



**UNIVERSITY of the  
WESTERN CAPE**

**Perceptions of Bachelor of Nursing students at a university in the Western  
Cape about clinical learning opportunities and competence regarding the  
administration of oral medication**

A mini-thesis submitted in partial fulfilment of the requirements for the Degree  
of Master in Nursing (Education) in the School of Nursing, Faculty of  
Community and Health Sciences, University of the Western Cape

By

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## **KEYWORDS**

Bachelor of Nursing

Clinical learning opportunities

Competence

Competency

General hospital

Medication errors

Nursing programme

Oral medication

Professional nurse

Route of medication



## LIST OF ABBREVIATIONS

- **BD:** Bis die (from Latin language) means two times in a day.
- **HB:** Hemoglobin
- **HGT:** Blood glucose test
- **NPO:** Non per os (from Latin language) means nothing by mouth, in other words a patient is not allowed to consume any food, drink or anything by mouth.
- **NPSA:** National Patient Safety Agency (Shane, 2009).
- **OD:** Omni die (from Latin language) means once a day.
- **PO:** Per os (from Latin language) means per mouth.
- **PRN:** Pro re nata (from Latin language) means as a situation occurs and in other words as needed.
- **QID:** Quater in die (from Latin language) means 4 times a day.
- **Q6h:** Q stands for quisque (from Latin language) and it means every. Q6h means every 6 hours.
- **Q8h:** Every 8hours.
- **SANC:** South African Nursing Council
- **SPSS:** Statistical Package for the Social Sciences

- **Stat:** Statim (from Latin language) means immediately.
- **TDS:** Ter die sumendus (from Latin language) means to be taken three times a day.
- **WHO:** World Health Organization





## DECLARATION

I hereby declare that “Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication” is my own work, that has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Full names: John James Musafiri

Signed: .....

Date: July 2015



## **DEDICATION**

This mini-thesis is dedicated to Jesus Christ, the highest Master; to my wife Aimee Musana for her love and significant contribution to my studies; to my daughter Marie-Reine Ineza for seeing me as a role-model in her academic work; to my son Irene Adrien Ikuzo and my daughter Larissa Inema for their excellent performance at school; and to my parents and parents-in-law, for they love me. This mini-thesis is also dedicated to those whom I have taught - for they inherited my knowledge and because teaching has been made my immortal second nature.



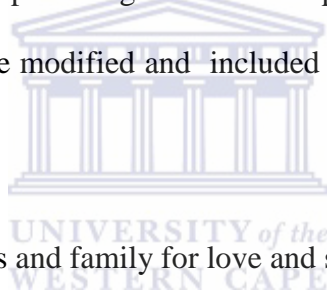
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I thank all my lecturers at University of the Western Cape for their message of support and encouragement whenever they saw me; they motivated me on my way towards the degree of M. Nursing.

To Ms Zohre Ghamari Zare, for providing me with the permission to use the observation check list of which the items were modified and included in a self-report questionnaire used in this current study.

Lastly, I must thank all my friends and family for love and support.



## ABSTRACT

Medication errors can result in harm and death, for which nurses are legally liable. The administration of medication by nurses can be improved through education and training to avoid medication errors in future. The study aimed to investigate fourth year Bachelor of Nursing students' perceptions regarding the clinical learning opportunities and their competence in the administration of oral medication in a general hospital. A quantitative cross-sectional descriptive design was employed. The all-inclusive sample constituted 176 fourth year Bachelor of Nursing students. A total of 125 respondents completed the self-report questionnaires. Descriptive statistics were produced through data processing and univariate and bivariate analysis using of SPSS version 22.

The study's findings show that most of the 125 respondents were placed in a medical (92%, 115) and surgical ward (86.4%, 108). However, a total of 59.2% (74) of the 125 respondents did not practice administration of oral medication on a daily basis. The majority of the respondents perceived themselves as competent in the administration of oral medication. However, only a total of 19.2% (24) of the 125 respondents perceived themselves as competent in all 42 skills required for the correct procedure of administration of oral medication. A negative correlation was found between *total self-assessment of competence* scores and *total clinical placement* scores. An observation study, using the check list, of the competence of nursing students in the administration of medication is recommended to exclude bias associated with self-assessment. The use of simulation is recommended to

enhance the opportunities and competence of the students in the administration of oral medication to many patients.



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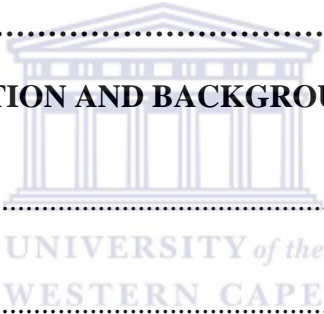
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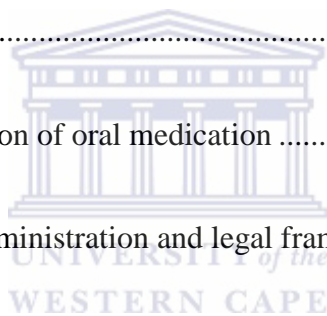
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# CHAPTER ONE: INTRODUCTION AND BACKGROUND

## 1.1 Introduction

Medication errors are among the serious problems that still occur in many hospitals. Errors that stem from medication may lead to severe harm of patients and sometimes disciplinary measures may be applied to the nurses responsible for such errors as they are legally liable. Medication error is known as the most common medical error (Bahadori, Ravangard, Aghili, Sadeghifar, Manshadi & Smaeilnejad, 2013). Unfortunately, all the medication errors are not reported by the nurses. In this regard, a cross-sectional survey conducted by Lin and Ma (2009) in Taiwan indicated that, 66.9% of nurse participants admitted to making medication errors. A total of 87.7% of the participants were willing to report the medication errors if there were no consequences after the errors are reported. The researchers therefore suggested the anonymity of participants in reporting of medication errors and the cancellation of negative consequences after the report. Therefore, the adequate training of the nurses is needed to prevent these errors.

Hughes and Blegen (2008) stated that the strategies taken in the training of nurses with regard to administration of medication have improved the safe administration of medication to the patient. In this regard, the competence of nursing students in medication administration plays a great role in the safety of the patients. The nursing education curricula include the clinical learning of the students with regard to medication administration in order to produce competent and efficient professional nurses (Zare, Purfarzad, & Adib-Hajbaher, 2013). Many studies have been conducted on training of nurses in administration of medication regardless

of the routes of administration. Simonsen, Johansson, Daehlin, Osvik and Farup (2011) conducted a study in Norway and found that the knowledge of registered nurses was not satisfactory with regard to the calculation of drug dose. Therefore, the nursing students must be well trained in order to give the correct dose; however there is not enough evidence to say that Bachelor of Nursing students at a university in the Western Cape perceive themselves to be competent in administration of oral medication before being registered as professional nurses.

Few studies have been done on training of student nurses in administration of oral medication while the patients prefer to take the oral medication according to Roy and Prabhakar (2010). More research studies are needed as nursing education programmes seem to pose challenges for the students to become competent in the administration of oral medication. According to the nursing programme of the School of Nursing at a university in the Western Cape, the students are exposed to the administration of oral medication in a general hospital in their second year of study, and again during their fourth year of study when they are placed in a general hospital for consolidation. However, the students' perceptions about their clinical learning opportunities and their competence in administration of oral medication are unknown.

## **1.2 Background**

The World Health Organization (WHO) highlighted the “nine patient safety solutions” for prevention of harm and six of them are related to medication administration (Shane, 2009). Those six solutions include the avoidance of confusing medication names which look or

sound like while using brand and generic names together in the same clinical setting. The WHO recommends the correct identification of the patient and the control of the concentration of the electrolyte solutions used for injection (Shane, 2009). Medication accuracy has to be ensured by comparing all the medicines that the patient is taking, especially when it is time for ordering or rewriting medication or when the patient is transferred to another level of care. The patients must not share the needles or other sharp instruments to prevent the cross-infection of microorganisms such HIV and hepatitis. Assuring the correct connection of the syringes and tubing is needed to prevent the deviation of medication through the wrong route of medication which is not intended (Sanders, 2012: 21).

Therefore, the registered nurses are requested to comply with policies and procedures related to medication administration policy as argued by Choo, Johnston and Manias (2013) who conducted a study in two hospitals in Singapore. In their study, the compliance of registered nurses with regard to medication administration procedures was examined and the findings showed that the registered nurses did not comply with the steps of medication check.

The registered nurses and enrolled nurses qualified for administration of medication are concerned by these policies and procedures which underpin the following criteria of administration of medication according to Choo *et al.* (2013). Before the administration of medication, the first check of medication against medication prescription chart is needed. Checking the patient's identification against the prescription chart is recommended. An entire assessment of prescription chart has been highlighted to ensure the allergy information, correct medication and dosage, correct time and frequency, correct patient and doctor's name

and signature. The medication should be taken to the bedside of the patients who have to be explained about the medication before they give verbal consent. Furthermore, the medication is checked against the prescription chart for a second time. The correct dosage of medication which must be checked for the third time before the administration is also a critical point. After administration of medication, record-keeping is requested. Above policies and procedures together with the six patient safety solutions for prevention of harm should be considered as guidelines to prevent medication errors.

However, medication errors still occur and the patients are exposed to harm and death. For example, the National Patient Safety Agency (NPSA) in United Kingdom reported that 56.5% of medication errors resulted in extreme harm or in death (Shane, 2009). Llewellyn, Gordon and Reed (2011) said that approximately 98 000 Americans died in 1999 due to medication errors. According to the South African Nursing Council (SANC) statistics on professional misconduct cases from 2003 to 2008, 105 professional nurses and 9 student nurses were involved in medication errors cases (South African Nursing Council, 2012).

Administration of medication is included in the responsibilities of registered nurses according to the scope of their practice under the Nursing Act 50 of 1978, as amended (South African Nursing Council, 2013). Different methods referred to routes are being used in administration of medication. These methods include the oral route which is the most frequent, convenient and economical among other routes. Most of the tablets are given per mouth and when they are halved, there is a risk of incorrect dosage. Medication is also given via intramuscular, intravenous and intradermal routes. Sprays such as nasal, inhalation are being used as routes of administration of medication, and eye and ear drops are being used. Ointments, creams and



suppositories are other alternatives of administration of medication (Kee & Marchall, 2013:109). Within South Africa, general hospitals have routines with regard to the frequencies of administration of medication. These frequencies are written on the first page of the prescription chart and are well explained.

According to the same routines, enrolled nurses may be delegated by registered nurses to administer, for instance, the oral medication but not the intravenous medication which is given by a registered nurse. Otherwise, a registered nurse has to administer the oral medication. The oral medication which includes the patients' medication issued by the pharmacy, and ward stock medication is kept on medication trolley. Scheduled drugs are kept in lockable cupboards. The medication trolley which is used in medication rounds should be lockable for security measures. Given that the administration of medication is the responsibility of registered nurses, according to their scope of practice, the administration of medication by nursing students, which is part of their clinical learning outcomes, should be done under the supervision of a registered nurse (South African Nursing Council, 2013).

The School of Nursing at a university in the Western Cape has a specific clinical programme for each year level of the Bachelor of Nursing programme. The programme also outlines specific clinical learning outcomes and skills or competencies for each year level. The students spend clinical learning time in general hospitals, clinics and skills laboratories to practice these skills to achieve the required level of competence for promotion to the next year level. In general hospitals, students are placed in wards together with other students from other nursing institutions and disciplines.

According to the clinical programme of the School of Nursing at a university in the Western Cape, oral medication is a specific clinical competency which is assessed in the second year, for which the student must be found competent. Besides the administration of medication and other clinical skills the learning outcomes for the second year include the management of specific medical conditions. Furthermore, they are allocated to attend to patient's activities of daily living such as hygiene and comfort. The second year students are expected to learn how to conduct a medication round in the ward and manage scheduled drugs under supervision. These students need to administer many types of medication to different patients. According to a set of assessment criteria, a student becomes competent when he/she correctly administers medication to a patient and meets the criteria. It is expected that after the student successfully completes the second year of study, the student will be able to conduct a medication round in the entire ward. The clinical learning programme of the third and fourth year however might not allow the student to achieve the levels of competence, as described by Benner cited in Masters (2012:74-75).

Benner (1984: 22) has identified five stages of acquisition of a skill from novice to expert stage. Novice stage refers to the lower stage of skill acquisition in which the nurse is nervous and unable to recognize the relevant points of the skill. Advanced beginner is characterized by ability of skill performance that is somehow acceptable. Competent stage refers to the stage in which the nurse can recognize the critical points. Proficient stage is defined as the stage in which the nurse feels confident to perform the skill. Expert stage refers to the stage characterized by "an intuition grasp of the situation". However, the last two stages of

acquisition of a skill are not applicable to this study because they are the high levels that need more experience beyond the nursing programme.

A challenge is that, at the third year level Bachelor of Nursing students are placed at maternity care facilities. At these facilities medication is mainly administered by the professional nurse. Students therefore do not get the opportunity to consolidate their learning of the second year. Likewise, the fourth year offers a new experience because the programme focuses on psychiatric nursing, and the administration of psychotropic medication. In the fourth year however, the students are also placed for a limited number of days in a general hospital where they administer oral and intravenous medication. Therefore, the clinical learning opportunities related to the administration of oral medication are expected to be mostly available in the second year level of nursing programme.



### **1.3 Problem statement**

According to Bachelor of Nursing programme at a university in the Western Cape, students are expected to be competent in the administration of oral medication at end of the second year. Currently medication errors are however a huge problem. Jevon, Payne, Higgins and Endecott (2010), postulate that the improvement of the skills and the competence of nursing students through education and training can contribute to the reduction of these errors. However, the nature of nursing education programmes seems to pose challenges for students to become competent in the administration of oral medication. The students' perceptions about clinical learning opportunities and their competence in the administration of oral medication are however unknown.

#### **1.4 Aim of the study**

The aim of the study was to investigate the fourth year Bachelor of Nursing students' perceptions regarding their clinical learning opportunities and their competence in the administration of oral medication at a general hospital.

#### **1.5 Research objectives**

The study's objectives were to:

- 1.5.1 Examine the students' perceptions about clinical learning opportunities related to the administration of oral medication in a general hospital.
- 1.5.2 Determine whether the fourth year Bachelor of Nursing students perceive themselves as competent in the administration of oral medication in a general hospital.
- 1.5.3 To identify the relationship between clinical learning opportunities and the students' perceptions about their competence in the administration of oral medication in a general hospital.

#### **1.6 Research questions**

- 1.6.1 What are the perceptions of Bachelor of Nursing students about their clinical learning opportunities regarding the administration of oral medication in a general hospital?
- 1.6.2 What are the perceptions of Bachelor of Nursing students about their competence in the administration of oral medication in a general hospital?

1.6.3 Are existing clinical learning opportunities in a general hospital perceived by Bachelor of Nursing students to be adequate for the development of competence in the administration of oral medication?

### **1.7 Significance of the study**

At the outset, the findings of this study will inform the Bachelor of Nursing programme at a university in the Western Cape about the adequacy of clinical learning opportunities of the students. Moreover, the study contributes to improve the alignment of clinical learning to the learning outcomes of the Bachelor of Nursing programme. Furthermore, patients will benefit from this study as the improved training of Bachelor of Nursing students will contribute to the reduction of medication errors.



### **1.8 Research methodology**

A quantitative approach was used in this study to determine the clinical learning opportunities and student's competence regarding the administration of oral medication. According to Polit and Beck (2012:53), a quantitative approach allows the researcher to collect "numeric data resulting from formal instrument and being analysed with statistical procedures". In this study, the researcher applied the cross-sectional descriptive design defined by Brink, van der Walt and Rensburg (2012) as the study in which the data were collected at one point in time using the same participants. The research setting was a university in the Western Cape where the fourth year students were registered in the Bachelor of Nursing Programme.

Population refers to the group of people or objects in their entirety and who are of interest to the researcher (Brink *et al.*, 2012). In this study, the population includes the fourth year Bachelor of Nursing students at a university in the Western Cape. Sampling is the process of selecting the sample from the entire population to obtain information regarding the phenomena to be studied (Brink *et al.*, 2012). Given the relatively small population size, the sample for this study was all-inclusive; meaning that all 176 fourth year Bachelor of Nursing students currently registered at a university in the Western Cape in 2014 were included in the study. However, the total number of participants did not include the 22 participants used in self-report questionnaire pre-testing.

In this study, a structured self-report questionnaire was developed by the researcher and based on the reviewed literature, an observational check list borrowed, with permission, from Zare *et al.* (2013), and an evaluation tool used by the School of Nursing involved in this study. The questionnaire which includes 90 closed-ended questions has three sections and includes mostly 5 point Likert scale type questions.

With regard to content validity in this study, the researcher ensured that the questionnaire represented all the aspects and measured the perceptions of the participants about the clinical learning opportunities and competence regarding the administration of oral medication and not something else (Polit & Beck, 2012). Face validity was applied by the researcher who ensured the readability and clarity of the instrument content. For reliability, in terms of stability, the researcher administered the questionnaires to the participants on two occasions separated by 12 days and compared the results. In this study, the internal consistency was measured by Cronbach's Alpha test as suggested by Burns and Grove (2011). The data were

collected using a self-report questionnaire and the researcher considered the ethical responsibilities towards the participants.

The computer program namely Statistical Package for Social Sciences (SPSS version 22) was used for data analysis to avoid the chaos of numbers, and to generate quantifiable data. The data were transformed into symbols through the process of coding and a codebook was used for record-keeping of codes and the values of the variables (Polit & Beck, 2012). Descriptive statistics defined by Burns and Grove (2011:383) as statistical analysis used to describe and summarize quantitative data, were used in this study. Therefore, nominal, interval and ordinal measurements were used in data analysis.

In this study, univariate analysis aimed at describing how often a condition occurs rather than describing the relationships between the variables (Polit & Beck, 2012: 226). Bivariate analysis was also used by the researcher to check how two variables were related to one another. The Tables, figures and percentages were used in this study (See chapters 3 and 4).

## **1.9 Operational definitions**

For the purpose of this research, the terms below are defined as follows:

1.9.1 Administration of oral medication - means giving medication to a patient. However in this study, administration of medication based on the principles highlighted by Downie, Mackenzie, Williams and Hind (2008) includes the whole procedure of administration of oral medication. It includes the main activities such as the hygiene protocol to prevent the cross-infection, preparation of the trolley, identification of the patient's documents and

identification of the patient; identification of medicine; giving the medication and monitor any immediate side-effects, reporting the abnormality related to medication intake, and record-keeping.

1.9.2 Bachelor of Nursing - is a degree awarded to a nursing student who has successfully completed four academic years of a nursing curriculum (South African nursing Council, 1988).

1.9.3 Clinical learning opportunities - refer to “a range of experiences that comprise work-integrated and service-learning in the clinical setting” (South African Nursing Council, 2013). In this study clinical learning opportunities refer to the opportunities which students have during a clinical placement within a general hospital with regard to: orientation, allocation of the task, supervision and practice of administration of oral medication.

1.9.4 Competence - refers to “the ability of a practitioner to integrate the professional attributes” (South African Nursing Council, 2013). In this study, the competence refers to the degree of performance of all competencies or skills related to the administration of oral medication.

1.9.5 Competency - In this study it refers to a skill, clinical skill or simply a task. It is defined by Rosenfeld, Pyc, Rosati and Marren (2012) as an acquisition of skills based on knowledge with ability of judgment, including the experience required for professional person.

