the end of the year and so are strongly recommended.

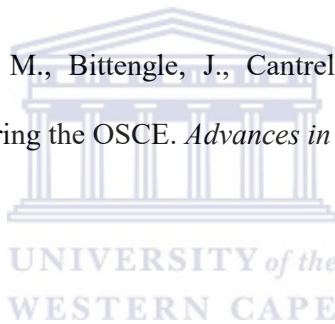


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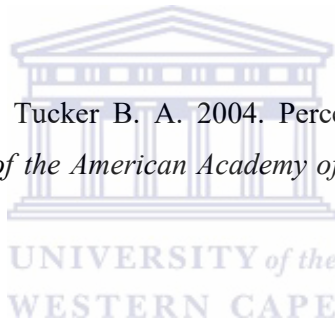
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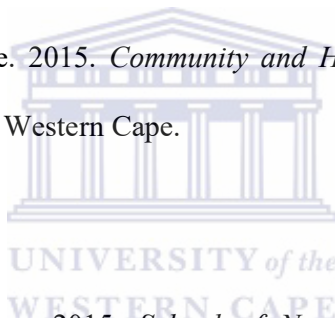
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APPENDIX 1: ETHICS LETTER



UNIVERSITY of the
WESTERN CAPE

OFFICE OF THE DEAN DEPARTMENT OF RESEARCH DEVELOPMENT

25 August 2015

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Ms DE Adibone (School of Nursing)

Research Project: Perceived stress of first year nursing students associated with the first Objective Structured Clinical examination at a university in the Western Cape.

Registration no: 15/4/56

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in black ink, appearing to read 'Patricia Josias'.

Ms Patricia Josias
Research Ethics Committee Officer University of the Western Cape

APPENDIX 2: REQUEST TO CONDUCT RESEARCH

The Director
School of Nursing
University of the Western Cape
Bellville, South Africa

REQUEST TO CONDUCT A RESEARCH STUDY

Dear Sir,

I am a postgraduate student, doing my Masters in Nursing Education. I wish to conduct a research study with the First Year students at the School of Nursing, University of the Western Cape in order to successfully complete my Masters' degree. The title of the research study is *Perceived stress of first year nursing students associated with the first Objective Structured Clinical examination at a university in the Western Cape*.

Ethic approval to conduct the research study was obtained (registration number 15/4/56). The data will be collected using a questionnaire and the potential respondents will not be forced to participate in the research study. Anonymity and confidentiality will be ensured throughout the study. This study will increase the body of knowledge on the first year nursing students' perception of stress associated with the first OSCE.

Please find attached copies of the ethic letter, information sheet, consent form and questionnaire for your perusal.

Yours sincerely



Dorothee Line Adibone Emebigwine

APPENDIX 3: PERMISSION LETTER



Private Bag X17, Bellville. 7535
South Africa
Tel: +27 (0) 21 959 2523
Fax: +27 (0) 21 959 2679
Website: www.uwc.ac.za
Email: sarunachallam@uwc.ac.za

PERMISSION LETTER

STUDENT: DL ADIBONE EMBIGWINE (2847910)

PROJECT TITLE: First year nursing students' perception of stress associated with the first OSCE at a university in the Western Cape

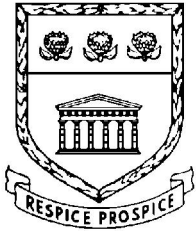
You are granted permission to conduct your study at the School of Nursing.

You have to arrange for data collection with the appropriate level coordinator(s) for a convenient time. During this phase you have to adhere to the ethical principles outlined in your study.

I wish you success with your studies.

A handwritten signature in black ink, appearing to read 'S Arunachallam', enclosed in a white rectangular box.

Dr S Arunachallam
Acting Director
School of Nursing



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2271, Fax: 27 21-959 2679

E-mail: 2847910@myuwc.ac.za

APPENDIX 4

INFORMATION SHEET

Project Title: Perceived stress of first year nursing students associated with the first Objective Structured Clinical examination at a university in the Western Cape.

