



**UNIVERSITY OF  
KWAZULU-NATAL**

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**INYUVESI  
YAKWAZULU-NATALI**

**AN OUTCOMES EVALUATION OF A QUALITY IMPROVEMENT  
TRAINING INITIATIVE FOR UNDERGRADUATE STUDENT NURSES,  
AT A PUBLIC HOSPITAL IN THE KWAZULU-NATAL MIDLANDS,  
SOUTH AFRICA.**

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**2017**

**RESEARCH DISSERTATION**

**Submitted in partial fulfilment of the requirements for the degree of**

**MASTERS IN NURSING MANAGEMENT**

**AT UNIVERSITY OF KWAZULU-NATAL**

**SCHOOL OF NURSING AND PUBLIC HEALTH**

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## DECLARATION

I, Mrs. Marlene Naidoo, declare that this dissertation hereby submitted to the University of KwaZulu-Natal, for the degree of Masters in Nursing Management as my own work and has not been previously submitted by me for a degree at this university or any other university. This is my work in design and execution and all the material herein has been acknowledged.

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Date

## **DEDICATION**

I dedicate this dissertation to my immediate and extended family, work colleagues, church family and close friends for their support and motivation during the challenging moments and the times of breakthrough.

I also dedicate this study to my husband Derek Naidoo for his patience understanding during the long hours of study and in completing this dissertation.

To my daughter, Delene Paul, for her untimely assistance, her husband Wade Paul and my son Demaine Naidoo for believing in me, encouraging me through the duress and allowing me to achieve this incredible milestone. Your input has not gone unnoticed.

To my dearest and sincere prayer partner Kathy Kissoom, and my sincere Grey's chapel family for their timeouts intercession for me and my family. I am extremely grateful for the love and care you constantly show me.

## **ACKNOWLEDGEMENTS**

My heartfelt thanks and appreciation goes out to:

My Lord and Saviour Jesus Christ for His unwavering grace in the ability He has instilled in me to accomplish all my goals for this study.

My supervisor Dorien Wentzel, thank you for your constant direction, support, and counsel the many hours spent in correcting and advising me in shaping my dissertation.

Jane Kerr for assistance with corrections and suggestions, Fiona Walters, Petra Bryziewicz, and Joanne Naidoo thank you for your support and giving me the opportunity to continue with my study despite the many delays.

My colleague Esther Lydie Wancko and Mr. Tlou, my statistician, much appreciation goes out to you for all your valuable and kind assistance.

My manager Mary Subhan, HOD Shaman Mahadeo and the management of the selected campus , thank you all for allowing me the opportunity to conduct my study at your institution. To Mrs. V. Sewkarran, Mrs. P. Mathura, Mr. M.A. Smith, Mrs. R. Moodley and Lekha Chirkoot, thank you for your assistance.

The management of KwaZulu-Natal College of Nursing, the hospital management and the QA manager, Sister Ahrens of Grey's hospital, I'm truly grateful for your timeous assistance and for allowing me the opportunity to conduct my study with the student nurses placed at Grey's hospital.

## **ABSTRACT**

### **AIM OF THE STUDY**

The aim of the study was to conduct an outcomes evaluation of a one-day Quality Improvement (QI) Training initiative for undergraduate student nurses, at a public hospital in the Kwazulu-Natal Midlands, South Africa.

### **METHOD**

A non-experimental, quantitative, descriptive, post-test only, evaluative design was employed using a survey with a structured questionnaire, which included a post-test as well as course evaluation questions. The awareness of QI and QI initiatives and the level of knowledge of undergraduate students after quality improvement training were assessed at a campus attached to a public hospital in the KwaZulu-Natal Midlands. Recommendations regarding the need for future training of this nature were also evaluated in the study.

### **RESULTS**

The evidence provided by this study show that whilst the QI training did not increase the knowledge of undergraduate student nurses for obvious reasons mentioned in the discussions (chapter 5), an increase in awareness and abilities was seen after exposure of the study participants to QI content and methodologies. This did not negate the requirement for training in this group of students, but rather a newfound interest in QI was reflected in the recommendations the students made after the training. A difference was noted concerning position held and the awareness of QI, QI methodologies and QI activities in the students in the two different levels of training at the institution. It was found that an increase in experience reflected an increase in awareness, but not an increase in knowledge of QI in undergraduate student nurses at the selected public hospital.

### **CONCLUSIONS AND RECOMMENDATIONS**

There is little evidence to show there is quality improvement training of undergraduate student nurses in the employment hospitals in South Africa (Dondashe-Mtise 2011). Since there is a concern regarding QI awareness, knowledge and application in the clinical field, the researcher recommends that QI training for undergraduate student nurses needs to be considered in order to improve the health outcomes of all South African citizens. This may be accomplished if health initiatives such as the "Make me look like a hospital project, the National Core Standards, the National Health Insurance" and many other national health initiatives are strengthened and supported by all categories of nurses with competency in QI awareness, knowledge and abilities (NCS: SA, 2011).