1.9.6 General hospital - is defined by World Health Organization (2009) as “a hospital providing a range of different services for patients of various age groups and with varying



disease conditions”. In this study, a general hospital refers to a non-specialized healthcare setting in the Western Cape that is able to admit the patients to receive care for the treatment of their medical conditions.

1.9.7 Medication errors - are defined as errors resulting from incorrect process of medication ordering, dispensing, prescription and administration (Lisby, Nielsen, Brock & Mainz, 2010). In this study, medication error means wrong administration of oral medication.

1.9.8 Nursing programme - is defined by South African Nursing Council (2013) as “a set of learning experiences that has a purpose and structure leading to the registration of professional nurses and midwives”.

1.9.9 Oral medication - refers to medication which is given through the mouth of the patient, this medication is “absorbed by the gastrointestinal track” according to Kee and Marshall (2013). In this study, oral medication refers to medication administered by a nursing student via the mouth of the patient admitted in general hospital.

1.9.10 Professional nurse - is defined by South African Nursing Council (2013) in its Nursing Act, Act no 33 of 2005 as “a qualified nurse having met prescribed education requirements for registration as professional nurse and midwife, having and maintaining the required competencies for nursing professional practice and registered by South African Nursing Council”.

1.9.11 Route of medication - refers to the way in which the medication is administered to the patient such as oral, intramuscular, intravenous and others (Kee *et al.*, 2013).

### **1.10 Outline of the study**

The next chapter, chapter two, provides the literature review of the study with regard to the training of nurses in administration of oral medication, administration and storage of medication, principles of medication administration and legal framework. Chapter three presents the research design and methodology of the study, while chapter four focuses on data analysis, interpretation and discussion. Chapter five discusses the limitations of this study, draws conclusions and presents the recommendations based on the findings of the study. The appendices are attached to the thesis towards the end.



## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The South African Nursing Council (2013) emphasizes the clinical learning opportunities which are an amount of clinical experiences gained by nursing students in order to meet “the required clinical skills”. SANC requests clinical supervision for the assistance and support of nursing students in clinical setting. Administration of oral medication is one of the clinical experiences needed to prevent patients’ harm and enhance the effectiveness of the medication. Oral medication is administered through the oral route which is the most occurring route in general hospitals as it is commonly accepted, convenient, easy, painless, and cheap, according to Donaldson, Gizzarelli and Chanpong (2007).

Studies have shown that medication errors are common and they are related to inadequate training of nursing students. Other studies found that there are other factors contributing to medication errors. For instance, Smeulers, Hoekstra, van Dijk, Overkamp and Vermeulen (2013) conducted a study in Netherlands and found that nurses make medication errors due to the interruptions during medication administration. Medication error is known as one of the common medical errors in health care setting. However, nursing educators have challenges regarding the provision of necessary knowledge needed for the students for safe medication administration (Cooper, 2014). Medication errors may lead to severe harm, death of the patient and disciplinary or penal sanctions may be applied to the nurse responsible for the errors. Therefore, successful training of the nursing students in medication administration is needed to prevent and eradicate those errors.

## **2.2 Training of nurses in administration of medication**

### **2.2.1 Clinical placement**

Significant studies have been conducted on nursing students' training and experiences and do not focus specifically on the administration of oral medication. One such study was conducted by Breier, Wildschut and Mgqolozana (2009) in South Africa which reported on mutual accusations between the students and the staff. Accusations from the enrolled nurses were about the students who are not eager to learn while the students complained about the enrolled nurses who abuse them verbally and do not guide them in clinical practice. Another study was conducted by Delobelle, Mamogobo, Marincowitz, Decock and Depoorter (2011) at the University of Limpopo and the results showed that nursing practice requires the combination of knowledge, skills and experience.

As already mentioned, the above studies do not specifically report on the administration of oral medication. There is a lack of studies addressing appropriate clinical placements and clinical learning opportunities for nursing students in specific clinical areas and with regard to the administration of oral medication. Hartigan-Rogers, Cobbett, Amirault and Muise-Davis (2007) conducted a study in Canada to describe the perceptions of the graduates about third and fourth year clinical placements. One of the findings of this study showed that nursing students preferred clinical placements in medical-surgical wards where they could get more opportunities to practice a range of basic and important nursing skills. Contrarily, the same study indicated that nursing students did not like to be placed in specialized units where the opportunities to practice were likely to be insufficient because the students were limited

to observation without participating in the care of the patients. Therefore, with regard to administration of oral medication by Bachelor of Nursing students at a university in the Western Cape, the opportunities to practice should depend on the nature of the wards in which they are placed. However in this study, these students will give their perceptions about clinical placements.

According to the South African Nursing Council (2013), clinical placement refers to the period that a nursing student spends in clinical setting and “other experiential learning sites” in order to achieve the outcomes of the nursing programme. Clinical education and training has been discussed in the Nursing Act No. 33 of 2005. This act specified that clinical education and training have to occur in accredited clinical facilities and other learning environments suitable for nursing programme. Within clinical learning, there are a number of clinical settings that are needed for the development of nursing student’s skills such as administration of oral medication.

The School of Nursing at a university in the Western Cape has set a number of clinical hours that the Bachelor of Nursing students have to spend in the general hospital for clinical learning at second year level of the study. Within Western Cape, the general hospitals in which the second year and fourth year levels nursing students are placed for administration of medication accommodate these students in different wards according to each ward capacity. More than one School of Nursing send these students in the same general hospitals and wards.

For instance, if a given ward can accommodate two students, one School of Nursing can send two students in that ward and another School will not send anyone. The other alternative allows two Schools of Nursing to send one student respectively. The guidelines of alternating these students in the wards to allow equal chance of learning are unknown to the researcher. However, students are mostly placed in the wards such as, medical, surgical, trauma, theatre, neurology, dermatology, urology, paediatric, orthopaedic, gynaecologic wards. The exact amount of hours spent by the students in administration of oral medication in general hospital remains unknown because these students' learning outcomes include also nursing management of medical conditions.

The annual total of hours spent by a second year level nursing student is established by the School of Nursing at a university in the Western Cape. According to the South African Nursing Council (2013), each year level of Bachelor of Nursing programme has a specific number of clinical hours that are recorded and kept by School of nursing. The above Nursing Act, Act No. 33 of 2005 requires also the accountability of nursing school with regard to clinical supervision.

### **2.2.2 Clinical supervision**

Woolley and Jarvis (2007) argue that the nursing students must get opportunities for practice and development of their skills prior to registering with a nursing council. Therefore, the students must be directed and supervised by the expert clinical supervisors in order to be found competent. Six phases of cognitive apprenticeship theory developed by Collins, Brown

and Newman (1987) cited in Woolley *et al.* (2007) are applicable in clinical supervision related to administration of oral medication.

In this regard, the modelling phase helps the novice nursing student observe the clinical supervisor performing the skill of administration of oral medication. Through coaching phase, the student is stimulated to perform a skill with supervisor's guidance and the student receives feedback. The third phase refers to scaffolding; the student attempts to improve the skill without direct support. As the student still needs to develop the skill, it is essential to self-monitor through the fourth phase defined as articulation while performing the skill. Reflection is the fifth phase in which the student is encouraged to perform the skill through analysis and critical thinking under clinical supervision's direction. The last model's phase concerns the exploration in which the student is encouraged to take into consideration the knowledge and skill which are applicable to the new situation in clinical setting. Considering above theory, there is no evidence about how the clinical supervisors apply six teaching methods with regard to administration of oral medication.

The number of guided practices of administration of oral medication in general hospital should be determined by the School of Nursing; however there is no evidence to say that the students perceive that amount to be sufficient or insufficient.

Studies have been conducted on clinical supervision in general such as the one conducted by Eta, Atanga, Atashili and D'Cruz (2011) in Cameroon. However, there is insufficient information related to supervision associated with clinical teaching of administration of oral medication in general hospital. The findings of Eta *et al.* (2011) revealed that the most of the

clinical educators experienced difficulties throughout clinical facilitation and supervision. Furthermore this study found that students did not have basic knowledge, skills related to expected procedure and orientation prior to clinical placement. Therefore, the preparedness of nursing students for clinical placement remains a concern and needs to be examined. Students may be equipped with knowledge and basic skills demonstrated in skills laboratory before being sent to the clinical setting.

In a study conducted by Smedley and Morey (2009) in Australia, nursing student respondents perceived that the input and guidance of clinical educators could improve the clinical learning environment in the hospital setting. Furthermore, nursing students perceived that the practical opportunities were limited resulting in insufficient clinical experience. In the same study, the students' perceptions about their clinical placements indicated that they received the inadequate and out-dated education experience. Therefore, new clinical teaching strategies were suggested by the students to enhance their learning process. A study conducted by Kristofferzona, Mårtenssona, Mamhidira and Löfmarka (2013) at a university in Central Sweden showed that students appreciated clinical lecturers and preceptors for their supportive behaviour and they perceived their clinical lecturers to be more challenging than preceptors in their supervision.

It is essential that adult learners contribute to their learning process as they have the autonomy and freedom in their learning according to Knowles (1980). Hence, Bachelor of Nursing students should be asked how they perceive their clinical learning and if they perceive themselves to be competent in administration of oral medication. Furthermore, the students should orientate themselves towards their needs in clinical learning to fulfil the



duties of a registered nurse in future. Jacobs and Hundley (2010: 20) argue that organized and applicable experiences of the students are useful in their real-life situation. For instance, is clinical supervision helpful to prepare Bachelor of Nursing students to become professional nurse able to handle medication trolley and administer oral medication to all patients in the ward according to the medication prescription? The perceptions of Bachelor of Nursing students about clinical supervision with regard to administration of oral medication should contribute to the preparation of clinical teaching programme. Therefore, through their perceptions, the School of Nursing will be more informed about their needs associated with clinical supervision for instance.

However, the perceptions of Bachelor of Nursing students at a university in the Western Cape about their clinical supervision related to administration of oral medication are unknown. These students are expected to have adequate clinical placement and supervision in order to meet the clinical learning outcomes of administration of oral medication. Furthermore, their perceptions about their clinical experience in this regard will serve as a helpful instrument of evaluation of clinical placements. The question therefore is who should supervise Bachelor of Nursing students in their clinical placements while administering oral medication? In this study, the participants will be asked about their perceptions on who mostly supervised them while administering oral medication.

In the Western Cape, according to the School of Nursing (2013:59), a fourth year Bachelor of Nursing is a mentor of a second year Bachelor of Nursing placed in the same ward. However, there is no evidence indicating that fourth year Bachelor of Nursing students perceive

themselves competent enough to guide a second year student in administration of oral medication.

Jeggels, Traut and Africa (2013), while arguing that clinical supervision plays significant role in the development of clinical skills of Bachelor of Nursing students, say that the professional nurse working in the ward is the supervisor of these students. Jeggels *et al.* (2013) however state that the contact sessions between clinical supervisors and nursing students who need support have been limited in the clinical setting.

### **2.2.3 Students' practice in administration of oral medication**

Karabacak, Serbest, Kan Öntürk, Aslan and Olgun (2013) who conducted a quantitative descriptive study in Turkey on 100 nursing students argue that self-efficacy defined as a personal perception and belief in one's performance ability in a specific behaviour must be improved through education and increased using different methods. Therefore, nursing students should be helped to develop and increase their self-efficacy in administration of oral medication. Self-efficacy should be increased through observation while a clinical supervisor is performing a skill and verbal support towards the student during skill application.

Nursing students should be empowered on the administration of oral medication during their clinical placements. Stolic (2014) argues that administration of medication is a crucial nursing function with underlying threatening consequences related to medication errors. Therefore, nurses and nursing students administering medication have to understand the use and effects of medication. They are requested to be able to do correct calculations of dosages

within the undergraduate programme. Previously, Wright (2007) indicated that nursing education has to help the nursing students develop drug calculation skills during their clinical practice. The study conducted by Wright (2007) in United Kingdom found that these skills can be improved by implementing strategies focussing on the sustainable mathematical skills and conceptual skills of nursing students.

According to the School of Nursing at a university in the Western Cape the admission criteria require prospective students to have passed Mathematics in grade 12. Second year Bachelor of Nursing students complete many mathematical exercises related to dosage calculations prior to being placed in a general hospital where they develop their competence in the administration of oral medication. Students should be found competent in dosage calculations to allow them to do prompt calculations while administering oral medication. In this regard, Macklin, Chernecky and Infortuna (2011) argue that oral medication is the most frequent prescription's type and stress the importance of the need to be skilled in the calculation of medication dosages.

In this regard, Simonsen, Johansson, Daehlin, Osvik & Farup (2011) conducted a study in Norway and found that the knowledge of registered nurses was not satisfactory with regard to the calculation of medication dosage. Therefore, Bachelor of Nursing students at a university in the Western Cape should be competent in calculation of medication dosage to prevent under or over medicating the patient. Furthermore, Bourbonnais and Caswell (2014) highlight that medication administration is an important procedure learned in undergraduate nursing programme. Therefore, nursing students are taught about the safe preparation and administration of medication. Oral medication is considered as convenient for most of the

patients according to Greenstein (2009) and this convenience is one of the advantages of oral medication.

Kerns and Di (2008) argue that the oral route is not only the most suitable but also the most safe and non-invasive, and the cheapest route of medication. Therefore, if the oral medication is route mostly used to administer medication to the patients, the clinical programme should ensure the adequate training of the nursing students in this area.

In this regard, students learn much better through the experience that brings the theory into practice as argued by Dewey cited in Palmer (2001:179). Dewey cited in Garrison (2001) emphasizes that students have to learn from the real environment and not just from the textbooks. In this regard, Bachelor of Nursing students should learn more when they administer oral medication by themselves. However, the amount of clinical learning opportunities on a daily basis for each student placed in the ward is unknown even if the nursing programme at a university in the Western Cape emphasizes the clinical learning for adequate development of students' skills in administration of oral medication. Therefore, the perceptions of Bachelor of Nursing students are needed to inform the nursing programme within South Africa.

In many countries such as Australia, Canada and Sweden, studies have reported on the clinical placements of nursing students in general (Smedley & Morey, 2009; Hartigan-Rogers *et al.*, 2007 and Kristofferzona *et al.*, 2013). However, the study conducted in Iran by Zare *et al.* (2013) proved that the nursing students were incompetent in administration of medication. Even if some students are found incompetent, the nursing programme has established

different learning opportunities to enhance students' competence. For instance, the use of skills laboratory has improved the students' skills. Dover (2013) conducted a study at Capella in United States and his findings proved that the use of simulation laboratory offers a clinical learning opportunity with regard to medication administration. Dover (2013) says that nursing students are not able to administer medication safely while the hospitals expect the knowledge, skills and confidence from new professional nurses.

With regard to the South Africa National Department of Health, the Minister of Health, Dr Motsoaledi cited by Magubane (2013) said that "nursing is a bedside experience; any training that is theory and no sign of certain practical training is not nursing and should not be accredited". Therefore, the School of Nursing at a university in the Western Cape trains Bachelor of Nursing students in the skills laboratory to support the clinical learning in general hospital in order to promote their competence validated by an assessment. However, the perceptions of these students about their experience and competence remain unknown.

#### **2.2.4 Clinical assessment**

Students' skills and knowledge must be assessed using an evaluation tool designed according to the alignment of theoretical and clinical learning outcomes, for the validation of students' competence (Krautscheid, Mocerri, Stragnell, Manthey, & Neal, 2014). Krautscheid *et al.* (2014) conducted a study to assess clinical evaluation tools by exploring students' and faculty's perspectives. The study found that there were gaps in evaluation process. Furthermore, Helminen, Tossavainen and Turunen (2014) argued that the assessment methods have to describe the nursing students' abilities to perform the skills suitable for the

profession. Helminen *et al.* (2014) conducted a descriptive survey study in Finland amongst 276 nursing students, 108 teachers and 225 mentors. This study aimed to describe the experiences and views of participants on the final assessment of nursing students in clinical practice. The findings of this study showed that the student respondents perceived themselves to have spent enough time with their clinical supervisors who assessed their behaviour in their clinical practice. Therefore, Bachelor of Nursing at a university in the Western Cape would be asked about their perceptions regarding supervision prior to assessment of the competency.

On the other hand, Gonzales (2012) conducted a study in Canada which aimed to gather information on how administration of medication is assessed in nursing education. The findings of this study indicated that the method used in nursing education for assessing the safe administration of medication is not standardized. Therefore, a comprehensive assessment which is reliable and valid was recommended for assessing the safe administration of medication and evaluating nursing students' competence. Cant, McKenna and Cooper (2013) discuss the assessment methods which do not show how students relate the cognition to the clinical situation. They indicate that student performance's observation and check list of student's skills are the most frequent clinical assessments used in USA. However, nursing students should give their perceptions related to their clinical learning and competence using a self-assessment tool even if there are eventual biases.

Dale, Leland and Dale (2013) conducted a study in Norway to explore what Bachelor of Nursing students perceived as crucial for a good learning experience in clinical learning. Dale *et al.* (2013) say that according to the university's rules, the students have the responsibility to

self-evaluate with regard to assessment of their level of competence and the self-assessment tools which are completed by these students must be submitted to an evaluation meeting at university for discussion. Based on the university's requirements in Norway, Bachelor of Nursing students at a university in the Western Cape should assess themselves with regard to administration of oral medication. Therefore, students' self-assessment should be compared to clinical supervisors' assessment of these students.

### **2.3 Competence in administration of oral medication**

Five Levels of Skills Acquisition developed by Benner (1984: 22) include: novice; advanced beginner; competent; proficient; and expert. Nursing student at novice level does not have experience in the procedure which must be performed; therefore the novice cannot apply the knowledge into practice. Advanced beginner can have the performance which is acceptable but under supervision because of lack of confidence. Nursing student at a competent level shows ability of reaching the goals of the procedure but does not possess the flexibility and speed that a proficient nurse has. According to the School of Nursing at a university in the Western Cape, within Bachelor of Nursing programme the nursing student is expected to perform at competent level in administration of oral medication.

Furthermore, proficient level refers to the level at which a nurse is able to understand the procedure as a whole, which means that a nurse can perform different tasks included in the procedure without referring to the clinical guidelines. The proficient nurse is able to decide on any action to be taken according to the situation. The top level of competence refers to the expert stage at which the nurse does not need to use the clinical guidelines to understand the

situation and take adequate action. An expert nurse possesses an "intuitive grasp of each situation". Therefore, the Bachelor of Nursing students are not expected to be expert in administration of oral medication, acknowledging that they still lacked appropriate experience.

With regard to the assessment of nurses and nursing students' competence, Lauder, Holland, Roxburgh, Topping, Watson, Johnson, Porter and Behr (2008) conducted a study on measuring competence, self-reported competence and self-efficacy in pre-registration students. The findings showed that students were found competent in good communication skills and decontamination of hands while their level of numeracy was low.

Aggar and Dawson (2014) who conducted a cross-sectional, exploratory study in Australia argued that the skills and competence of nursing students in administration of oral medication are a challenge. Aggar and Dawson (2014) added that the competence of nursing students in administration of oral medication depends on the theory and practice in this regard. Furthermore, Perry, Potter and Elkin (2012) highlight the correct procedures of medication administration and emphasize that medication should be administered to the patient 30 minutes either before or after the prescribed right time. However medication errors still occur although the correct procedures of medication administration are in place. Van den Bemt, Idzingac, Robert, Kormelink and Pels (2009) conducted a study in three nursing homes in Netherlands and found that medication errors were 21.2% of medication given by the participants. The prevalence of medication errors threatens the safety of the patient. Therefore, this safety must be taken into consideration before, during and after medication administration.