Purpose of the Study. As part of the requirements for Master in Nursing Education at University of the Western Cape, I have to carry out a research study. The study is concerned with First year nursing students' perception of stress during their first OSCE at a university in the Western Cape

What will the study involve? The study will involve you completing the questionnaire attached the most truthful possible.

Why have you been asked to take part? You have been asked because you are specifically suitable to provide data for my study.

Do you have to take part? No your participation is voluntary and if at any moment you wish to withdraw from the study you are free to do so.

Will your participation in the study be kept confidential? Yes. I will ensure that no clues to your identity appear in the mini-thesis.

What will happen to the information which you give? The data will be kept confidential for the duration of the study. On completion of the thesis, they will be retained for a further six months and then destroyed.

What will happen to the results? The results will be presented in the Mini-thesis. They will be seen by my supervisor, a second marker and the external examiner. The thesis may be read by future students on the course. The study may be published in a research journal.

What are the possible disadvantages of taking part? I don't envisage any negative consequences for you in taking part. It is possible that talking about your experience in this way may cause some distress.

What if there is a problem? After completing the questionnaire, I will discuss with you how you found the experience and how you are feeling. If you subsequently feel distressed, you should contact the Centre for Student Support Service

Who has reviewed this study? Approval must be given by the Ethic Committee of the University of the Western Cape and the Nursing Department before studies like this can take place.

If you agree to take part in the study, please sign the consent form overleaf.

Prof K Jooste (head of School)
School of Nursing
Private Bag X17
Bellville 7535
kjooste@uwc.ac.za

Prof José Frantz
University of the Western Cape
Private Bag X17
Bellville 7535
chs-deansoffice@uwc.ac.za

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.



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APPENDIX 5

CONSENT FORM

Title of Research Project: Perceived stress of first year nursing students associated with the first Objective Structured Clinical examination at a university in the Western Cape.

I _____ (full name) agreed that the study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name.....

Participant's signature.....

Date.....

APPENDIX 6

QUESTIONNAIRE: PERCEIVED STRESS OF FIRST YEAR NURSING STUDENTS ASSOCIATED WITH THE FIRST OBJECTIVE STRUCTURED CLINICAL EXAMINATION AT A UNIVERSITY IN THE WESTERN CAPE.

SECTION A: *Demographic Information*

Age: **Gender:** Male Female:

Marital Status: Married Single Cohabitation Widow
Separated

Race: Black White Coloured Indian Other

Place of Residence: On campus Off Campus

(a) Is nursing your first your first post Matric\ tertiary education? Yes No

(b) If yes, (b) Have you ever been assessed by OSCE method? Yes No

(c) If yes, do no continue with the questionnaire.

(d) If no, continue with the questionnaire conducted

SECTION B

Carefully read each item below and mark with an "X" only one number corresponding to the intensity of stress that the situation causes you, as in the following legend:

0 = Never; 1 = Almost Never; 2 = Sometimes; 3 = Fairly Often; 4 = Very Often.

DOMAIN: PERCEPTION OF STRESS DURING OSCE	0	1	2	3	4
1. Have you been upset because of something that happened unexpectedly during OSCE?					
2. Have you felt that you were unable to remember the important things during OSCE?					
3. Have you felt nervous and stressed during the OSCE?					
4. Have you felt confident about your ability to handle your performance during the OSCE?					
5. Have you felt comfortable (that things were going your way) during the OSCE?					
6. Have you found that you could not cope with all the required activities (things that you had to do) during the OSCE?					
7. Have you been able to control irritations in your life?					
8. Have you felt that you were on top of things during the OSCE?					
9. Have you been angered because of things that were outside of your control during the OSCE?					
10. Have you felt difficulties were piling up so high during the OSCE that you could not overcome them?					