Research as to the benefit of QI training for undergraduate student nurses in the South African context will determine the need for its inclusion in their curriculum. There is a further need to explore these learners' awareness of the importance of continually improving the quality of the care they give to their clients and their level of knowledge; skills and understanding of QI.

**KEY TERMS: outcomes evaluation, quality improvement training, undergraduate student nurses, initiatives.**

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## **ABBREVIATIONS**

CDAD	Clostridium Difficile Associated Disease
CDC	Centres for Disease Control and Prevention
CME	Continuing medical education
CHEO	the Provincial Centre of Excellence for Child and Youth Mental Health at Children's Hospital of Eastern Ontario
COHSASA:	Council for Health Services Accreditation of South Africa
DOH	Department of Health
HAC	Hospital acquired conditions
HCAI	Health care associated infections
SUI's	serious untoward incidents
MDGs	Millennium development goals
MRSA	Multi Resistant Staphylococcus Aureus
NDSA	Negotiated Service Delivery Agreement
QI	Quality Improvement
QA	Quality Assurance
QSEN	Quality and Safety Education for Nurses
NCS	National Core Standards
NHI	National Health Insurance
PDCA	Plan-Do-Check-Act
PDSA	Plan-Do-Study-Act
UTI's	Urinary tract infections

## **DEFINITION OF TERMS**

### **Evaluation**

Evaluation is the formal way in which information is gathered, interpreted and evaluated in relation to set standards and criteria. Evaluation requires monitoring and measurement. Measurement requires instruments with a monitoring system to support and quantify the degree to which health services meet the standards (Booyens 2008). An evaluation is the making of a judgment about the amount, number, value of something; 'the evaluation of each method' or 'an initial evaluation of the programme (On-line English Oxford *Living Dictionaries* 2016). In this study, evaluation will mean the appraisal of a quality improvement training initiative for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands in South Africa.

### **Undergraduate student nurses**

Undergraduate student nurses are nursing students who have not yet received a first degree (Collins English Dictionary 2014). These students are referred to as 'learner nurses' according to section 32 of the South African Nursing Council Regulation Act 33 of 2005. Undergraduate student nurses at Grey's Hospital obtain a diploma and not a degree qualification to qualify as registered nurses as the campus does not presently offer a bachelor's degree course in nursing. The courses offered are a two year bridging course termed the R683 South African Nursing Council programme and the three year comprehensive course termed the R425 South African Nursing Council programme.

### **Quality improvement training programme**

In this study, a quality improvement training program refers to the formal quality improvement training that is conducted for all members of staff excluding undergraduate student nurses at Grey's Hospital. This training is held periodically in the hospital's clinical sector by the QA manager and QI trainers from various departments of the hospital.

### **Initiative/s**

Initiatives are the first steps to a set of actions (Collins English Dictionary 2016). In this study, initiatives refer to the different QI programmes conducted locally (in the hospital) and nationally (in the Department of Health). Examples of these programmes are the National Core Standards, The Make-Me-Look-Like-A-Hospital Project, Prevention of Mother to Child Transmission of HIV (PMTCT) Programme, the Mother-Baby-Friendly Hospital Initiative and many other health programmes to improve the health of the nation.

## **Quality improvement projects/programmes**

These are initiatives directed towards improving health outcomes and creating patient satisfaction in one or more clinical or non-clinical fields (Centers for Medicaid Services: cms.gov 2013). In this study, QI programmes or projects refer to the projects or programmes that are conducted by staff trained in QI, examples of which are improving record keeping, preventing pressure sores, preventing patient falls etc.



# CHAPTER ONE

## 1.1. INTRODUCTION

Quality improvement (hereafter referred to as QI), has yet again become a buzz word in all institutions, particularly in the current health sector in the South African government as health facilities have become more involved in accreditation. The Negotiated Service Delivery Agreement (NSDA) and the National Core Standards (NCS), among other quality initiatives, were designed by the South African Department of Health to improve and fortify health outcomes, the health system, and to evaluate health service delivery (Office of Health Standards (OHS DOH: July 2009 - April 2010, Whittaker; Shaw; Spieker; Linegar 2011). Laurens (2012) confirms the significance of the NCS as a national initiative by the South African Department of Health to better the quality of health care in South Africa and to beckon leaders to foster and activate a change in the way care is given.