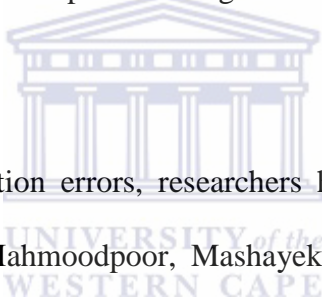
In this regard, Masters (2012:83) argued that “the safe administration of medication is included in nursing administration and monitoring therapeutic interventions”. The safety of the patient is a priority; the administration of correct medication which is valid, undamaged, stored at correct temperature is a critical requirement. Jevon *et al.* (2010) emphasized the adequate and correct storage of medicines in the lockable place. Furthermore, Agalu, Ayele, Bedada and Woldie (2012) conducted a study in Ethiopia in an intensive care unit and found that participants in the study made prevalent errors in medication administration.

Furthermore, Kim and Bates (2013) conducted a study in Korea using a check list based on medication administration guidelines, infection control and medication record-keeping rules. The aim was to evaluate the medication activities of clinical nurses. The findings showed that the adherence rates to guidelines were low and indicated that the nurse respondents did not follow strictly many guidelines of medication administration.

In a cross-sectional survey conducted by Lin and Ma (2009) in Taiwan to explore the prevalence of medication errors and the willingness of the nurses to report them, the findings indicated that 66.9% of the 605 nurse participants admitted to making medication errors. A total of 87.7% of the participants were willing to report the medication errors if there were no consequences after the errors were reported. The researchers therefore suggested the anonymity of participants in reporting of medication errors and the cancellation of negative consequences after reporting.

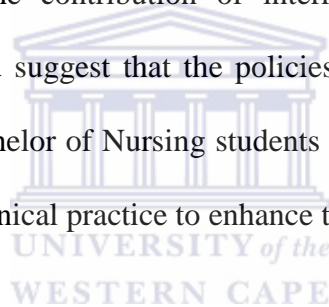
In addition, Bahadori, *et al.* (2013) conducted a cross-sectional descriptive study in Iran and the results indicated that medication errors were not reported due to management’s factor and

because the participants feared the consequences of reporting those errors. Therefore the Bachelor of Nursing students must be encouraged to report medication errors so that their supervision may be increased for improvement of their skills. Attention must be paid to medication errors as they are one of the most common mistakes that threaten the health of the patient in health care settings as argued by Cheragi, Manoocheri, Mohammadnejad and Ehsani (2013). Cheragi *et al.* (2013) conducted a cross-sectional descriptive study in Iran to evaluate the causes and types of medication errors made by nurses and the findings showed that 64.55% of the 237 nurse participants had made medication errors. The use of abbreviations of drugs and synonyms of drugs were the common causes of medication errors. This study highlighted the lack of pharmacological knowledge as the main cause of medication errors.



Regarding the causes of medication errors, researchers have found different contributing factors. Emami, Hamishehkar, Mahmoodpoor, Mashayekhi and Asgharian (2012) suggest that insufficient training of the nurses contributed to medication errors. Even this training has been highlighted in a study conducted in Korea by Sung, Kwon and Ryu (2008) to analyse the effects of a blended learning program on medication administration by new nurses using a non-equivalent groups design. The findings of this study showed that there was a lack of knowledge in administration of medication. Recently, Schneidereith (2014) conducted a longitudinal study at a private university in United States and the findings show that the students neglect the verification of medication administration's rights as is described in the subheading 2.4.1 below. Therefore, nursing programme at a university in the Western Cape should ensure that Bachelor of Nursing students comply with above rights.

In South Africa, Labuschagne, Robbette, Rozmiarek, Strydom, Wentze, Diederick and Joubert (2011) also conducted a study and the findings showed that 39.3% of the 188 participants were involved in medication errors. However, the contributing factors to medication errors were not found. Furthermore, Craig, Clanton and Demeter (2014) conducted a study in United States on interruptions contributing to medication errors during medication administration and on measures to be taken to reduce these interruptions. A study conducted by Shahrokhi, Ebrahimpour and Ghodousi (2013) in Iran showed that the contributing factors of medication errors among nurses included carelessness, tiredness, insufficient knowledge of pharmacology and insufficient work experience. Bennett, Dawoud and Maben (2010) highlight the contribution of interruptions to errors in medication administration by the nurses and suggest that the policies should be made to reduce these interruptions. In this regard, Bachelor of Nursing students should be aware of and guided by medication policies during the clinical practice to enhance their competence.



However, there is insufficient knowledge about how the students are trained to reduce the interruptions and how they perceive these interruptions compromise their competence. Studies suggest the prevention of medication errors that occur in medication preparation that appears to be a crucial step in medication administration (Biron, Lavoie-Tremblay & Carmen, 2009). In brief, the professional nurses or nursing students who have been found competent in administration of oral medication can be involved in medication errors. The lack of calculation knowledge results in medication errors while nurses have been taught how to calculate the dosage. Administration of medication is the most common clinical procedure done by the nurses to evaluate their competence (Dougherty & Lister, 2011).

For instance, McMullan, Jones and Lea (2010) conducted a cross-sectional study in which 44 registered professional nurses and 229 second year nursing students wrote both numerical and drug calculation tests in United Kingdom. The findings showed that 55% of nursing students and 45% of registered nurses failed the numerical test; and 92% of nursing students and 89% of professional registered nurses failed the test on the drug calculation.

Based on above research, the competency should be sustainable and an on-going skill of acquisition according to Le Roux (2006). Le Roux (2006) conducted a cross-sectional survey to describe the extent to which the Baccalaureus Curationis programme at the University of the Western Cape prepared graduating learners for professional competence. The findings showed that the second year Bachelor of Nursing students had very limited clinical experience while they have moved from novices to advanced beginners. The same study indicated that the progression in competence was not found at second year and fourth year levels. Le Roux (2006) therefore recommended the development of nursing students' competence which is enhanced by the practice in clinical setting. Furthermore, the nurses administering the medication must always comply with the policies and principles regarding administration of medication.

#### **2.4 Principles of medication administration and legal framework**

The use of guidelines for medication administration contributes to the prevention of medication errors and enhances the safety of the patients in this regard. Nurses and nursing students must comply with these guidelines. Medication errors may harm the patients, and the nurses responsible for these errors may face disciplinary sanctions.

### **2.4.1 Principles of medication administration**

Medication errors are preventable according to Kee, Hayes and Mcuistin (2009) who stressed the importance of the use of guidelines for medication administration which refer to the rights related to drug administration. Nurses administering medication should have access to the hospital policies related to safe administration of medication. Within South Africa in the Western Cape, hospital policies in this regard remain unknown to the researcher. However, Kee *et al.* (2009) assert that nurses need to practice the rights of medication administration. Therefore, Bachelor of Nursing students must also practice the safe administration of medication.

Daily preparation duty includes the washing of medication trolley and medication cupboard using the disinfectant in order to stick on infection prevention. The identification of medication refers to checking if the medication is the real medication which is prescribed by the doctor, not expired for the patient's safety, and if there is enough stock. The nurse or nursing student administering medication should ensure that bottles for drinking water and cups to be used while administering the medication are clean for infection control. The medication trolley must be neat and tidy. Hand washing between the patients is recommended, touching medication with hands is forbidden and a tablet divider should be used.

Downie *et al.* (2008) emphasized the principles of medication administration. The correct identification of the patient refers to the patient's surname and names, date of birth, hospital folder number and physical address which are written on patient's sticker. This information

will be compared with patient's identification band or bracelet. For instance, nurses should pay attention to patients with the same surnames. Therefore, nurses and nursing students are responsible for the correct identification to comply with the safe administration of medication.

The correct identification of medication means identifying the generic or trade name of medication which is prescribed by the doctor on the prescription chart and comparing this name with the name of medication which is in the box or container. The medication prescription must be signed by a known doctor who printed his/her surname and put his/her signature on the prescription chart. Nurses or nursing students administering medication must check also the expiry date of medication, the validity of medication in terms of damage and storage at correct temperature. In case of telephonic or verbal order for medication, two nurses must listen to the same order and co-sign the medication given to the patient and which must be prescribed by the doctor on the prescription chart within 24 hours.

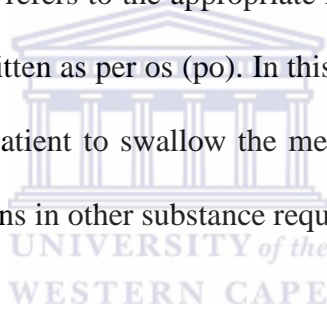
In a study conducted by Zare *et al.* (2013) the procedures of medication administration were also highlighted. For safe administration of the medication, nurses and nursing students must check the medication label three times before medication administration. While identifying the medication, nurses and nursing students should pay attention to medication names which sound alike and to medication components with regard to patient's allergy. For example, myprodol used to treat mild to moderate pain has paracetamol in its ingredients and should not be administered to the patient allergic to paracetamol.

Furthermore, Downie *et al.* (2008) went on to emphasize the guidelines of identifying the patient and checking. The right dose refers to the dose prescribed by the doctor for a particular patient. The right dose involves the nurses or nursing students' knowledge of drug calculations. Therefore, nurses should always remember the formula used to calculate the dose. Furthermore, nurses are advocates of the patients and they should consider the weight of the patient comparing to prescribed dose. In case of suspected high dose, nurses should consult the doctor before medication administration.

It is also important for the nurses and nursing students to know the strength of specific medication. For instance, Amoxicillin dose in stock can be 250mg or 500 mg; Metformin dose in stock can be 500mg or 850mg. Therefore, nurses and nursing students should know which dose in stock was taken before calculation. They should check medication package insert to enhance the safe administration of medication.

According to the principles of administration of medication emphasized by Kee *et al.* (2009), the right time refers to the time at which the patient will receive prescribed dose. The frequency of medication administration means how often the patient will receive medication within 24 hours. The common times include 02:00, 04:00, 06:00, 07:30, 10:00, 11:30, 14:00, 16:00, 18:00, and 22:00. The frequency of medication administration includes also once day (o.d) which is either at 06:00 or 10:00, the doctor might also write in morning or at night. Twice a day (b.d) means for example at 06:00 and 18:00 or 10:00 and 22:00. Three times a day (tds) means at 10:00, 16:00 and 22:00.

Every 8 hours (q8h) allows the antibiotic medication to be given at even intervals than three times a day. Medication can be given four times a day (qid) or every 6 hours (q6h) and the time should be 04:00, 10:00, 16:00 and 22:00. With regard to frequency, the prescribed dose should be given as a single dose (stat) or as needed (PRN). The duration of medication refers to the number of days during which the medication will be administered to the patient. For instance, 3/7 means that the medication will be given for 3 consecutive days in a week while 5/7 means 5 consecutive days in a week. For the medication which must be given over 7 consecutive days, the doctor writes 1/52 which also means a week in 52 weeks. Furthermore, 2/52 means two weeks in 52 weeks meaning that the medication will be given over 14 consecutive days. The right route refers to the appropriate route prescribed by the doctor, for example the oral route will be written as per os (po). In this case, nurses and nursing students should assess the ability of the patient to swallow the medication before its administration. Crushing or mixing the medications in other substance requires pharmacist consultation.



The nurses should not work from any assumption (Downie *et al.*, 2008). Therefore, the right assessment must be done and it includes assessing the prescription chart with regard to allergy of the patient; it includes doctor's orders such as "nil per mouth" (NPO) or "omit", the legal prescription of medication and the time at which the patient took the previous dose. The assessment of the patient involves the vital signs, blood sugar and haemoglobin levels if it is needed. The assessment of patient's diagnosis and nursing progress notes should be needed for nursing management continuity, for instance the patient might be nauseous before medication administration.



The right documentation includes appropriate record-keeping of medication administered. The nurse or nursing student will sign in the appropriate block for medication administered; the date and time at which the medication dose was administered will be recorded. On prescription chart, there are numbers corresponding to the reasons of not administering the medication. Number 1 means that the patient was away from the ward, number 2 the patient could not receive the medication because of vomiting for example and so on, number 3 means the patient refused the medication, number 4 means that the medication was not issued by the pharmacy. The nurse or nursing student should record in patient's file the information related to medication administered.

Furthermore, Mogotlane, Manaka-Mkwanazi, Mokoena, Chauke, Matlakala and Randa (2015) emphasize the procedure of administration of medication. The right to health education refers to the right of the patient to receive the necessary information related to medication to be administered. The patient will be informed about the name of medication, its indication and route, possible side-effects and drug interaction such as dietary restriction. The whole procedure of medication administration will be explained to the patient who will give verbal consent of taking medication. Administration of oral medication follows therefore a procedure, nurse and nursing students must ensure that the correct dose of medication is given to the right patient. After medication administration, the patient must be made comfortable and the bell has to be always at the reach of patient's hands.

The right evaluation concerns the effectiveness of medication administered to the patient. For instance, the nursing student who administers oral medication to the patient ensures that the medication has been swallowed. Therefore, the effectiveness of medication will depend on

the response of the patient to its action. Any immediate side-effect should be noted if it occurs. Any medication error or side-effect must be reported to a medical doctor.

The patient has the right to refuse medication and nurse or nursing student administering medication must record it on prescription chart and put his/her initial; furthermore, the interim entry in this regard will be made immediately in the patient's file.

After medication administration to all the patients, the medication cupboard or trolley will be locked. Medication trolley or drug cupboard key should be kept by a professional registered nurse for safe keeping.

#### **2.4.2 Legal framework related to medication administration**

A study conducted by Lohman, Schleifer and Amon (2010) confirmed that insufficient training caused the health workers to fear prosecutions related to medication errors. In addition, Jevon *et al.* (2010) warned the registered nurses about these errors that may lead to disciplinary sanctions or to civil court action. Nursing students should be well trained to prevent medico-legal hazards. According to the South African Nursing Council statistics on professional misconduct cases from 2003 to 2008, 6 professional nurses were involved in medication errors cases in the Western Cape Province (South African Nursing Council, 2012).

## **2.5 Conclusion**

Few studies address the importance of the appropriateness of clinical placements of nursing students; however, there is insufficient literature related to clinical supervision associated with administration of oral medication in general hospitals. The training of nursing students in administration of oral medication remains a concern. Studies showed that nursing students' skills and knowledge must be assessed using an evaluation tool to measure their competence. Furthermore, nursing students should be well trained according to the guidelines of medication administration to prevent medico-legal hazards.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

In this chapter, the researcher explains the methods used in the current study and addresses among others: philosophy of research; research approach and design; population and sampling; data collection instrument; data analysis; validity and reliability; and research ethics.

### **3.2 Research philosophy**

In nursing research, positivism and constructivism are the predominant paradigms used to respond to the research questions. A paradigm refers to a view of the world and serves to answer the philosophical questions related, for example to the nature of reality, and the relationship between the objects being researched and the inquirer. Therefore, positivism involves many activities aiming to understand the causes which underlie the phenomenon in research. The positivist paradigm, known as positivism or logical positivism dominated the nursing research in 19<sup>th</sup> century (Polit & Beck, 2012).

For constructivism paradigm, known as naturalist paradigm, reality is an entity which is not fixed. Constructivist philosophers believe that reality occurs within a context and is about a construction of research participants. Therefore, the reality is considered as subjective and multiple. Furthermore, the researcher interacts with the study's subjects (Lobiondo-Wood & Haber, 2006). Hence, the researcher gathers the data about the subjects using appropriate methods such as questionnaires, interviews and so on.

With regard to the relationship between the paradigms and research methods, a quantitative research approach is mostly closer to positivism. Therefore researchers conducting quantitative research use deductive reasoning to produce predictions tested in the real environment. The findings of numeric data are generalized outside the study setting. In this study, the researcher applied a quantitative research approach to gather information from the Bachelor of Nursing students who gave their perceptions through a self-report questionnaire.

On the other hand, a qualitative research is allied with constructivist paradigm. Hence, qualitative researchers focus on understanding of the experience of the objects to generate in-depth and rich data and use inductive reasoning to generalize the data from specific observations (Lobiondo-Wood & Haber, 2006).

### **3.3 Research approach**

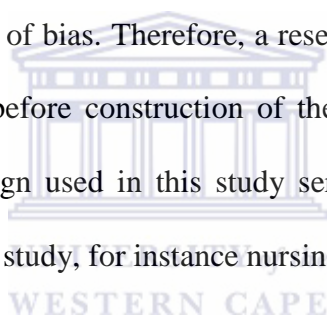
According to Burns and Grove (2011), a quantitative research approach, defined as an objective, formal and systematic process, in which the information is obtained from numeric data, has been used in many nursing studies. Quantitative researchers believe in absolute truth and researchers have to be objective in their research to find this truth. According to Creswell (2009), a quantitative research approach involves the description of variables in descriptive research and examines the relationships of the variables in correlational research. Regarding the determination of interactions of cause-effect between the variables, quasi-experimental or experimental quantitative research is applied.

In this study, the quantitative approach is the most appropriate approach to gather and describe the data related to the perceptions of the Bachelor of Nursing students using a self-reported questionnaire. The amount of clinical learning opportunities and competence highlighted by Benner (1984) which are quantifiable data are researched in this study. The perceptions are quantifiable; for instance, Poolman, Sierevelt, Farrokhyar, Mazel, Blankevoort and Bhandari (2007) conducted a quantitative research study to “examine perceptions and competence in evidence-based medicine among Dutch orthopaedic surgeons” and this approach generated great results.

Furthermore in the Western Cape’s public hospitals and clinics for example, a designed assessment tool is used to assess the competence of the students in different skills. Therefore, a quantitative approach is suitable for this study to establish the students’ perceptions about clinical learning opportunities related to the administration of oral medication; and determine whether the fourth year Bachelor of Nursing students perceive themselves as competent in the administration of oral medication. In this study, a quantitative approach allows the researcher to identify the relationship between clinical learning opportunities and the students’ perceptions about their competence in the administration of oral medication. According to Polit and Beck (2012:53), a quantitative approach allows the researcher to collect numeric data using a formal instrument and analyse these data with statistical procedures. Furthermore, Brink, van der Walt and van Rensburg (2012), assert that a quantitative approach is the most useful approach to gather quantifiable data.

### 3.4 Research design

A research design refers to the plan selected by the researcher to obtain answers to the research questions. For example, a research design can show how the researcher will gather and analyse the data, indicates the research setting, and so on. Therefore, a research design provides not only a plan but also the structure and strategy which help a researcher write research questions, conduct the study including data analysis and evaluation. In such way, the direction of the study is maintained by a research design (Lobiondo-Wood & Haber, 2006). Polit and Beck (2012: 58) considers a research design as the “architectural backbone of the study” and argues that the researcher selects an appropriate plan and identifies strategies which contribute to minimization of bias. Therefore, a research design should be comparable to a house plan that is needed before construction of the house. According to Burns and Grove (2011), a descriptive design used in this study serves to gain more data about the qualities within a specific field of study, for instance nursing practice.



A Cross-sectional study refers to the study in which the data are collected at one point in time using the same participants (Brink *et al.*, 2012). In this study therefore, the cross-sectional descriptive design is used by the researcher to describe the perceptions of Bachelor of Nursing students in order to answer the research questions and to meet the aim and the objectives of this study as suggested by Polit and Beck (2012). In this study, the data were collected on one occasion from current fourth year level Bachelor of Nursing students.