Carefully read each item below and mark with an "X" only one number corresponding to the intensity of stress that the situation causes you, as the following legend:

0 = Never; 1 = Almost Never; 2 = Sometimes; 3 = Fairly Often; 4 = Very Often

DOMAIN: FACTORS CAUSING STRESS DURING OSCE	0	1	2	3	4
1. Have you found that there was no enough time to complete your OSCE?					
2. Have you found the OSCE waiting time in the corridor was too long and stressful?					
3. Have you felt anxious while waiting for your OSCE?					
4. Have you felt that you were well familiar with the simulation manikin used for the OSCE?					
5. Have you felt shy performing in front of the other students during practical sessions?					
6. Have you felt shy performing in front of an evaluator during the OSCE?					
7. Have you found the OSCE environment stressful?					
8. Have you found yourself making mistakes during OSCE that would not normally happen?					
9. Have you had an OSCE practice before the actual OSCE?					
10. Have you felt well prepared before the OSCE?					

Carefully read each item below and mark with an "X" only one number corresponding to the intensity of stress that the situation causes you, as the following legend:

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

DOMAIN: INCIDENCE OF STRESS DURING OSCE	0	1	2	3	4
1. Have you felt that you do not know exactly what the evaluator is looking for during the OSCE?					
2. Have you felt certain of the rules and how to perform during the OSCE?					
3. Have you felt overwhelm during the OSCE?					
4. Have you felt like even though you were prepared for the OSCE but you were not able to remember?					
5. Have you felt like you were unable to remember to talk while performing the procedure during the OSCE?					
6. Have you felt unprepared for the OSCE?					
7. Have you felt unsure about how to perform during the OSCE?					
8. Have you felt familiar with the expectations of your evaluator during the OSCE?					
9. Have you felt familiar with the process of the OSCE?					
10. Have you felt that you met your expectation of the OSCE?					

APPENDIX 7: SAMPLE OF THE DATA ANALYSIS

AGE	GENDER	MARITAL STATUS	RACE	PLACE OF RESIDENCE	a	b
31	female	single	other	off campus	no	no
20	male	single	black	off campus	yes	no
	female	single	coloured	off campus	yes	no
19	female	single	black	off campus	yes	no
	female	single	coloured	off campus	yes	no
20	female	single	black	off campus	yes	no
19	female	single	white	off campus	yes	no
36	female	married	white	off campus	no	no
25	female	single	coloured	off campus	no	no
18	female	single	coloured	off campus	yes	no
23	female	single	black	off campus	no	no
18	female	single	coloured	off campus	yes	no
25	female	single	black	off campus	yes	no
20	male	single	black	off campus	yes	no
18	female	single	coloured	off campus	yes	no
19	male	single	coloured	on campus	yes	no
19	female	single	coloured	off campus	yes	no
	female	single	black	off campus	no	no
19	female	single	black	off campus	yes	no
20	female	single	black	off campus	yes	no
21	female	single	coloured	off campus	yes	no
20	female	single	black	off campus	yes	no
43	female	single	black	on campus	no	no
	female	single	black	off campus	yes	no
20	male	single	black	off campus	yes	no
23	male	single	black	off campus	yes	no
21	male	single	black	off campus	yes	no
19	female	single	black	off campus	yes	no
21	female	single	black	off campus	yes	no

* a- Is nursing your first post Matric/tertiary education?

* b- Have you ever been assessed by the OSCE method before?

APPENDIX 8: EDITING CERTIFICATE

Dr Elaine Ridge
Freelance Editor and Translator
eridge@adept.co.za
elaineridge42@gmail.com
Cell: 083 564 1553
Landline: 021 8871554

TO WHOM IT MAY CONCERN

This is to attest that I have edited the language of the thesis: "Perceived stress of first year nursing students associated with the first Objective Structured Clinical Examination at a university in the Western Cape" by Dorothee LINE ADIBONE EMEBIGWINE.



(Dr) Elaine Ridge BA UED (Natal) DEd (Stell)
Freelance Editor and Translator

13 December 2016