Improvement in the quality of service delivery leads to a healthier nation, thereby enhancing the quality of life of all citizens nationally and internationally (Whittaker *et al.* 2011, Hwang & Park 2013). Dondashe-Mtise (2012) endorses this mind set with regard to total quality management. The Royal College of Physicians in the United Kingdom (UK) have also seen the need to establish and adhere to their set practice standards to uphold their image and to foster the wellbeing of the public (The Health Foundation 2012). In teaming up with the Institute of Health Care Management, the Royal College of Nursing aims to affirm quality improvement in the form of practice team development, education and service planning (The Health Foundation 2012). The teams in this joint venture were responsible for setting their own QI goals, completing self-assessments and participating in multidisciplinary peer evaluations (The Health foundation 2012).

As noted by Vanderbilt University Medical Centre (VUM) (2010), nurses play a vital role in quality assurance and are perceived to have the most effect and impact on the quality of health care in health institutions. Draper; Felland; Liebhaber & Melichar (2008) maintain a similar stance to Vanderbilt University Medical Centre in that they agreed that nurses are in the frontline in all health care facilities globally (Draper *et al.* 2008). Draper *et al.* (2008) have realized that ensuring the involvement of all nurses, especially, front line nurses are most crucial to stepping up quality in health care. These authors have found that in fostering ownership and understanding of and supporting quality assurance initiatives, these nurses are able to produce a better standard of care (Draper *et al.* 2008). This statement was made in response to the issue that in many instances, quality improvement involvement is dominated by nurse managers (Draper *et al.* 2008, Dondashe-Mtise 2011).

## 1.2. BACKGROUND

(Hwang & Park 2013, Whittaker *et al.* 2012, Shay; Sanders & Kruger 2011, Linear, Whittaker & Van Zyl 2012) view Quality improvement (QI) programme implementation as a necessity for and a pre-requisite to accreditation of health facilities. The importance of improving nurses' QI competencies through in-service education and training is thus stressed. To achieve this high status in health care service delivery in the six priority areas (safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity) prescribed by the National Core Standards globally, a comprehensive quality assurance programme is required (The National Core Standards of South Africa (NCS: SA 2011, De Jonge; Nicolaas; Van Leerdam; Kuiper 2011). This comprehensive programme includes training of health care personnel in QA and QI (NDOH 2007).

The NCS SA (2011) and the mandate on the Policy on Quality in Health Care for South Africa dictate that all categories of undergraduate student health professionals be exposed to quality assurance training in an attempt to improve the quality of health care in the country (NDOH 2007). In-depth training in the principles and tools of quality improvement and quality methods are proposed as one of the five main steps necessary for quality management systems to gain success (Manuela 2008, Kyrkjebø; Hansen & Haugland 2001).

Newly qualified registered nurses in certain hospitals in the United States of America (USA) are expected to acquire quality improvement skills (Kovner; Brewer; Yingrengreung & Fairchild 2010). Further to this, these nurses are expected to be involved in quality assurance activities from their basic training. They are also not expected to rely on the institution for knowledge and experience to be effective as registered nurses (Kovner *et al.* 2010).

In one of the few qualitative studies traced regarding the attitudes of nurse managers towards QI programmes in the East London Hospital complex in a South African context, nurse managers (the respondents in the study) displayed negative attitudes towards QI programmes. One of the reasons given for their negative attitudes was: knowledge deficit in QI implementation arising from the lack of QI training of their subordinates (Dondashe-Mtise 2011). Comments such as staff not being aware of how to conduct QI programmes, no updated courses, and a need to conduct QI courses more frequently were echoed by respondents (Dondashe-Mtise 2011). Melaka (2007); Dondashe-Mtise (2011) and Hwang & Park (2013) have shown that problematic issues in quality of care are incorrect, information is out-of-date or ignorance in knowledge and skills by healthcare workers. Mention of

information overload as well as rapid advances in technology that health care workers cannot keep up with was also made (Meluleka 2007).

In their studies, Dondashe-Mtise (2011) and Draper *et al.* (2008) deduce that QI training and implementation is solely the concern of nurse managers (Draper *et al.* 2008, Dondashe-Mtise 2011). The public hospital under study commenced their first QI training in 2001 on entry into the Council of Hospitals Accreditation of South Africa (COHSASA) accreditation programme. The training is ongoing to date and exhibits (showcased on a graph at the hospital's recreational hall) 318 trained nursing staff; 12 medical doctors; 122 supplementary health service workers; 200 administration support and 7 maintenance staff (total of 659 staff) professional and non-professional QI trained staff (DOH: KZN 2014).

This two day on-the job QI training programme has used the 10-step Quality cycle to execute QI programmes. Undergraduate student nurses are not included in the on-the-job QI training at the hospital and neither is QI practice included in their curricula. Murray *et al.* (2010) reiterate these findings in their study on Teaching Quality Improvement. Owing to this gap in QI knowledge and practice skills, an evaluation of a QI Training programme for undergraduate student nurses in this institution was conducted to determine the value of providing such training as seen in the study by Flores, Hickenlooper, Saxton (2013).