### **3.5 Population and sampling**

#### **3.5.1 Population**

Population refers to a specific group of people or subjects in their entirety who are of interest to the researcher (Brink *et al.*, 2012). In this study, the population included Bachelor of Nursing students. The population, to which the researcher had access, as defined by Burns and Grove (2011), included all fourth year Bachelor of Nursing students who are registered at a university in the Western Cape in 2014.

#### **3.5.2 Sampling**

According to Brink *et al.* (2012), sampling refers to the selection process of units which represent a population that the researcher is interested in. The researcher while conducting a study may have difficulties to study an entire population of interest as it can be extremely time-consuming and expensive. Furthermore, it might not be feasible to study every single element in the target population. The majority of researchers therefore avoid collecting data from an entire population due to huge numbers of people, many research settings, time-consuming and waste of money as argued by Yang (2010: 35). Therefore, researchers will gather data using a representative sample.

In this study the selection of the units was not done due to a relatively small target population therefore all 176 Bachelor of Nursing students at a university in the Western Cape were selected to complete the self-report questionnaires. Therefore, this research study's efficiency

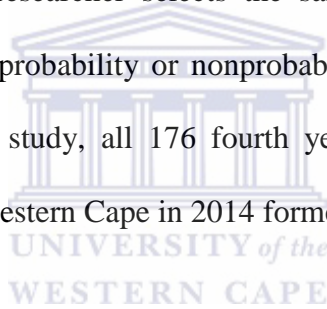


was more increased than using sample according to Lobiondo-Wood and Haber (2006). The 22 students used in the pre-testing of instrument were excluded from the main study.

Dawson (2009: 48) argued that a small number of elements within a study population can be entirely included in the research resulting in a census. Furthermore, Jupp (2006) argues that a census refers to a data collection method which uses all the subjects to get their ideas.

### **3.5.2.1 Sampling frame**

A sampling frame refers to a list acquired by the researcher and which includes every object of the eligible population; the researcher selects the sample size from this list using a sampling plan which might use probability or nonprobability sampling methods (Burns & Grove, 2011). However, in this study, all 176 fourth year Bachelor of Nursing students registered at a university in the Western Cape in 2014 formed the sampling frame.



### **3.5.2.2 Sampling technique**

Sampling techniques are either probability or nonprobability sampling. Representativeness is ensured by applying probability sampling which is the process of random selection of elements. The results generated from a probability sampling technique is more generalizable than those from a non-probability sampling strategy in which there is a lack of random selection (Lobiondo-Wood & Haber, 2006). In this study, the researcher intended to collect data from every subject of the population being studied instead of from a selected sample.

### **3.5.2.3 Sample size**

A sample refers to a subset of people or elements that should reflect the representativeness of the entire population who meets the criteria. The researcher has to know or estimate the total population; and the sample size in quantitative research should be as large as possible to ensure representativeness of the target population. Furthermore, there are no rules to follow in order to determine the largeness of the sample size. However, the smaller is the sample, the larger is the sampling error (Lobiondo-Wood & Haber, 2006; Polit & Beck, 2012). This sampling error results in sampling bias. In this study, the total population was 176 students. The sample size (n) defined through all-inclusive sampling which was done due to the relatively small population equalled 176 participants (Terre Blanche, Durrheim & Painter, 2006).



## **3.6 Data collection**

### **3.6.1 Introduction**

According to Grove, Burns and Gray (2013: 46), “data collection is the systematic and precise gathering of relevant information which is needed to reach the research purpose and specific objectives, to answer the research questions”. Data collected in a quantitative study is numerical. In this quantitative study, the data collection was structured according to Polit and Beck (2012) who emphasized the development of a plan for data collection - aiming at obtaining accurate, significant and valid data. In order to prevent chaos during data analysis,

the researcher identified the types of data which could be useful for this study. During data collection process, a high level of research ethics was maintained.

### **3.6.2 Data collection instrument**

The identified data included in section A were related to demographic information with regard to gender, age, marital status, race and academic history. Regarding the perceptions about clinical learning opportunities that students experienced in the second year level of the nursing programme, the identified data included in section B were associated with clinical placements, orientation, supervision and allocation of duties; section B included also the data related to the administration of oral medication, infection control and the practice of this competency. Regarding the participants self-assessment with regard to their competence in administration of oral medication, the researcher identified forty two items included in section C. Nominal, ordinal and interval data were identified to be collected with the use of this instrument.

As recommended by Polit and Beck (2012), after the identification of the data, the researcher selected the appropriate instrument, a self-report questionnaire to collect data in this study. A questionnaire is defined by Burns and Grove (2011) as a formal written self-report. The self-report questionnaire was developed by the researcher and was based on the reviewed literature, an evaluation tool used by the School of Nursing involved in this study and an observational check list borrowed, with permission, from Zare *et al.* (2013) which was used in Iran. The self-report questionnaire included a total of 90 closed-ended questions and included mostly 5-point Likert scale type questions.

The self-report questionnaire was tested for validity before its use. The researcher collected the data after the validity and reliability of the instrument was ensured. The respondents were requested to tick the appropriate box. Polit and Beck (2012) argue that a self-report questionnaire is exposed to the vulnerability of biases which can be reported by the respondents. In order to prevent these biases, the researcher explained to the participants that the results of this study could not negatively influence their studies. It was also explained to the participants that their names and their institution name would be omitted in the results. Therefore the researcher invited the participants to give the correct answers.

### **3.6.3 Pre-test of instrument**

According to Blaxter, Hughes and Tight (2010), pre-testing of questionnaire before its use in the survey is necessary to modify the questions included in this questionnaire based on the responses obtained from the participants included in the pre-test. In this study therefore, the researcher performed a pre-test of instrument while Dawson (2009) argues that a constructed questionnaire must be piloted. In this study, the self-report questionnaire was submitted to the supervisor of this study for assessment of its readability and unambiguity, length, wording and structure.

The self-report questionnaire was found to be valid by the researcher who was assisted by the statistician and the supervisor of this study. Furthermore, the researcher invited current fourth year Bachelor of Nursing students who were registered at a university in the Western Cape in 2014 to participate in the pre-test of instrument. A total of 22 fourth year students participated in the pre-test.

The researcher read the self-report questionnaire to the participants who asked questions for clarification. The participants were requested to answer all questions included in the questionnaires. The researcher collected the questionnaires and checked all the answers in order to ensure that the participants understand the questions. The researcher found that the respondents understood the questions. Furthermore, the researcher applied Cronbach's Alpha test used to establish the reliability of the instrument and the items under the same variable were analysed together. After 12 days, the same instrument was administered to the same participants to test the similarity of the data and the consistency of instrument.

After obtaining the data on the second occasion, Cronbach's Alpha test was also applied to establish the reliability of the instrument and the items under the same variable were analysed in the same way as on the first occasion. The researcher's aim was to compare the results and the Cronbach's Alpha values were found to be acceptable. With regard to the academic history, Cronbach's Alpha value was 0.558 which was low due to the few numbers of items. Regarding the clinical placement, Cronbach's Alpha value was 0.591 on the first occasion and 0.633 on the second occasion which was low value but acceptable for nominal data. With regard to the orientation, Cronbach's Alpha value was 0.710 on the first occasion and 0.725 on the second occasion which was a good value.

About the allocation of duties, Cronbach's Alpha value was 0.792 on the first occasion and 0.748 on the second occasion which was also a good value. About the infection control, Cronbach's Alpha value was 0.938 on the first occasion and 0.897 on the second occasion which was a very good value. Regarding the practice related to administration of oral

medication beside infection control, Cronbach's Alpha value was 0.732 on the first occasion and 0.877 on the second occasion which was also a good value. About the self-assessment with regard to the competence in administration of oral mediation, Cronbach's Alpha value was 0.979 on the first occasion and 0.975 on the second which was acceptable. The reliability of original instrument borrowed from Zare *et al.* (2013) was no longer relevant in this study as it was substantially modified.

### **3.6.4 Data collection process**

The researcher considered research ethics while collecting the data. Polit and Beck (2012) argued that the most suitable procedure used in data collection is to distribute the questionnaires at the same time. The researcher contacted the Director of the School of Nursing to obtain the permission to conduct the study using the fourth year students as participants. The researcher obtained the written permission and contacted the coordinator and lecturer of the fourth year of the Bachelor of Nursing programme to enquire about the availability of the fourth year Bachelor of Nursing students and to confirm a suitable date and time for the collection of data.

The researcher booked a suitable venue where the data would be collected. The researcher obtained an alphabetical list of all current fourth year nursing students. These students (176), who were expected to complete the nursing programme on 30th November 2014, were invited to participate in the study.

The participant information sheet was sent to the students and the date, time and venue where the data would be collected as communicated to them one week before the collection of data. On the day of data collection the researcher explained the study to the participants and allowed them to ask questions. All the ethical aspects associated with the research were explained to the participants, as described by Grove *et al.* (2013). Furthermore, the researcher distributed the consent forms for participants to sign voluntarily. The questionnaires were then distributed to the students who agreed to participate in the study.

The completion of self-report questionnaires took approximately 30 minutes; the researcher collected the consent forms together with the self-report questionnaires. The researcher kept the consent forms separate from self-report questionnaires in a safe and lockable place to protect the information and identity of the participants. Furthermore the researcher checked the self-report questionnaires and found that a total of 71% (125) of the 176 participants, who were invited, completed the self-report questionnaires.

### **3.7 Data analysis**

A check was conducted by the researcher to determine whether all the self-report questionnaires were legible and complete. According to Babbie (2010) who argued that the researcher handles the quantitative analysis by the computer programs, in this study the researcher entered the data into the computer program to quantify the data. A number (code) was assigned to each participant's questionnaire to allow the easy identification by the researcher. The data were captured in SPSS version 22 and cleaned by running some frequencies to explore the data. The data were transformed into the symbols through the

process of coding and a codebook was used for record-keeping of codes and assigned numerical values of the variables.

Descriptive statistical analysis as described by Burns and Grove (2011) was conducted in this study to describe and summarize quantitative data related to the perceptions of Bachelor of Nursing students. Therefore in this study, nominal, interval and ordinal measurements were used in data analysis. Frequency distributions defined as organization of the values arranged from the lowest to the highest value were used to organize numeric data (Polit & Beck, 2012).

In this study, the researcher analysed the data using appropriate statistical tests based on the nature of the variables and objectives. Univariate analysis aimed at describing how often a condition occurred rather than describing the relationships between the variables (Polit & Beck, 2012). Factor analysis defined by Babbie (2010) as “a complex algebraic method used to discover the patterns among the variations in values of many items” was also used to decrease the number of items among variables. Factor analysis was also used to eliminate factors where Cronbach’s Alpha was low in this study (See subheading 3.8.2).

Kaiser-Meyer-Olkin (KMO) Measure of sampling Adequacy and Bartlett’s test were used to see how well factor analysis fit for these items. According to Vogt (2005), KMO test refers to an indicator of relationships’ strength between the variables in a correlation matrix. In order to determine KMO, the researcher has to calculate “the correlations between each pair of variables after controlling for the effects of all other variables. The KMO statistic can vary



between 0 and 1.0. A minimum value of 0.70 is usually considered for conducting a factor analysis. In this study, KMO for all the variables were greater than 0.8.

According to Cramer and Howitt (2004), while using Bartlett's test of Sphericity in factor analysis, the researcher wants to determine whether the correlations between the variables which are examined at the same time do not differ significantly from zero. Factor analysis is normally conducted when the test is significant, showing that the correlations do differ from zero. The Bartlet test of Sphericity which is significant at 0.05 for factor analysis to be appropriate was significant at 0.00 for all variables. Factor analysis is also used in multivariate analysis of variance and covariance to determine whether the dependent variables are significantly correlated. According to Babbie (2010), bivariate analysis was used in this study to check the relationship between two variables. The coefficient of determination was calculated to get an idea of how much variance the two variables share by squaring the correlation  $r$  value i.e. multiply it by itself.

Furthermore, the researcher conducted the test of normality to check if the data are normally distributed. Kolmogorov-Smirnov test which is not truly considered for normality test due its low power according to Ghasemi and Zahediasl (2012) and Shapiro-Wilk test were used in this study and showed that the data were not normally distributed. The significant value of more than 0.5 indicates normality. Therefore, Spearman's Rank Order Correlation test was used to check the correlation between the variables. Kruskal-Wallis analysis which is a nonparametric test was not used in this study because this test is used to compare two groups or more when ANOVA assumptions are not met (Pallant, 2013).

### **3.8 Validity and reliability**

#### **3.8.1 Validity**

The validity of self-report questionnaire used in this study “refers to its ability to measure accurately what is supposed to be measured” (Moule & Goodman, 2009).

##### ***Face validity***

Bornstein (2004) defined face validity as the estimation of the degree to which the clarity and unambiguity of a measure are determined to assess the construct. In this study, with the help of a statistician, the researcher prevented the use of vague or confusing concepts or statements. Face validity is the type of instrument validity which is obviously weak and refers to the apparent ability of instrument to measure what is supposed to be measured (Brink *et al.*, 2012). By pre-testing the instrument, the researcher ensured that the questions were readable and clear and that they were not ambiguous.

##### ***Content validity***

Content validity refers to assessing an adequate way in which all the components of the variables that will be measured are represented by the instrument (Polit & Beck, 2012). According to Moule and Goodman (2009), the researcher submitted the self-report questionnaire to the project supervisor, who is an expert in research, for review. Furthermore, the self-report questionnaire was administered to the participants in the pre-test of the instrument which confirmed the usefulness of instrument. Therefore in this study, the self-

report questionnaire represented all the aspects of measuring the perceptions of the participants with respect to clinical learning opportunities and competence regarding the administration of oral medication and not something else.

### **3.8.2 Reliability**

According to Polit and Beck (2012), reliability refers to the consistency that comprises the stability, dependability or accuracy and with which the instrument measures the target attribute. Reliability occurs when an instrument provides similar results if it is used repeatedly over time on the same participants or if used by two researchers (Babbie, 2010; Polit & Beck, 2012). Polit and Beck (2012) argued that a newly designed instrument or an existing instrument has to undergo a pre-test in order to be evaluated and refined. Any possible improvements highlighted in the pre-test will be brought to the instrument before it is used. Internal consistency refers to homogeneity that indicates the extent to which all the aspects included in the instrument measure the same variable (Brink *et al.*, 2012).

According to Tappen (2011), Cronbach's Alpha indicates the internal consistency of homogeneity of scale. Therefore in this study, internal consistency was measured by Cronbach's Alpha test as suggested by Burns and Grove (2011). The reliability coefficient's value is between 0 - 1.0. Hence, a coefficient of 0 indicates that there is no reliability while a coefficient of 1.0 means perfect reliability. However there are some errors in all tests; therefore, reliability coefficients never reaches 1.0. According to Nunnally and Bernstein (1996), quoted by Tappen (2011), Cronbach's Alpha value of 0.70 is tolerable for new measure. For existing measure, the value of Cronbach's Alpha should be no less than 0.80

while for clinical evaluation measure, Cronbach's Alpha value should be at least 0.90 or better 0.95 or above.

With regard to this study, if a standardized test of reliability is greater than 0.80, it means that there is a good reliability according to Polit and Beck (2012). If it is less than 0.50, it should not be considered as a very reliable test. However a value from 0.7, and above showed that the instrument was reliable in this study. In this study Cronbach's Alpha value for scale ranged from 0.710 to 0.979, which means from good value to a very good value. Cronbach's Alpha value for category ranged from 0.558 to 0.633, the lowest value resulted from the few numbers of items. Polit and Beck (2012) argue that the comparison of the scores is obtained through a computed reliability coefficient.

### **3.9 Research Ethics**

In this study, the researcher considered all the ethical principles relating to research as described by Brink *et al.* (2012). The researcher obtained the approval of the research proposal from the Higher Degrees and Ethics Committee and permission to conduct the study from the Registrar of the University where the study was conducted. The researcher also obtained permission from the Director of the School of Nursing at the University prior to the collection of the data.

Each participant was informed that he/she has the right to accept or refuse to participate; and at any time, he/she had the right to withdraw from the study without penalty. Therefore, participation was voluntary and the participant signed a consent form. Regarding the

principle of beneficence that emphasises the right of protection from any harm or emotional discomfort, there was no anticipated harm in this study. It was explained to the participants that the results of this study could not negatively influence their studies and their names and their institutions' name would be omitted from the results.

The principle of justice was considered and all the fourth year Bachelor of Nursing students were included in the study without unfair discrimination. The researcher did not make any promises with regard to specific rewards or money. The right of privacy and dignity was applied according to Lobiondo-Wood and Haber (2006). The researcher explained to each participant that "he/she had the right to determine the extent to which his/her private information could be shared or protected from others".

In this study, all the completed forms were stored in a safe and lockable cupboard to ensure the confidentiality emphasised by Babbie (2010). However, the anonymity could not be guaranteed during data collection as the participants were seeing each other in the venue where the data were collected. The names of the participants were omitted on the questionnaires and protected during data analysis because codes were used.

## **CHAPTER FOUR: RESULTS AND DISCUSSION**

### **4.1 Introduction**

This chapter presents the study's results obtained from questionnaires completed by fourth year registered nursing students on the Bachelor of Nursing programme. The demographics of 125 respondents, their perceptions about clinical learning opportunities, and their competence with regard to the administration of oral medication are presented in tables and graphs. In discussing the results, the researcher makes the necessary links to the current literature on issues related to medication errors and compares the findings of this study with other researchers' findings. However it seems that few studies have been conducted on administration of oral medication by nursing students within South Africa.

### **4.2 Demographic characteristics**

Demographic characteristics considered in this study include: gender, age, marital status, race and academic history of respondents.

#### **4.2.1 Gender**

A total of 88% (110) of the 125 respondents were female, while 12% (15) were male. The results of this study are not surprising in terms of the female versus male ratio as the findings of several studies show a similar trend. For instance, Smith (2008:1) asserted that nursing is a female dominated profession. Furthermore, Essani and Ali (2011) conducted a study in Pakistan in which of the 40 nurse participants, 85% were female and 15% were male. Within

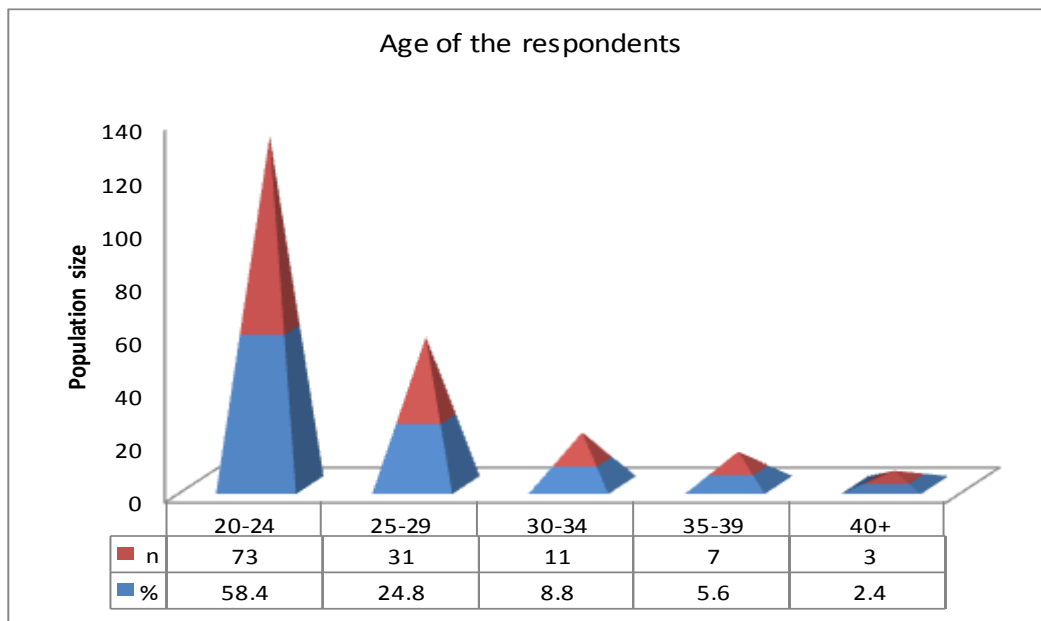
South Africa, one study conducted by Rispel, Blaauw, Chirwa and de Wet (2014) indicated that of the respondents from Western Cape Province 96.1% (921) were female nurses and 3.9% (37) were male nurses. The findings of another study conducted in South Africa by West (2013) indicated that within Western Cape in 2011, of the 2554 nurse participants a total of 2099 were female and 464 were male. Similar to these results, the findings of a study conducted in Kwazulu-Natal by Wirth (2014) indicated that the female nursing students were the majority (73.6%, 293) of the respondents.

Supporting these findings, SANC statistics for 2011 (West, 2013) showed that of a total of the 2876 students who were registered and enrolled in 2009 for nursing programmes in Western Cape, the total of female nursing students were four times the total of male nursing students.



#### **4.2.2 Age**

Of the 125 respondents, the youngest group of students were aged between 20-24 years (58.4%), the youngest student being a 20 year old male; 24.8% were aged between 25-29 years; 8.8% between 30-34 years; 5.6% between 35-39 years and 2.4% were aged 40 years and above, and the oldest respondent being 48 years old. The mean of the respondents' age was 25.86 years (SD 5.13).



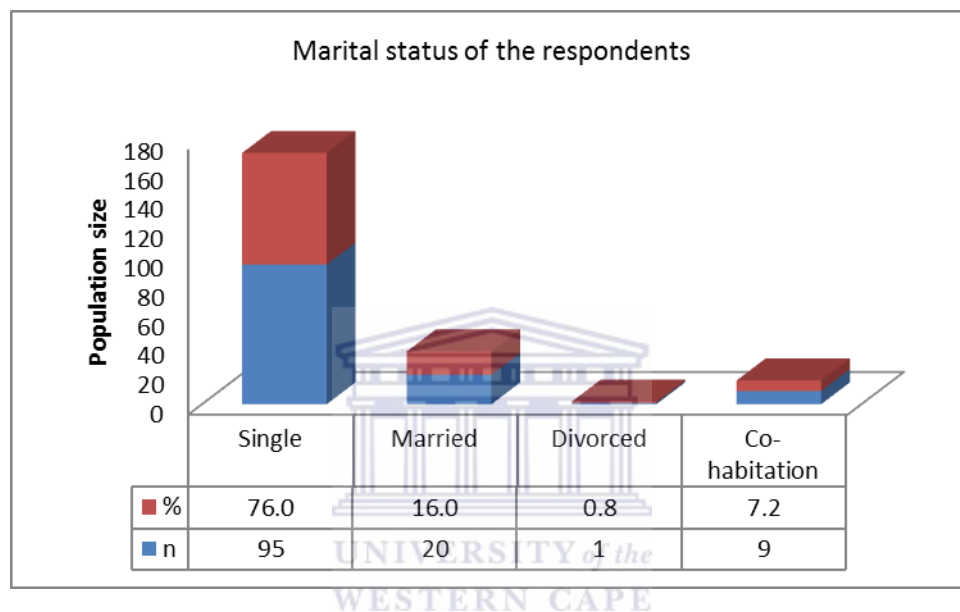
**Figure 4.1: Age of the respondents**

The majority of the 125 respondents were between 20-24 years old (58.4%, 73). These results indicate that the normal age of the Bachelor of Nursing students to complete secondary education before they enter tertiary education is around 18-19 years. At this age respondents are regarded as adults who are expected to be self-directed learners and who are able to take ownership for their learning, as argued by Jarvis and Watts (2012). The youngest respondent was 20 years old and as such he would have completed the secondary education at the early age of 16. The oldest respondent was 48 years old, however this respondent did not have prior nursing experience which could possibly have had a positive influenced their level of competence.



### 4.2.3 Marital status

A significant number of the respondents (76%, 95) were single, whilst 16% (20) were married. The remainder (8%, 10) of the respondents were either divorced or in a co-habitation relationship.



**Figure 4.2: Marital status of the respondents**

The large number of single respondents could be linked to the fact that majority 83.2% (104) of the students were in the 20–29 year age group, of which there were 73 respondents who were aged between 20-24 years. This study did not however establish the relationship between age and marital status which would have allowed the researcher to make conclusion about whether it was in fact the younger and not the older respondents who were single.

#### 4.2.4 Race

In terms of race, the majority of the respondents (69.6%; 87) were Black, followed by 23.2% (29) Coloured and 7.2% (9) who were White. There were no Indian students amongst the group of respondents. The following table presents the number of male and female students within each of these racial groups.

**Table 4.1: Number of male and female respondents per racial group**

<b>Race</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Black	11	76	87
Coloured	3	26	29
White	1	8	9
<b>Total</b>	<b>15</b>	<b>110</b>	<b>125</b>

The results of this study indicated that there were more Black nursing students (69.6%, 87) in this School of Nursing than Coloured students (23.2%, 29) and White students (7.2%, 9). The researcher however did not intend to investigate the influence of race on clinical placement, clinical learning opportunities and student's competence in the administration of oral medication. With regard to global statistics related to race of all categories of nurses, there is no evidence to say that Black nurses are the majority in Western Cape. For instance the findings of a study conducted in South Africa by Rispel *et al.* (2014) indicated that among the nurse respondents from Western Cape the majority were Coloured (54.7%, 522), 24.0% (229) were White; 20.6% (197) were Black and 0.7% (7) were Indian.

#### **4.2.5 Academic history**

The question regarding the respondents' academic history was related to whether they were previously employed as an enrolled nurse or whether they had repeated either the second or fourth year of their studies. None of the respondents had been employed as an enrolled nurse prior to registering for the Bachelor of Nursing programme. A total of 22.4% (28) of the 125 respondents had repeated the second year of nursing programme while 1.6% (2) of the respondents were repeating the fourth year of nursing programme at the time of the study.

In this study, all the fourth year Bachelor of Nursing students who were registered at this university in 2014 were included in this study regardless their academic history. The respondent's perceived competence must therefore be viewed in light of the fact that students are assessed for competence in the administration of oral medication in their second year of study, and consolidate this skill during their fourth year of study when they are placed in a general hospital. The nursing students who repeated the second and fourth year of nursing programme could, by virtue of their extended period of study, have had more clinical learning opportunities which could have resulted in higher levels of competence than the students who did not repeat a year.

#### **4.3 Perceptions regarding clinical learning opportunities**

The perceptions of the respondents about their clinical learning opportunities with regard to the administration of oral medication were related to clinical placement, orientation,

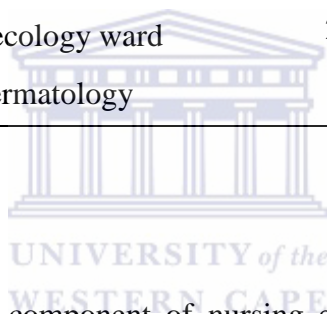
supervision, allocation of duties, infection control, and practice related to administration of oral medication beside infection control.

#### **4.3.1 Clinical placement**

The questionnaire established the respondents' perceptions about their exposure to clinical learning opportunities with regard to administration of oral medication by asking which types of wards/disciplines they were placed in for clinical practice during the second year of study. The students could indicate more than one ward in which they had exposure to the administration of oral medication. The disciplines where students were placed and where the respondents indicated that they had clinical learning opportunity with regard to the administration of oral medication are listed in table 4.2 below. Of the top four disciplines where students were placed, the results showed that 92% (115) were placed in a medical ward; 86.4% (108) were placed in surgical ward; 56% (70) were placed in a paediatric ward and 48.8% (61) were placed in an orthopaedic ward.

**Table 4.2: Respondent's clinical placement opportunities**

<b>Clinical placement</b>	<b>n</b>	<b>%</b>
Medical ward	115	92.0
Surgical ward	108	86.4
Paediatric ward	70	56.0
Orthopedic ward	61	48.8
Theatre ward	59	47.2
Trauma ward	58	46.4
Urology ward	28	22.4
Neurology ward	27	21.6
Gynecology ward	26	20.8
Dermatology	12	9.6



Clinical placement forms a key component of nursing education and it is considered as crucial as it helps the students perceive the reality of nursing and gain experience (Nasrin, Soroor & Soodabeh, 2012; Emanuel & Pryce-Miller, 2013; Hilli, Salmu & Jonsén, 2014). Clinical placement also permits the nursing students to consolidate their skills (Halcomb, Peters & McInnes, 2012). Therefore in this study, the results indicated that the nursing students were placed in wards where they would have had the learning opportunities related to the administration of oral medication. The students placed in the four top disciplines (See table 4.2) would more likely have had more exposure to administration of oral medication than the students who were not placed in these areas. For example, if one considers a clinical placement in theatre or trauma, it becomes clear that in these disciplines, by virtue of the type

of care or health management provided, the students would not necessarily be exposed to the administration of oral medication. At best, in a trauma ward the students might be required to administer analgesics to the patients. Students are less likely to be placed in a neurology ward based on it being highly specialized. The study did not however establish how many students had exposure to more than one of these disciplines or the number of students who did not have exposure to any of these disciplines.

Similar to this study, a study conducted in Australia by Reid-Searl, Happell, Burke and Gaskin (2013) indicated that 62% of the student respondents were placed in a medical ward and 76% in a surgical ward where they practiced administration of medication. In this regard, the study conducted by Hartigan-Rogers *et al.* (2007) showed that many clinical learning opportunities occur in medical and surgical wards. In contrast to these findings, a study was conducted in Finland by Kajander-Unkuri, Suhonen, Katajisto, Meretoja, Saarikoski, Salminen and Leino-Kilpi (2014) to evaluate nursing skills' level at the point of graduation based on students' self-assessments and to identify possible related factors. With regard to clinical placement, the findings indicated that 35% of the 154 nursing student participants were placed in theatre or a surgical ward and only 19% were placed in a medical ward.

Kajander-Unkuri *et al.* (2014) found that only 24% of the students were placed in a paediatric ward compared to the findings of the current study which found that 56.0% (70) were placed in a paediatric ward in which the students could have opportunities to learn the calculation of medication dosages. In this regard, Essani and Ali (2011) conducted a study in Pakistan on the perceptions of the registered nurses about their knowledge and practice gaps in paediatric

wards. A total of 40 nurses participated in the study. The findings indicated that the nurses had gaps in administration of medication prescribed for the paediatric patients while acknowledging that an adequate acquisition of skills is required for the quality of care for paediatric patients.

Surprisingly in the current study, more students were not placed in a gynaecology ward (79.2%, 99) and dermatology 90.4% (113) where they could possibly have administered analgesics and antibiotics.

#### **4.3.2 Orientation to the administration of oral medication**

The perceptions of respondents about their orientation to the ward routine with regard to the administration of oral medication in a general hospital were ascertained through a Likert scale. The number of respondents who strongly disagreed and those who disagreed that they were orientated were 5.6% (7) respectively. A total of 24.8% (31) strongly agreed and 44.8% (56) agreed that they were orientated, while 19.2% (24) were uncertain about whether they were orientated. Table 4.3 presents the detailed results.

In this regard, the researcher also had to establish whether the professional nurse-in-charge of the ward was informed about their learning needs. Of the 125 respondents, 20.8% (26) strongly agreed and 43.2% (54) agreed that the professional nurse-in-charge was informed (See table 4.3 below).

The results further indicate which staff member took responsibility to orientate the respondents to the administration of oral medication: Whether they were orientated by an

enrolled nurse on the procedure of the administration of oral medication, affirmation of a total of 48% (60) was received with 14.4% (18) strongly agreeing and 33.6% (42) agreeing (See table 4.3 below). The results shown in table 4.3 indicate that those who reported being orientated by a professional nurse included 15, 2% (19) who strongly agreed and 45.6% (57) who agreed. A total of 51.2% (64) strongly agreed and 38.4% (48) agreed and that they were orientated by their clinical supervisor. In this regard, since the professional nurse is the student's first point of contact in the ward, she / he, rather than the enrolled nurse or clinical supervisor, would be expected to orientate the student to the ward routine and activities. In this way, the student becomes functional at an earlier stage rather than waiting, for example, to be orientated by a clinical supervisor who is expected to see the student, at most, only once a week.





**Table 4.3: Student's orientation to administration of oral medication**

Items	Strongly disagree		Disagree		Uncertain		Agree		Strongly agree		Total		Mean (SD)
	n	%	n	%	n	%	n	%	n	%	n	%	
Orientation to routine	7	5.6	7	5.6	24	19.2	56	44.8	31	24.8	125	100	3.78 (1.06)
Professional nurse-in-charge aware of students' learning needs	6	4.8	13	10.4	26	20.8	54	43.2	26	20.8	125	100	3.65 (1.07)
Orientated by enrolled nurse	22	17.6	18	14.4	25	20.0	42	33.6	18	14.4	125	100	3.13 (1.32)
Orientated by professional nurse	9	7.2	16	12.8	24	19.2	57	45.6	19	15.2	125	100	3.49 (1.12)
Orientated by clinical supervisor	3	2.4	3	2.4	7	5.6	48	38.4	64	51.2	125	100	4.34 (0.88)

The findings presented in table 4.3 showed that students who informed the professional nurse-in-charge about their learning needs were the majority 64% (80) of the 125 respondents. These results confirmed that the adult learners should be responsible and autonomous for their learning as argued by Knowles (1980). Surprisingly, a total of 36% (45) of the 125 respondents who were also adult learners were not as responsible towards their learning and failed to inform the professional nurse-in-charge about their learning needs. It is evident that the nursing institutions inform the professional nurse-in-charge about the expected learning outcomes of the students placed in their wards. However, the students were held responsible for presenting their clinical skills books to the professional nurse-in-charge and for discussing their learning needs to facilitate the appropriate orientation.

Information in literature about the orientation of the nursing students to ward routine seems insufficient; however, Henderson and Eaton (2013) argue that a poor interpretation of the students' learning needs by permanent nursing staff during orientation may negatively influence the students' learning experience. While many researchers such as Nasrin *et al.* (2012), Smedley and Morey (2009) and Kristofferzona *et al.*(2013) focussed on nursing students' clinical placement, practice and supervision, more studies are needed to investigate the orientation of the nursing students to ward routine.

The orientation to the ward routine is an important basis for students to meet their clinical learning outcomes and therefore should be considered as such by the professional nurse-in-charge during clinical placements. In this regard, the findings of the current study indicated that the majority (69.6%, 87) of the 125 respondents were orientated to ward routine (See

table 4.3 above). The researcher did not however investigate the possible relationship between orientation and lack of orientation on the competence of both the respondents who were or were not orientated. The results of this study presented in table 4.3 indicate that the respondents reported that they were orientated on the procedure of administration of oral medication by different persons. It is likely standard that the students are orientated according to their learning needs.

The findings revealed that 48% (60) of the 125 respondents were orientated by an enrolled nurse (See table 4.3 above). However, according to their scope of practice under Nursing Act 50 of 1978, as amended (South African Nursing Council, 2013), it is not the responsibility of the enrolled nurse. Instead, Jeggels *et al.* (2013) argued that a professional nurse on duty in the ward is a supervisor of nursing students; hence the orientation should be part of the responsibility of the professional nurse. Similarly, the results of this study showed that many respondents (60.8%, 76) were orientated by a professional nurse on duty in the ward (See table 4.3 above). Eta *et al.* (2011) however argued that clinical supervisors are the most responsible for training nursing students in the clinical environment. In this regard, the results of this study indicated that the majority of the students (89.6%, 112) were orientated by a clinical supervisor (See table 4.3 above) who was able to align the practice to theory.

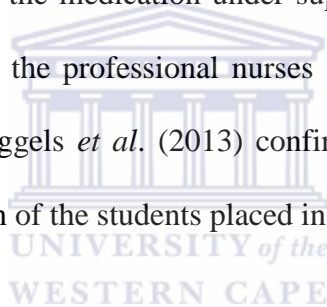
### **4.3.3 Supervision of respondents**

During their second year of the nursing programme, 30.4% (38) of the 125 respondents indicated that they were mostly supervised by the clinical supervisor, skilled to align clinical learning to the theory learned in the classroom. However, a total of 38.4% (48) of the 125

respondents were mostly supervised by a professional nurse on duty in the ward and 24% (30) of the 125 respondents were mostly supervised by an enrolled nurse. Furthermore, a total of 7.2% (9) of the 125 respondents indicated that they were mostly supervised by a senior nursing student in the ward. It is concerning, given the report only 64% (80) of the 125 respondents reported that the professional nurse-in-charge was informed of their learning needs, that there would be a possible gap in the alignment of the clinical learning to the theory when the professional nurse, enrolled nurse or senior student were reported as the main person who took responsibility for supervising the students. Furthermore this challenge could impact the competence of the students. The study did not however establish the relationship between the supervision and competence in administration of oral medication.

Supervision is useful to enhance skills and guide the students in their clinical placements; likewise, supervision is needed for administration of oral medication. Hilli, Melender and Jonsén (2011) highlighted the significant contribution of clinical supervision to clinical learning of nursing students. In a study conducted by Kajander-Unkuri *et al.* (2014), 46% of the nursing student respondents appreciated the contribution of clinical supervision to the development of their competence. A similar positive supervision experience was reported when a total of 88% of the 45 respondents who participated in a study conducted in Australia by Reid-Searl *et al.* (2013) to investigate nursing students' experiences of supervision while administering medication indicated that they were supervised throughout the administration of medication. Therefore Hilli, *et al.* (2014) who conducted a study in Finland and Sweden, argued that the supervisors have a considerable responsibility to guide the nursing students in their placement.

In the national context however, Rikhotso, Williams and de Wet (2014) argued that it is unclear who is responsible for clinical supervision of nursing students within South Africa. In contrast to this statement, O'Driscoll, Allan and Smith (2010) who conducted a study in England confirmed the real predominance of mentors in leadership related to clinical teaching of students on a day-to-day basis. However, as presented earlier, only 15.2% (19) of the 125 respondents strongly agreed and 45.6% (57) agreed that a professional nurse orientated them to the administration of oral medication. In support of this statement, Reid-Searl, Moxham and Happell (2010) who conducted a study in Australia to explore the factors influencing the practice of medication administration for nursing students in clinical setting argued that nursing students must administer the medication under supervision. According to the South African Nursing Council (2013), the professional nurses should support and guide nursing students during their training. Jeggels *et al.* (2013) confirmed that a professional nurse on duty is responsible for supervision of the students placed in her/his ward.



In the current study, a total of 30.4% (38) of the 125 respondents were mostly supervised by a clinical supervisor during administration of oral medication. This is acceptable as the clinical supervisor is a professional nurse who functions in this capacity based on his or her clinical experience. However, the above results indicate that the majority of the students were not guided in administration of oral medication by their supervisors.

In contrast, Halcomb *et al.* (2012) who conducted a study in Australia assert that most of the nursing students are supervised by clinical facilitators employed by schools of nursing. Furthermore, Bimray, Le Roux and Fakude (2013) who report on the Western Cape context,

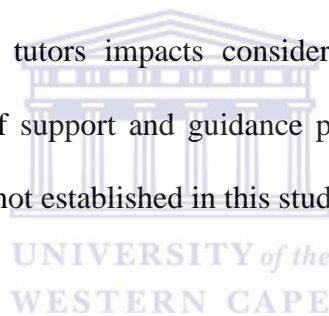
argued that clinical supervisors responsible for students' support and accompaniment play a significant role in nursing education. Bimray *et al.* (2013) asserted that the clinical supervisors also participate in students' contact sessions that occur in the classroom in order to link the theory to the practice.

In addition, clinical supervisors who in this study are employed by the university are skilled to demonstrate the clinical skills according to the five levels of skills acquisition developed by Benner (1984). Therefore, clinical supervisors should be more involved in guidance of nursing students during administration of oral medication in order to meet the expected learning outcomes. Small, Pretorius, Walters and Ackerman (2011) who conducted a study in Namibia amongst 198 nursing students argued that acceptable supervision should be available for nursing students. Hence, it was hoped that all nursing students in the current study in the Western Cape had an equal chance to be supervised by clinical supervisors.

The researcher did not investigate the reasons why clinical supervisors were not mostly responsible to guide the students in administration of oral medication. However, studies have been conducted by other researchers in this regard. For instance, Mabuda, Potgieter and Alberts (2008) conducted a study to explore nursing students' experiences during clinical practice at a nursing college in the Limpopo Province. The findings of their study indicated that nursing students could see the clinical supervisors only when they came for students' evaluation. Similarly, a study conducted in Cape Town, South Africa, by Klerk (2010) confirmed that clinical supervisors were invisible in clinical environment.

Abubu (2010) argued that nursing students at a university in the Western Cape were mainly guided by the nurses on duty in the ward than clinical supervisors. In contrast, the study conducted by Mabuda *et al.* (2008) indicated that professional nurses on duty in the ward were unwilling to teach the students. Further research in this regard was that of Rikhotso *et al.* (2014) who conducted a study in Limpopo and found that professional nurses on duty in the ward were reluctant to support and guide nursing students.

The surprising findings of this study indicated that a total of 24% (30) of the 125 respondents were mostly supervised by an enrolled nurse and 7.2% (9) by a fourth year Bachelor of Nursing student placed in the same ward. While Emanuel *et al.* (2013) stipulated that the quality of support provided by tutors impacts considerably on clinical learning of the students, the level and quality of support and guidance provided by enrolled nurses and a fourth year nursing students was not established in this study.



#### **4.3.4 Allocation of duties**

In the second year of nursing programme, the respondents gave their perceptions about the opportunities they had to administer oral medication during their second year of clinical learning in the ward. Of the 125 respondents, only 3.2% (4) strongly agreed that they were allocated on a daily basis to administer oral medication while 16.8% (21) agreed. A total of 20.8% (26) of the respondents indicated that they were uncertain, while collectively 59.2% (74) strongly disagreed or disagreed. A total of 34% (43) collectively strongly agreed or agreed that they were partnered with another second year student from the same institution to administer oral medication while 22.4% (28) were uncertain. A total of 20% (25) of the

respondents strongly disagreed and 23.2% (29) disagreed that they were partnered with another student from their institution. Those who reported that they were allocated to administer oral medication with students from another learning institution comprised 14.4% (18) of the 125 respondents who strongly agreed and 45.6% (57) who agreed. A total of 12.8% (16) were uncertain while 10.4% (13) strongly disagree and 16.8% (21) disagreed.

The study's findings show that the majority of the students were not allocated to administer the oral medication on a daily basis. These results therefore showed that opportunities to practice the administration of oral medication were likely insufficient. In this regard, the insufficient opportunities to practice and master the crucial procedures were also found in a study conducted in Gauteng province by Mntambo (2009) which aimed to describe and explore the experiences of nursing students regarding clinical accompaniment in a public hospital.

Furthermore, Aggar *et al.* (2014) affirmed that achievement of skills and competence in administration of oral medication is a challenge for nursing students. Therefore the allocation of nursing students to administer oral medication in a general hospital should be improved. Nursing students should be provided with sufficient opportunities to master the skill of oral medication administration in order to contribute to reduction of medication errors as suggested by Jevon *et al.* (2010).

The allocation of more than one second year Bachelor of Nursing student to administer the oral medication at the same time could reduce the time for practice. In addition to that, the need to manage the morning ward routine, a fourth year nursing student placed in the same



ward could possibly be preferred by the professional nurse-in-charge to administer oral medication based on the student's experience which is more advanced than that of the second year student. This preference could reduce the opportunities of a second year nursing student to practice administration of oral medication. The presence of more than one second year student from different institutions in the same ward who were alternating with each other to administer the oral medication could cause insufficient clinical learning opportunities. Overall, the current limited clinical platform and the competition for clinical learning opportunities is a reality.

#### **4.3.5 Clinical learning opportunities related to infection control**

##### ***Hand washing***

The respondents were questioned about their second year clinical learning opportunities associated with infection control when administering oral medication. A total of 40.8% (51) strongly agreed and 44.8% (56) agreed that they learned how to wash hands before preparation of medication. However for hand washing and disinfecting of their hands between patients 25.6% (32) strongly agreed and 29.6% (37) agreed that they learned this skill. Only 4% (5) of the 125 respondents strongly disagreed and 4.8% (6) disagreed that they learned hand washing before preparation of oral medication. A number of respondents were uncertain in this regard 5.6% (7).

Hand washing is essential, like other procedures used to fight nosocomial infection, in the prevention of contamination and cross-infection while administering oral medication. In this

study, the findings showed that the majority of the respondents learned how to wash hands before preparation of medication (See table 4.4 below). Although it is interesting to find that the students were taught this skill, the respondents were not asked about the alignment of theory to practice in terms of the standard precautionary measures associated with administration of medication. For example they were not asked about the availability of the equipment which is required for hand washing and disinfecting. The researcher however acknowledges that resources at hospitals in which the students were placed vary and some are less resourced than others, e.g. some hospitals may have a scarcity of disinfectants.

In contrast to this finding, Kim and Bates (2013) conducted a study and the findings showed that only 4.5% of the participants washed their hands before administration of medication. Furthermore, a study conducted in India by Nair, Hanumantappa, Hiremath, Siraj and Raghunath (2014) indicated that a total of 46.1% of the 46 nursing student participants admitted to forget hand washing/disinfecting. Nursing students should learn to prevent cross-infection and gain experience which will allow them to function effectively in future. In this regard, Baglin and Rugg (2010) affirmed that the nature and quality of lived experiences of nursing students in clinical placement impact their performance after graduation.

Moreover, the respondents were asked whether they learnt to wash hands between patients during the administration of oral medication. The results indicated that hand washing or disinfecting was performed more often before preparation of medication than between patients (See table 4.4 below).

In support of the above findings, a study conducted in the United States by Bagget, Gore, Sanderson and Sankar (2013) indicated that 30% of the 51 nursing student respondents self-reported being 100% compliant with appropriate hand hygiene before caring for a patient while 21% were 100% compliant after caring for a patient. It is evident that patients may be exposed to nosocomial infection due to the non-compliance to universal precautions to prevent cross-infection.

### *Cleaning of the medication trolley and utensils*

Questions were also asked about the cleaning of the medication trolley and utensils used to dispense the medication and fight cross-infection when handling the oral medication. Table 4.4 below presents the results pertaining to these questions. The findings of the current study showed that the majority of the respondents were taught to clean the medication trolley before packing in the medication; wash the medication and water cups (See table 4.4). However, a total of 35.2% (44) of the 125 respondents reported not being taught to break the tablet without touching it with bare hands, which could lead to the spread of infection.

**Table 4.4: Infection control**

Items	Strongly disagree		Disagree		Uncertain		Agree		Strongly agree		Total		Mean (SD)
	n	%	n	%	n	%	n	%	n	%	n	%	
Washing hands before preparation of medication	5	4.0	6	4.8	7	5.6	56	44.8	51	40.8	125	100	4.14 (1.00)
Cleaning medication trolley	10	8.0	13	10.4	17	13.6	52	41.6	33	26.4	125	100	3.68 (1.20)
Washing medication cups	11	8.8	19	15.2	22	17.6	43	34.4	30	24.0	125	100	3.50 (1.25)
Washing water cups	7	5.6	20	16.0	23	18.4	46	36.8	29	23.2	125	100	3.56 (1.17)
Clean drinking water is available	5	4.0	2	1.6	9	7.2	51	40.8	58	46.4	125	100	4.24 (0.95)
Providing each patient with clean cup of water	11	8.8	5	4.0	12	9.6	46	36.8	51	40.8	125	100	3.97 (1.21)
Hands were washed/disinfected between the patients	21	16.8	19	15.2	16	12.8	37	29.6	32	25.6	125	100	3.32 (1.43)
Using clean spoon when taking out medication	19	15.2	15	12.0	14	11.2	43	34.4	34	27.2	125	100	3.46 (1.40)
Breaking tablets without touching with bare hand	25	20.0	19	15.2	19	15.2	31	24.8	31	24.8	125	100	3.19 (1.47)
Disposable bag available on trolley	6	4.8	4	3.2	9	7.2	60	48.0	46	36.8	125	100	4.09 (1.00)

#### **4.3.6 Practice related to administration of oral medication beside infection control**

Various questions were asked regarding the perceptions of the respondents about their practice related to administration of oral medication, other than infection control.

##### ***Alignment of theory and practice***

A total of 27.2% (34) and 41.6% (52) of the 125 respondents respectively strongly agreed and agreed that oral medication was administered according to the theory learned in the classroom. The findings of this study showed that the majority of the respondents confirmed that the practice related to the administration of oral medication was aligned to the theory. These results support the statement of Dewey cited in Palmer (2001) who stipulated that the theory must be put into practice in order to gain experience. Similarly, Krautscheid *et al.* (2014) argued that the knowledge and the skill must be aligned. In contrast, Reid-Searl *et al.* (2013) conducted a study in Australia and investigated the experiences of nursing students being supervised while administering medication. The findings of this study indicated that a collective total of 42% of the 45 student respondents strongly disagreed, disagreed and were not sure that the rights of medication administration were respected by the professional nurses.

##### ***Administration of oral medication to one patient***

A total of 28.8% (36) and 47.2% (59) of the 125 respondents strongly agreed and agreed that they administered many types of oral medication to one patient at the same time, while 4.8 % (6) and 5.6% (7) disagreed and strongly disagreed. A total of 13.6% (17) were uncertain.

Administration of oral medication to one patient on the same day at different times was practiced by 28% (35) and 48.8 % (61) of the 125 respondents who respectively strongly agreed and agreed. Although the majority of the respondents had opportunities to practice the administration of many types of oral medication to one patient at the same time, a few respondents were not given this opportunity. Students should have experience in assessing the entire prescription chart to ensure that they gain the necessary confidence. Furthermore, a good experience during clinical placement will develop the level of competence as student and as professional nurse after registration, as argued by Peters, Halcomb and McInnes (2013). The lack of experience might lead to medication errors, which could result in disciplinary sanctions as suggested by Anderson and Townsend (2010).

### ***Handling medication trolley***



A total of 63.2% (79) of the 125 respondents collectively strongly agreed and agreed that they administered the oral medication to more than one patient but not to all the patients in the ward. With respect to the opportunity to administer oral medication to all the patients in the ward during a medication round, a total of 24.8% (31) of the 125 respondents strongly agreed and 40.8% (51) agreed that they had this opportunity. However, 8.8% (11) and 10.4% (13) respectively disagreed and strongly disagreed, while 15.2% (19) were uncertain that they were granted this opportunity during their clinical learning.

The results of the current study showed that the majority of the respondents learned how to manage the medication trolley, which is the task of a professional nurse. Students who did not practice this competency might encounter problems after registration as a professional

nurse. As medication errors are currently a huge problem (Simonsen *et al.*, 2011), the rights related to medication administration discussed by Elliott and Liu (2010) should be applied and the training in this regard must be effective to prevent medication errors (Sung *et al.*, 2008).

### ***Practical opportunities and session***

Of the 125 respondents, 30.4 % (38) strongly agreed and 37.6% (47) agreed that they had more than two practice opportunities to administer oral medication. A total of 17.6% (22) were uncertain that they were granted more than two opportunities, while 14.4% (18) collectively strongly disagreed and disagreed. With regard to having a practical session in the presence of the supervisor prior to clinical assessment, 8.8% (11) collectively strongly disagreed and disagreed while 9.6% (12) were uncertain that this happened; 38.4% (48) strongly agreed and 43.2% (54) agreed that they had a practice session.

It is evident that the majority of the respondents (81.6%, 102) had a practical session in the presence of the supervisor prior to clinical assessment. The remaining 18.4% (23) did not have such an opportunity; however the cause of lack of opportunity remains unknown. It is possible that the students was absent from the ward on the day booked for guided practice or the clinical supervisor did not come to guide the student.

### ***Clinical supervisor's feedback***

The respondents were asked about whether they were given feedback from the clinical supervisor. In this regard, 38.4 % (48) of the 125 respondents agreed and 48.8% (61) strongly agreed that they received feedback. The findings of this study further showed that the majority of the respondents obtained the feedback from their clinical supervisors after practice. Similarly, Smedley and Morey (2009) who conducted a study in Australia to investigate the perceptions of Avondale College's senior Bachelor of Nursing students about their clinical learning environment, argued that the input of the clinical supervisors is useful for the students. In support of this statement, Clynes and Raftery (2008) argued that feedback is crucial for students' clinical learning in order to improve their performance. Furthermore, Bimray *et al.* (2013) confirmed that at one South African university School of Nursing, clinical supervisors provide the students with immediate feedback. However, in this current study, it was surprising to find that some clinical supervisors most likely did not help the students improve their skill of administration of oral medication because they did not provide feedback to the students regarding their performance.

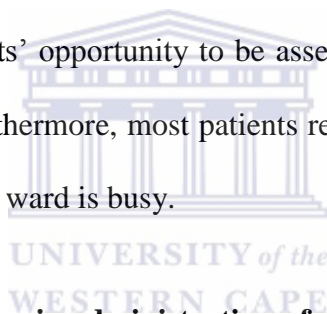
### ***Student's assessment of competence by clinical supervisor***

The respondents were asked whether the assessment of competence, with regard to the administration of oral medication, was done on one patient only. In this regard, 0.8% (1) of the 125 respondents strongly disagreed and 2.4% (3) disagreed, while 9.6% (12) were uncertain. However 31.2 % (39) agreed and 56% (70) strongly agreed that they were assessed on one patient in order to be found competent. Before the end of the second year of the



Bachelor of Nursing programme, each student is expected to be assessed on administration of oral medication by the clinical supervisor, as is argued by Helminen *et al.* (2014) that the ability of the student to perform a skill must be assessed.

The findings of the current study indicated that the majority of the respondents were assessed on the administration of oral medication to one patient and they were found competent. In support of these findings, according to the School of Nursing at a university in the Western Cape, it is acceptable that a second year student is assessed on the administration of oral medication to one patient. Challenges with clinical learning opportunities, such as ward routine and the number of students competing for learning opportunities, amongst other, is likely to negatively affect students' opportunity to be assessed on the administration of oral medication to many patients. Furthermore, most patients receive combinations of medication in the morning at 10h00 when the ward is busy.



#### **4.4 Perceptions about competence in administration of oral medication**

Respondents were asked to give their perceptions, as a fourth year student, about their competence in administration of oral medication, according to a Likert scale on the questionnaire. A student was regarded as competent in any of the 42 skills listed in table 4.5 below, when they selected the option of agree or strongly agree. The items in table 4.5 are ranked from highest to lowest, based on the cumulative scores of the options agree and strongly agree for each of the 42 listed skills. A total of 19.2% (24) of the 125 respondents indicated that they were competent in all 42 skills listed by either agreeing or strongly

agreeing. However, one student (0.8%) indicated for all 42 questions that she was incompetent.

For a total of thirteen skills, 90 % or more of the 125 respondents perceived themselves as competent. The first two skills in which a high number (96.0%, 120) of the respondents perceived themselves to be competent were related to checking the time and frequency of medication according to the prescription chart, and taking the correct medication prior to be given to the patient. The item in which the least respondents (49.6%, 62) indicated that they were competent was the checking of drug interaction. Table 4.5 below presents more results.



**Table 4.5: Students who perceived themselves as competent in administration of oral medication**

Items	Agree		Strongly agree		Total n=125		Mean (SD)
	n	%	n	%	n	%	
Checking time/ frequency of medication on prescription chart	52	41.6	68	54.4	120	96.0	4.49 (0.64)
Taking the correct medication prior to be given	48	38.4	72	57.6	120	96.0	4.51 (0.66)
Checking doctor's prescription	55	44.0	64	51.2	119	95.2	4.44 (0.67)
Checking the name of medication on prescription chart	45	36.0	74	59.2	119	95.2	4.51 (0.70)
Administration of correct dose to the patient	51	40.8	68	54.4	119	95.2	4.46 (0.73)
Checking the route of medication administration on prescription chart	40	32.0	78	62.4	118	94.4	4.54 (0.69)
Offering of water to the patient	52	41.6	66	52.8	118	94.4	4.42 (0.78)
Checking medication dose on prescription chart	43	34.4	74	59.2	117	93.6	4.51 (0.67)
Signing the prescription chart in the correct block	48	38.4	69	55.2	117	93.6	4.44 (0.77)
Locking medication trolley after use	47	37.6	69	55.2	116	92.8	4.45 (0.73)
Checking previous time of medication administration	54	43.2	61	48.8	115	92.0	4.40 (0.66)
Recording the scheduled drugs in scheduled drugs book	48	38.4	67	53.6	115	92.0	4.43 (0.72)
Calculation of correct dose of medication	49	39.2	65	52.0	114	91.2	4.41 (0.73)
Reporting abnormalities to the sister- in- charge	50	40.0	62	49.2	112	89.2	4.36 (0.76)
Checking the balance of scheduled drug under supervision of a professional nurse	60	48.0	51	40.8	111	88.8	4.25 (0.79)
Ensuring patient swallows the medication	46	36.8	63	50.4	109	87.2	4.30 (0.92)
Checking the expiry date of medication	46	36.8	60	48.0	106	84.8	4.25 (0.92)
Making the patient comfortable	58	46.4	48	38.4	106	84.4	4.15 (0.89)
Checking for indication of allergy on prescription chart	50	40.0	55	44.0	105	84.0	4.19 (0.93)
Washing hands before setting medication trolley	60	48.0	44	35.2	104	83.2	4.11 (0.89)
Ensuring the patient's safety, e.g. bed cots raised, bell at reach of patient	57	45.6	47	37.6	104	83.2	4.14 (0.86)
Explain the role of the witness to counter sign for administered scheduled drug, if applicable	44	35.2	59	47.2	103	82.4	4.20 (0.98)
Taking the container of medication against the prescription chart	42	33.6	60	48.0	102	81.6	4.17 (1.03)

Identifying scheduled drug if applicable	57	45.6	45	36.0	102	81.6	4.11 (0.86)
Checking medication a second time against the prescription chart	43	34.4	59	47.2	102	81.6	4.18 (0.98)
Identification of prescription chart by checking patient's name against patient's identification band	43	34.4	57	45.6	100	80.0	4.12 (1.06)
Identifying the alternative name of the medication if needed	61	48.8	38	30.4	99	79.2	3.99 (0.94)
Checking the name and signature of medical practitioner	41	32.8	58	46.4	99	79.2	4.14 (1.02)
Giving health education to the patient	56	44.8	41	32.8	97	77.6	4.03 (0.89)
Explaining the safe keeping of the scheduled drugs cupboard key, if applicable	38	30.4	58	46.4	96	76.8	4.15 (0.98)
Checking contra-indications, e.g. NPO, nausea, HB, HGT, bradycardia	46	36.8	47	37.6	93	74.4	4.03 (0.95)
Cleaning used items	52	41.6	40	32.0	92	73.6	3.92 (1.02)
Cleaning medication trolley	54	43.2	37	29.6	91	72.8	3.85 (1.09)
Monitoring any immediate side-effect of medication	49	39.2	41	32.8	90	72.0	3.92 (1.02)
Obtaining verbal consent from the patient	47	37.6	42	33.6	89	71.2	3.90 (1.05)
Explaining role of witness before administration of scheduled drug if applicable	54	43.2	32	25.6	86	68.8	3.75 (1.09)
Checking the diagnosis of patient	42	33.6	42	33.6	84	67.2	3.86 (1.08)
Explaining the procedure to the patient	45	36.0	39	31.2	84	67.2	3.79 (1.13)
Assessing the patients' basic needs	45	36.0	33	26.4	78	62.4	3.73 (1.05)
Checking the side-effects	44	35.2	28	22.4	72	57.6	3.56 (1.11)
Checking the vital signs of the patient	33	26.4	37	29.6	70	56.0	3.68 (1.09)
Checking drug interaction, e.g. with/before/after meals	38	30.4	24	19.2	62	49.6	3.42 (1.10)

In this study the fourth year Bachelor of Nursing respondents were requested to conduct a self-assessment of their competence in administration of oral medication (See table 4.5).

During the fourth year of study, Bachelor of Nursing students were placed in a general hospital for few days and they had opportunities to administer oral and intravenous

medication. Therefore, the students who responded by strongly disagreeing, disagreeing and being uncertain were considered as incompetent in the administration of medication.

According to the data obtained from the fourth year Bachelor of Nursing students, the self-assessment was found useful to determine their competence as argued by Dale *et al.* (2013). Supporting the statement of Zare *et al.* (2103), these findings are helpful to enlighten teaching strategies and encourage autonomous learning. The researcher acknowledges the possible biases in self-assessment; however the participants were advised by the researcher to be honest as their anonymity was ensured.

Similar to the results of a study conducted by Lin and Ma (2009) which indicated that 66.9% of the nurse participants were honest to admit having made medication errors, the findings of the current study showed that Bachelor of Nursing students were most likely honest. For instance only 19.2% (24) of the 125 respondents reported themselves as competent in all 42 skills. It is concerning that the majority of Bachelor of Nursing students were not competent in the entire procedure of administration of oral medication. It is expected that students should be competent in all 42 skills included in the questionnaire to avoid medication errors which is a concern.

Although more than 90% of the 125 respondents perceived themselves as competent in thirteen skills (See table 4.5), the students were not competent in other skills.

### ***Incompetence in administration of oral medication***

A total of 50.4% (63) of the 125 respondents were incompetent in checking drug interaction while one medication error might cause patient's fatal harm. These results supported the statement of Reid-Searl *et al.* (2010) who stipulated that nursing students are susceptible to make medication errors resulting in possible harm to patients'. In their study, a total of 9 of the 28 participants reported having made medication errors or were at risk of medication errors. The incompetence of nursing students in administration of medication was also highlighted by Sulosaari, Kajander, Hupli, Huupponen and Leino-Kilpi (2012).

### ***Hand hygiene***

The findings of the current study showed that the majority were competent in hand hygiene (See table 4.5). In support of these results, the findings of Kim *et al.* (2013) indicated that 96.6% of the respondents washed their hands before administration of medication.

### ***Identification of the patient and prescription chart***

Medication errors can be reduced if the patient is identified against the prescription chart, and the patient's diagnosis and vital signs are checked. Koohestani and Baghcheghi (2009) conducted a study in Iran and ascertained that nursing students are likely susceptible to make medication errors. Their findings indicated that nursing students made 124 medication errors of which 75.8% were reported to the supervisors. Supporting these findings, the results of a study conducted by Kim *et al.* (2013) showed that only 6.5% of the participants identified the patient's name written on the wristband. Although Schneidereith (2014) argued that the

students are lazy to adhere to the principles of administration of medication, this current study's findings indicated that 80% (100) of the 125 respondents perceived themselves as competent checking the patient's names against their identification band. A total of 67.2% (84) of the 125 respondents were competent in checking the patient's diagnosis and only 56% (70) in checking the patient's vital signs.

### ***Identification of oral medication***

Moreover, a total of 81.6% (102) of the 125 respondents were competent in checking the medication container against the prescription chart. Furthermore a total of 95.2% (119) were competent in checking the name of medication on prescription chart. A total of 96% (120) of the 125 respondents were competent in taking the correct medication prior to be given to the patient. It is likely possible that a nurse can identify the correct medication and check it against the prescription chart, and he/she can administer a wrong medication to the patient. Therefore the medication must be checked and re-checked prior to be administered. Regarding the checking of the expiry date of medication, a total of 84.8% (106) of the 125 respondents were competent. To avoid harming the patient, an expired medication should never be administered to the patient.

Comparative to these findings, the results of Kim *et al.* (2013) indicated that a total of 98.6% managed to check the name of medication at least once. A failure to check the name of medication on the prescription chart may result in administration of wrong medication. In support of this statement, the study conducted in South Africa by Labuschagne *et al.* (2011) found that 48.6% of the respondents administered the wrong medication.

### ***Frequency of oral medication***

A total of 96% (120) of the 125 respondents perceived themselves as competent in checking the time or frequency of medication on the prescription chart; 92% (115) were competent in checking the previous time that medication was administered. In a study conducted in Ethiopia by Agalu *et al.* (2012), 15.5% of medication errors were due to the medication being given at the wrong frequency. Van den Bemt *et al.* (2009) also discovered that 18% out of 428 medication errors were related to the wrong time of medication administration. Another study by Kim *et al.* (2013) showed that only 41.0% of the participants administered the medication at the correct time. It is crucial to comply with frequency at which medication is prescribed by the doctor as highlighted by Perry, Potter and Elkin (2012).

### ***Checking doctor's prescription, name and signature***

A total of 95.2% (119) of the 125 respondents perceived themselves as competent in checking the doctor's orders but there was a decrease in number of the respondents (79.2%, 99) who were competent in checking the name and signature of medical practitioner. The incompetence to check the doctor's orders such as NPO, checking HGT or HB, blood pressure, omitting medication administration if the patient is vomiting, for example, is regarded as a medication error. Furthermore, medication should be administered to the patient when it is prescribed and signed by an identifiable professional.



### ***Calculation of medication dose***

A total of 93.6% (117) of the 125 respondents perceived themselves as competent in checking the medication dose on the prescription chart while 95.2% (119) of the 125 respondents were competent administration of correct dose to the patient. It is recommended not only to check the prescribed medication dose but also to administer the correct dose. However with regard to the administration of correct dose, there was a decrease in number of the respondents competent in calculation of medication dose (91.2 %, 114).

While the 8.8% (11) of the 125 respondents who were incompetent in calculation of medication might be considered low, the incorrect calculation of the medication dose remains one of the main medication errors which may cause great harm to the patient (Van den Bemt *et al.*, 2009; Cheragi *et al.*, 2013). The study conducted by Van den Bemt *et al.* (2009) found that 3.5% of 428 medication errors were related to the administration of the wrong dose. Agalu *et al.* (2012) also found that out of the medication errors, 15.1% were associated with wrong dose. Administration of medication requires some mathematical calculation skills as argued by Andrew, Salamonson and Halcomb (2009) who conducted a study in Australia. Their findings indicated that the second year nursing students were confident in medication calculation through addition, subtraction and division.

In contrast to these findings, medication calculation skills remain a challenge according to other researchers. Several studies conducted in Finland and Norway by Grandell-Niemi, Hupli, Leino-Kilpi and Puukka (2005); Simonsen *et al.* (2011) and Simonsen, Daehlin, Johansson and Farup (2014) found that nursing students had deficiencies in medication

calculation skills. Wright (2010) argued that nursing students' miscalculation of dosages contributed to medication errors.

Although many studies highlighted the contribution of administering the incorrect dose, medication errors most likely result from non-compliance with the principles of administration of medication such as to check and recheck documents and medication. The results of the study conducted by Choo *et al.* (2013) showed that the nurses did not adhere with the steps of medication checking.

### ***Checking the route of medication administration***

The respondents gave their perceptions regarding their compliance with rights of medication administration, as discussed by Anderson *et al.* (2010), and commonly called golden rules which are usually applied in a general hospital. A total of 94.4% (118) of the 125 respondents perceived themselves to be competent in checking the route of medication on the prescription chart.

### ***Patient's safety and documentation***

Regarding the patients' safety and correct documentation, as highlighted by Elliott and Liu (2010), the findings of this study indicated that a total of 93.6% (117) of the 125 respondents perceived themselves to be competent in signing the prescription chart in the correct block. The presence of the signature in the correct block on prescription chart indicates that the medication was administered. This prevents the repeated administration of medication and

possible overdose because if there is no signature it might be assumed that the medication was not given.

Surprisingly a total of 42.4% (53) of the 125 respondents reported that they were incompetent in checking the side-effects of oral medication prior to its administration to the patient. Elliott *et al.* (2010) reported that 72% (90) of the respondents were competent in monitoring immediate side-effect of medication after administration. In this way the side-effect can be detected, reported and managed at an early stage. However the findings of the current study indicated that a total of 89.2% (112) were competent in reporting abnormalities to the professional nurse-in-charge.

### ***Patient's consent***

Regarding the violation of patients' rights related to administration of medication, the results revealed that a total of 32.8% (41) of the 125 respondents were incompetent in explaining the procedure of the administration of oral medication to the patient while the patients have the right to be informed about their treatment (Mogotlane *et al.*, 2015). Furthermore, a total of 28.8% (36) were not competent in obtaining the verbal consent from the patient before administration of oral medication while the patients have the right to refuse the treatment.

### ***Competence in administration of oral medication***

Since medication errors have been researched by many authors (Biron *et al.*, 2009; Van den Bemt *et al.*, 2009); Lin & Ma, 2009; Bennett *et al.*, 2010; Labuschagne *et al.*, 2011; Agalu *et al.*, 2012; Bahadori *et al.*, 2013; Cheragi *et al.*, 2013; Kim *et al.*, 2013; Shahrokhi *et al.*,

2013), it is hoped that the contributions of the Bachelor of Nursing respondents will be used to reduce medication errors. Due to the low number of students being competent in all 42 skills, the perceptions of Bachelor of Nursing students revealed that the existing clinical learning opportunities in general hospital are most likely inadequate for the development of their competence in the administration of oral medication.

#### **4.5 Correlation**

Correlation analysis was used to describe the strength and direction of the linear relationship between the independent and dependent variables. In this study, the items were grouped together to create three new independent variables and one new dependent variable. New variables were selected by the researcher due to the impact of clinical placement and the practice of administration of oral medication on the competence of the nursing students. In this regard, Hartigan-Rogers *et al.* (2007) and Woolley *et al.* (2007) have argued that the clinical placement of nursing students, their practical opportunities and experience impact positively their competence.

Therefore a new independent variable *total clinical placement* was created from the group of items under clinical placement. The items under the infection control were grouped to create a new independent variable *total infection control*. Furthermore the items under the practice related to administration of oral medication beside infection control were grouped to create a new independent variable *total practice related to administration of oral medication*. Forty two items under perceptions about competence in administration of oral medication were

grouped together to create a new dependent variable named *total self-assessment of competence*.

In this study data distributions were not normal on Kolmogorov-Smirnov test as this test's results showed the violation of the assumption. Kolmogorov-Smirnov test should be used when its significant value equals 0.05 as argued by Filion (2015). The non-parametric test was the best test to use for non-normal distributions and Spearman's Rank Order Correlation discussed by Salkind (2010) was therefore used in this study.

Table 4.6 presents information of Spearman's Rank Order Correlation test between *total self-assessment of competence* scores and *total infection control* scores. The researcher was interested to see whether there was a statistically significant correlation between above variables and the results showed a positive correlation at ( $r = 0.442$ ). The strength of relationship for these two variables was medium correlation and indicated the coefficient of determination ( $r^2 = 0.442 \times 0.442 = 19.54 = 20\%$ ) 20% shared variance, meaning that 20% of variation in *total self-assessment of competence* scores are explained by *total infection control* scores. The two tailed test was significant at  $P$  value = 0.000 that is less 0.001.

**Table 4.6: Results of Spearman’s Rank Order Correlation between *total self-assessment of competence scores and total infection control scores***

			Total self-assessment of competence	Total infection control
Spearman's rho	Total self-assessment of competence	Correlation Coefficient	1.000	.442***
		Sig. (2-tailed)		.000
		n	125	125
	Total infection control	Correlation Coefficient	.442***	1.000
		Sig. (2-tailed)	.000	
		n	125	125

\*\*\*. Correlation is significant at the 0.001 level (2-tailed).

Table 4.7 provides information of Spearman’s Rank Order Correlation test between *total self-assessment of competence scores and total practice related to administration of oral medication scores* excluding infection control. The researcher aimed to see whether there was a statistically significant correlation between above variables and the results indicated a positive correlation at ( $r = 0.455$ ). The strength of relationship for these two variables was medium correlation and indicated the coefficient of determination ( $r^2 = 0.455 \times 0.455 = 20.25\%$ ) 20.25 % shared variance. This means that 20.25 % of variation in *total self-assessment of competence scores* were explained by *total practice related to administration of oral medication scores*. The two tailed test was significant at  $P$  value= 0.000 that is less than 0.001.

**Table 4.7: Results of Spearman’s Rank Order Correlation between *total self-assessment of competence* scores and *total practice related to administration of oral medication* scores**

			Total self-assessment of competence	Total practice related to administration of oral medication
Spearman's rho	Total self-assessment of competence	Correlation Coefficient	1.000	.455***
		Sig. (2-tailed)		.000
		n	125	125
	Total practice related to administration of oral medication	Correlation Coefficient	.455***	1.000
		Sig. (2-tailed)	.000	
		n	125	125

\*\*\*. Correlation is significant at the 0.001 level (2-tailed).

Table 4.8 presents information of Spearman’s Rank Order Correlation test between *total self-assessment of competence* scores and *total clinical placement* scores. The researcher intended to see whether there was a statistically significant correlation between above variables; the results indicated that there was no significant relationship. *P* value = 0 .217 which is greater than the cut off value (0.05). There was a negative correlation at ( $r = -0.112$ ), meaning that when *total clinical placement* scores increase, *total self-assessment of competence* scores decrease; when *total self-assessment of competence* scores increase, *clinical placement* scores decrease. Therefore the strength of relationship for these two variables was weak correlation and indicated the coefficient of determination ( $r^2 = -0.112 \times -0.112 = 0.013\%$ ) 1.3% shared variance. These results indicated that *clinical placement* scores helped explain 1.3% of the variance in students’ scores on *self-assessment of competence*.

**Table 4.8: Results of Spearman’s Rank Order Correlation *between total self-assessment of competence scores and clinical placement scores***

			Total self-assessment of competence	Total clinical placement
Spearman's rho	Total self-assessment of competence	Correlation Coefficient	1.000	-.112
		Sig. (2-tailed)		.217
		n	125	125
	Total clinical placement	Correlation Coefficient	-.112	1.000
		Sig. (2-tailed)	.217	
		n	125	125

Many researchers such as Wright (2007); Ronda *et al.*, (2008); Jevon *et al.*, (2010); Zare *et al.*, (2013); Aggar *et al.*, (2014) and the South African Nursing Council (2013) have highlighted the contribution of the clinical placement, practice and experience of nursing students to their competence.

In this study, there was a positive correlation between *total self-assessment of competence scores* and *total infection control scores* (See table 4.6). This correlation was greater than the positive correlation ( $r = 0.264$ ,  $p = 001$ ) found between the overall self-assessed level of nursing skills and pedagogical atmosphere in a study conducted by Kajander-Unkuri *et al.* (2014). Within nursing practice, the students’ opportunities to practice the infection control have a positive impact on their competence regarding the standard guidelines for infection control.



The correlation between *total self-assessment of competence* scores and *total practice related to administration of oral medication* scores excluding infection control was also a positive correlation (See table 4.7). This correlation was greater than the correlation ( $r = 0.20, p \leq 0.01$ ) found between attitude and practice scores in a study conducted in India by Singh, Purohit, Bhambal, Saxena, Singh, and Gupta (2010). Within nursing practice the increased opportunities to practice the administration of oral medication should influence positively the competence of nursing students in this regard.

Furthermore, there was a negative correlation at between *total self-assessment of competence* scores and *total clinical placement* scores (See table 4.8). However in nursing practice, clinical placement where there are opportunities to practice positively impacts the students' learned experience and competence.



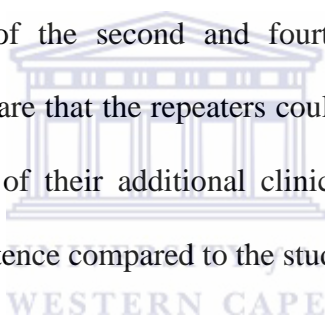
#### **4.6. Conclusion**

The results highlight that many students do not get sufficient learning opportunities with regard to the administration of oral medication. Their self-assessment indicates further that students do not rate themselves as competent. The relationship between the lack of learning opportunities and lack of competence can not be over-emphasised and provides both education and practice with proof that a review of students' clinical learning is imperative to prevent medication errors in future.

## **CHAPTER FIVE: LIMITATIONS, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Limitations of the study**

In this study the researcher could not have access to the recent policies related to the procedure of administration of oral medication in a general hospital and the policies regarding the placements of the students. Possession of these documents could have assisted in understanding what was expected of student and possible learning opportunities with regard to the administration of oral medication. Another possible limitation is that the study did not exclude the repeaters of the second and fourth year of Bachelor of Nursing programme. The researcher is aware that the repeaters could possibly have had more clinical learning opportunities by virtue of their additional clinical placements which could have positively influenced their competence compared to the students who did not repeat.



### **5.2 Conclusion**

The findings of this study have demonstrated that the majority of the nursing students were placed in medical and surgical wards, in which more clinical learning opportunities occur as argued by Hartigan-Rogers *et al.* (2007). This study also revealed that the majority of the second year nursing students were not allocated daily to practice the administration of oral medication and was therefore insufficient. The majority of the respondents indicated that they learnt hand hygiene during administration of oral medication. However many students

indicated that hand washing or disinfecting was performed more often before preparation of medication than between the patients.

The findings indicate that some students practiced and were assessed on the administration of oral medication to only one patient. There were challenges with regard to practicing the administration of more than one type of medication to patients. With regard to self-assessment of competence, the findings showed that the majority of the respondents perceived themselves as competent in some of the aspects related to the administration of oral medication. However very few respondents perceived themselves as competent in all 42 skills required for performing administration of oral medication correctly. A positive correlation was found *between total self-assessment of competence scores and total infection control scores* and between *total self-assessment of competence scores and total practice related to administration of oral medication scores* excluding infection control.



### **5.3 Recommendations**

#### **5.3.1 Recommendations for education and practice**

- This study recommends that the general hospitals update their policies or procedures regarding the administration of oral medication to enhance the alignment of the practice to the theory.
- It is also recommended that general hospitals implement or tighten their policy related to the placements of the nursing students to ensure that students have equal and fair clinical learning opportunities.

- Due to the limited learning opportunities with regard to the administration of oral medication, this study recommends that the School of Nursing increase the use of simulation in the skills laboratory, in this regard.

### **5.3.2 Recommendation for research**

- It is recommended that observation studies using the check list be conducted to assess the competence of nursing students in the administration of medication, to exclude bias associated with self-assessment.



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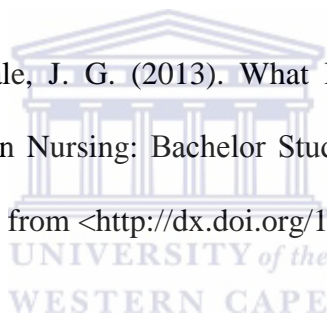


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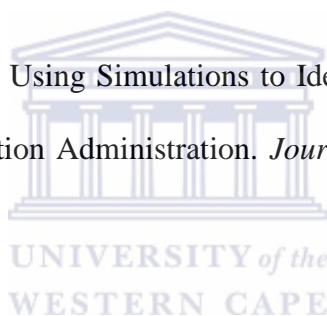
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# APPENDICES

## Appendix I: Self-report questionnaire



FACULTY OF COMMUNITY AND HEALTH SCIENCES

SCHOOL OF NURSING

SELF-REPORT QUESTIONNAIRE

**TITLE:** Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication.

### SECTION A: DEMOGRAPHIC INFORMATION

#### A1. Gender

Please tick one box below according to your gender.

1	Male	<input type="checkbox"/>
2	Female	<input type="checkbox"/>

## A2. Age

a) Please write your date of birth in the boxes below.

Date	Month	Year

b) Please write your approximate age expressed in years in the box below.

## A3. Marital status

Please tick one box below reflecting your marital status.

1	Single	
2	Married	
3	Divorced	
4	Widow	
5	Co-habitation	



## A4. Race

Please tick one box below according to your race.

1	Black	
2	Coloured	
3	Indian	
4	White	

UNIVERSITY of the  
WESTERN CAPE

## A5. Academic history

Please tick appropriate box below.

No	Criteria	Yes	No
1	Have you been employed as an enrolled nurse?		
2	Have you repeated the second year of nursing programme?		
3	Are you repeating the fourth year of nursing programme?		

**SECTION B: PERCEPTIONS ABOUT CLINICAL LEARNING OPPORTUNITIES REGARDING ADMINISTRATION OF ORAL MEDICATION IN A GENERAL HOSPITAL DURING THE SECOND YEAR OF YOUR STUDY.**

**B1. Clinical placement**

In the second year of nursing programme, I was placed in a general hospital in the wards below.

Please indicate your response by ticking an appropriate box below.

No	Criteria	Yes	No
1	Medical ward		
2	Surgical ward		
3	Trauma ward		
4	Theatre ward		
5	Neurology ward		
6	Dermatology ward		
7	Urology ward		
8	Paediatric ward		
9	Orthopedic ward		
10	Gynecology ward		

**B2. Orientation**

In the second year of nursing programme, I had orientation with regard to administration of oral medication in the ward in a general hospital.

Please indicate your response by ticking an appropriate box on a scale of 1-5 as described below.

**Strongly disagree =1    Disagree =2    Uncertain =3    Agree =4    Strongly agree= 5**

No	Criteria	1	2	3	4	5
1	I was orientated to ward routine with regard to administration of oral medication					
2	It was explained to the professional nurse- in-charge about my learning needs with regard to administration of oral medication					
3	I was orientated by an enrolled nurse on the procedure of administration of oral medication					
4	I was orientated by a professional nurse on duty in the ward with regard to administration of oral medication					
5	I was orientated by the clinical supervisor with regard to administration of oral medication					

### B3. Supervision

In the second year of nursing programme, I had supervision related to administration of oral medication in the ward in a general hospital. Who **mostly** supervised you in the ward while administering oral medication?

Please indicate your response by ticking an appropriate box below (**only one option**).

1	My clinical supervisor	
2	An enrolled nurse on duty in the ward	
3	A professional nurse on duty in the ward	
4	A fourth year nursing student from a university in the Western Cape placed in the ward	
5	A fourth year nursing student from other institution	

### B4. Allocation of duties

In the second year of nursing programme, I was allocated the duty during my clinical learning in the ward in a general hospital.

Please indicate your response by ticking an appropriate box on a scale of 1-5 as described below.

**Strongly disagree =1    Disagree =2    Uncertain =3    Agree =4    Strongly agree=5**

No	Criteria	1	2	3	4	5
1	Each day on duty, I was allocated the duty to administer oral medication					
2	More than one second year Bachelor of Nursing students were allocated at the same time to administer oral medication					
3	I alternated with the second year nursing student from other institution in administration of oral medication					

### B5. Infection control

In the second year of nursing programme, I had opportunities to learn about infection control related to administration of oral medication in a general hospital during my clinical hours. Please indicate your response by ticking an appropriate box on a scale of 1-5 as described below.

**Strongly disagree =1    Disagree =2    Uncertain =3    Agree =4    Strongly agree= 5**

No	Criteria	1	2	3	4	5
1	Washing hands before preparation of medication					
2	Cleaning medication trolley before putting in the medication					
3	Washing the medication cups					
4	Washing water cups					
5	Clean drinking water for the patients was made available					
6	Providing each patient with a clean cup of water					
7	Hands were washed or disinfected between the patient and the next during administration of oral medication					
8	Using a clean spoon when taking medication out of the container and not touching medication with bare hands					
9	Breaking tablets without touching with bare hands					
10	Placing a plastic bag used for disposables on the trolley					

### **B6. Practice related to administration of oral medication beside infection control**

In the second year of nursing programme, I had opportunities to practice the administration of oral medication in a general hospital.

Please indicate your response by ticking an appropriate box on a scale of 1-5 as described below.

**Strongly disagree =1    Disagree =2    Uncertain =3    Agree =4    Strongly agree= 5**

<b>No</b>	<b>Criteria</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1</b>	Administration of oral medication according to the theory learned in the classroom					
<b>2</b>	Administration of many types of oral medication to one patient at the same time					
<b>3</b>	Administration of oral medication to one patient on the same day at different times					
<b>4</b>	Oral medication administration to more than one patient but not to all the patients in the ward					
<b>5</b>	Oral medication administration to all the patients in the ward at time of medication round.					
<b>6</b>	Safe keeping and storage of oral medication					
<b>7</b>	I had practice opportunities > 2					
<b>8</b>	Practical session in the presence of supervisor prior to clinical assessment					
<b>9</b>	Obtaining feedback from the clinical supervisor					
<b>10</b>	Assessment on administration of oral medication to one patient					



**SECTION C: PERCEPTIONS ABOUT COMPETENCE IN ADMINISTRATION OF ORAL MEDICATION IN A GENERAL HOSPITAL.**

**C 1. Self-assessment with regard to the competence in administration of oral medication**

At the fourth year level, you are in the final year prior to graduating. At this level, you are requested to conduct a self-assessment with regard to the competence in administration of oral medication. Your information will be kept confidential in a safe place and protected.

**Do you perceive yourself as competent in the administration of oral medication according to the criteria below?** Even if this question might be sensitive, you are kindly advised to be honest. Please tick appropriate box below on this page and the next page using a scale of 1-5 according to your ability of performing the following criteria used in administration of oral medication.

**Strongly disagree =1    Disagree =2    Uncertain =3    Agree =4    Strongly agree= 5**

No	Criteria	1	2	3	4	5
1	Washing hands before setting medication trolley					
2	Cleaning medication trolley					
3	Identification of prescription chart by checking patient's names against patient's identification band					
4	Checking doctor's prescription					
5	Checking for indication of allergy on prescription chart					
6	Checking the name of medication on prescription chart					
7	Identifying the alternative name of the medication if needed					
8	Checking the medication dose on prescription chart					
9	Checking the route of medication administration on prescription chart					
10	Checking the time/ frequency of medication on prescription chart					
11	Checking the name and signature of medical practitioner					
12	Checking the previous time of medication administration					
13	Checking the diagnosis of the patient					
14	Checking the vital signs of the patient					
15	Assessing the patients' basic needs					
16	Explaining the procedure to the patient					
17	Obtaining verbal consent from the patient					
18	Taking the container of medication against the prescription chart					

No	Criteria (Continued)	1	2	3	4	5
19	Identifying scheduled drug if applicable					
20	Checking the balance of the scheduled drug under supervision of a professional nurse					
21	Checking the expiry date of medication					
22	Checking contra-indications, e.g. Nil per mouth, nausea, HB, HGT, bradycardia					
23	Checking drug interaction, e.g. with/before/after meals					
24	Checking the side-effects					
25	Calculation of correct dose of medication					
26	Taking the correct medication prior to be given					
27	Check medication a second time against the prescription chart					
28	Explaining the role of the witness before administration of scheduled drug if applicable					
29	Administration of correct dose to the patient					
30	Administration of water to the patient					
31	Ensuring patient swallows the medication					
32	Ensuring the patient's safety, e.g. bed cots raised, bell at reach of the patient's hand					
33	Making the patient comfortable, e.g. covering the patient					
34	Giving health education to the patient					
35	Signing the prescription chart in the correct block					
36	Monitoring any immediate side-effect of medication					
37	Reporting abnormalities to the sister-in-charge					
38	Cleaning used items					
39	Locking medication trolley after use					
40	Recording the scheduled drugs in scheduled drugs book					
41	Explaining the role of the witness to counter sign for administered scheduled drug, if applicable					
42	Explaining the safe keeping of the scheduled drugs cupboard key, if applicable					

**Strongly disagree =1    Disagree =2    Uncertain =3    Agree =4    Strongly agree= 5**

## Appendix II: Information sheet



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

*Tel: +27 21-9592271, Fax: 27 21-9592679*

**E-mail: [kjooste@uwc.ac.za](mailto:kjooste@uwc.ac.za)**

### INFORMATION SHEET

I hereby invite you to participate in a study, there will be a fair selection of the participants and your rights associated with research participation will be protected. The study will be explained to you and you will have opportunities to ask questions.

**Project Title:** Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication.

#### **What is this study about?**

I am inviting you to participate in this research project because you are currently registered as a fourth year Bachelor of Nursing student at a university in the Western Cape.

The purpose of this research project is to investigate the fourth year Bachelor of Nursing students' perceptions regarding their clinical learning opportunities and their competence in the administration of oral medication in a general hospital.

#### **What will I be asked to do if I agree to participate?**

You will be asked to give the information related to your gender, date of birth and age, marital status and race. You will be asked to give your perceptions about your clinical placement, orientation and supervision, about allocation of duties and infection control practice. You will be asked to give your perceptions about practice related to administration of oral medication beside infection control during your second year of study. Finally, you will be requested to give your perceptions about your competence in administration of oral medication in a general hospital. In this regard, it is about the self-assessment. The study will be conducted at a university in Western Cape where you are currently studying. In this study,

Bachelor of Nursing refers to a degree given to a nursing student after completion of four years nursing programme. Clinical learning opportunities refer to a range of chances for practice in clinical setting to gain the experience in administration of oral medication. Competence means the level of performing the skills related to administration of oral medication without skipping any critical point and at the same time the assessment scores during evaluation must be a least 50%. General hospital means a non-specialized health care setting that admits the patients to receive care for the treatment of their medical conditions. The completion of the questionnaires will take place at a university where you are studying in the Senate Hall on 18 September 2014 at 10:00.

**Would my participation in this study be kept confidential?**

Your information will be kept confidential. To help protect your confidentiality, the completed form will be kept in a safe and lockable cupboard.

The anonymity will not be guaranteed during data collection as the participants will be seeing each other. However, your name will be omitted on the questionnaire and will be protected in data analysis using the codes. The access to your identification key will be reserved only to the researcher. You have the right to determine the extent to which your private information can be shared or protected from others. The collected data will be published without mentioning your name and the name of your institution.

**What are the risks of this research?**

There are no known risks or discomfort related to participation in this study. Regarding the self-assessment, your correct answers will not affect your self-esteem if you say that you cannot remember some criteria included in the evaluation related to administration of oral medication. The results of this project will not influence your qualification and graduation at the end of the fourth year.

**What are the benefits of this research?**

There will be no money to pay you for your participation; however the findings of this study will inform the Bachelor of Nursing programme at a university in the Western Cape about the adequacy of clinical learning opportunities of the students. Furthermore, the improvement of the alignment of clinical learning to the learning outcomes of the Bachelor of Nursing programme is expected.

**Do I have to be in this research and may I stop participating at any time?**

The participation will be voluntary and you have the right to accept or refuse to participate and at any time to withdraw from the study without penalty's risk. All the fourth year Bachelor of Nursing students current registered at a university in the Western Cape will be included in this study.

**Is any assistance available if I am negatively affected by participating in this study?**

If you are psychologically harmed, you will be referred for counselling and for free. However, there is no expected psychological harm.

**What if I have questions?**

This research is being conducted by **Mr JJ. Musafiri** at a university in the Western Cape. If you have any questions about the research study itself, please contact

**Researcher:** JJ. Musafiri  
School of Nursing  
University of the Western Cape  
Cell: 0739696784  
email: [jjmusafiri@gmail.com](mailto:jjmusafiri@gmail.com)

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

**Director:** Prof K. Jooste  
School of Nursing  
University of the Western Cape  
Private Bag X17, Bellville, 7535  
Telephone: 021 959 2271  
[kjooste@uwc.ac.za](mailto:kjooste@uwc.ac.za)



**Research Supervisor:** Prof F. Daniels  
School of Nursing  
University of the Western Cape  
Private Bag X17, Bellville, 7535  
Telephone: 021 959 2271  
[fdaniels@uwc.ac.za](mailto:fdaniels@uwc.ac.za)

**Dean of the Faculty of Community and Health Sciences:** Prof J. Frantz  
University of the Western Cape  
Private Bag X17  
Bellville 7535  
Tel: +27 (0) 21 959 2631/2746  
Fax: +27 (0) 21 959 2755  
Email: [jfrantz@uwc.ac.za](mailto:jfrantz@uwc.ac.za)

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

**Appendix III: Consent form**



**UNIVERSITY OF THE WESTERN CAPE**

Private Bag X 17, Bellville 7535, South Africa

*Tel: +27 21-9592271 Fax: 27 21-9592679*

E-mail: [kjooste@uwc.ac.za](mailto:kjooste@uwc.ac.za)

CONSENT FORM

Title of Research Project: Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name.....

Participant's signature.....

Date.....

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name:

JJ. Musafiri

School of Nursing

University of the Western Cape

Cell: 0739696784

Email: [jjmusafiri@gmail.com](mailto:jjmusafiri@gmail.com)

Supervisor: Prof F Daniels

University of the Western Cape

Private Bag X17, Belville 7535

Telephone: (021) 9592271

Fax: (021) 959-2679

Email: [fdaniels@uwc.ac.za](mailto:fdaniels@uwc.ac.za)



## Appendix IV: Permission of the instrument use

**Mr JJ. Musafiri**

University of the Western Cape  
Faculty of Community and Health Sciences  
School of Nursing  
Belville, 7030  
Cape Town 8000  
Republic of South Africa 05/05/2014

**Zohre GhamariZare**

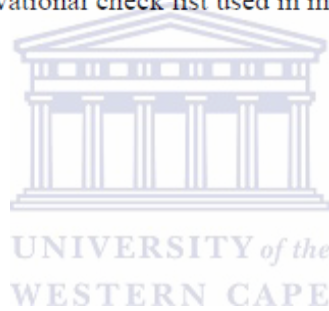
University of Islamic Azad  
Faculty of Medical Science  
Department of Nursing  
Qom City  
Islamic Republic of Iran

Dear Sir,

It is a pleasure to give you the authorization of using my instrument in your study as you have asked me the permission. The observational check list used in my study was tested before its use. All the best.

Regards

Ms Zohre GhamariZare





## Appendix V: University ethical clearance



OFFICE OF THE DEAN  
DEPARTMENT OF RESEARCH DEVELOPMENT

19 August 2014

### 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:  
Mr J Musafiri (School of Nursing)

Research Project: Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication.

Registration no: 14/6/24

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.

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

Private Bag X17, Bellville 7535, South Africa  
T: +27 21 959 2988/2948 . F: +27 21 959 3170  
E: pjosias@uwc.ac.za

A place of quality,  
a place to grow, from hope

## Appendix VI: Registrar permission to conduct research



### University of the Western Cape

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Private Bag X 17 Bellville South Africa Telegraph: Unibell  
Telephone: +27 21 959 2111 Fax: +27 21 959 3126

#### OFFICE OF THE REGISTRAR

26 August 2014

Mr. JJ Musafiri  
Student number: 2928198

Dear Mr. JJ Musafiri

#### PERMISSION TO CONDUCT RESEARCH AT UWC

*Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication."*

Thank you for complying with our requirements for obtaining permission to do research at the University of the Western Cape.

I have noted that the ethics statement of your research proposal has been approved by our Senate Research Committee and it therefore gives me great pleasure to grant you permission to proceed with your research.

Your research will make an important contribution to our knowledge base of Nursing and I wish you every success with the completion of your study.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'J. J. Cornelissen', is placed on a light yellow rectangular background.

Prof J. J. Cornelissen  
**Acting REGISTRAR**

*A Place of Quality, A Place to Grow*

## Appendix VII: Permission from the Director of School of Nursing



24 August 2014

Dear student J Musafiri

### REQUEST TO CONDUCT RESEARCH AT UWC IN THE SCHOOL OF NURSING

I hereby received the certification of the Senate Research Committee of the University of the Western Cape approving the methodology and ethics of your research project (Mr J Musafiri School of Nursing).

I hereby grant you permission to conduct your studies as approved (Registration no: 14/6/24). Your topic is "Perceptions of Bachelor of Nursing students at a university in the Western Cape about clinical learning opportunities and competence regarding the administration of oral medication."

Please contact the level coordinator of the students to arrange your data collection. You must adhere to all ethical principles as stipulated in your proposal.

I wish you well on your journey and encourage you to progress well and contribute to the research output in the School of Nursing.



Karien Jooste

Director

School of Nursing

University of the Western Cape

## Appendix VIII: Editor's letter

10 Bergvliet vistas, 59  
main service road,  
Heathfield, 7945,  
Cape Town.

08/05/2015

To whom it may concern,

**“Perceptions of Bachelor of Nursing students at a university in the Western Cape  
about clinical learning opportunities and competence regarding the administration  
of oral medication”**

I am an experienced editor with background in social sciences. I have thoroughly read the above dissertation by **John James Musafiri** and made the required changes to grammar, spelling, referencing, punctuation, paragraphing and formatting. This was done in line with UWCs guide to dissertations.



**Adam Andani**

Doctoral candidate

Department of Social Development, University of Cape Town, Private Bag, Rondebosch 7701, South Africa. Telephone: +27(21) 650-3486/650-3493; Fax No.: (021) 689-2739. Cell: 078 268 4761; Email: [andada002@myuct.ac.za](mailto:andada002@myuct.ac.za)/ [adam@activateleadership.co.za](mailto:adam@activateleadership.co.za), Skype ID: adam-andani



UNIVERSITY of the  
WESTERN CAPE