A range of methods may be used to target health care workers with regard to training in quality (NDOH: OHS SA 2012). The Plan- Do-Check- Act cycle (PDCA) is recommended as an effective way to evaluate structure and process outcomes to peak patient satisfaction (De Jorge *et al.* 2011). Evidence of the success of this in undergraduate nurse training in quality assurance is noted (Flores *et al.* 2013). In view of the above, it is assumed that QI training for undergraduate nurses may contribute to successful accreditation of hospitals in South Africa to improve service delivery (Whittaker *et al.* 2011) with reference to studies done abroad in the United States (USA), United Kingdom (UK), Korea, Norway and India, to name but a few (Flores *et al.* 2013).

The Plan-Do-Study-Act; IHI (Institute for Healthcare Improvement) Improvement Model; CANDO (Clean, Arrange, Neatness, Discipline, Ongoing improvement), The DMAIC (Define, Measure, Analyse, Improve, and Control also known as the Six Sigma) and Lean Management are also widely used quality improvement methodologies in formal accreditation curricula, (The Health Foundation 2012, Murray *et al.* 2010). These QI techniques are introduced in a basic way to QI trainees at the institution under study (DOH: KZN 2014).

The Health Foundation (2012) reflect that not all studies showed improved knowledge, skills and attitudes after quality improvement training for health professional students. To address this, comprehensive curricula restructuring is in progress, where both patient safety in health care and the learners' concerns about student outcomes in Quality and Safety Education for Nurses (QSEN) are implemented (Durham and Van Hofwegen 2014).The authors of The Health Foundation (2012) also note that not all empirical evidence is negative, but a greater volume of current research indicates that QI training can prove effective (The Health Foundation 2012).

The intention of the research was to gauge the level of awareness of QI in undergraduate students prior to the training and determine their knowledge level post the QI training. The researcher thus saw the need to evaluate a QI training initiative conducted on undergraduate students. The purpose of this evaluation was to propose this training for the future seeing that QI training is not conducted on undergraduate student nurses at the hospital under study. It is therefore necessary to reflect on the current QI training programme of the selected hospital to understand its operation.

### **1.3. THE CURRENT QI TRAINING PROGRAMME AT THE SELECTED HOSPITAL:**

#### **1.3.1. Description of the current QI training programme for employees at the selected hospital:**

- A two (2) day on-the job QI training programme with theory on QI and practical QI project development using the 10 step quality cycle to execute QI programmes is currently conducted in the hospital under study. Undergraduate student nurses are not included in the on- the - job QI training at the hospital and neither is QI practice included in their curricula.

#### **1.3.2. Purpose of the current QI training programme for employees at the selected hospital:**

- “The ultimate goal of the QI training programme is to develop / empower people to improve the quality of care for the people they serve “(Grey’s QI Training Manual 2014:3).

#### **1.3.3. Objectives of the current QI training programme for employees at the selected hospital:**

- “To promote awareness of and instil a culture of quality assurance in the daily duties of personnel in the hospital “(Grey’s QI Training Manual 2014:3),

- “To produce a departmental QI programme to address the gaps in a specific ward or department“(Grey’s QI Training Manual 2014:3).

#### **1.3.4. Activities of the current QI training programme for employees at the selected hospital:**

- Lectures, practical sessions, team building and QI programme development was initially completed using the 10-step quality improvement cycle was recently amended to the Plan-Do-Check-Act cycle from October 2016. The undergraduate QI training programme that was conducted in this study had initiated the use of the PDCA cycle in August/September 2016.

#### **1.3.5. Outcomes of the current QI training programme for employees at the selected hospital:**

- 659 professional and non-professional QI trained staff (Grey’s Hospital QI Training Manual 2016). None of these are undergraduate student nurses. The QI training conducted for undergraduate student nurses in 2016 will now increase these statistics.

### **1.4. PROBLEM STATEMENT**

The public hospital under study does not include undergraduate students in their quality improvement training in the clinical area, which leads to their ignorance of accreditation and quality initiatives within the institution. The resultant impact has therefore lowered compliance to standards prescribed by the accreditation authorities (Melaka 2007, Hwang & Park 2013). The researcher did not find any studies on undergraduate student nurse training in quality assurance in the province of KwaZulu-Natal or in South Africa. However, Uys & Naidoo (2004:1) reported on the evaluation of the quality of care given by nurses in this province. “Many varying difficulties” were found (Uys & Naidoo 2004:1). Handing over from one shift to another, implementation of universal precautions, patient satisfaction, nursing records and management of chronic illnesses were of great concern (Uys & Naidoo 2004:1). Dondashe-Mtise (2011) found similar occurrences in her study on nurse managers’ attitudes towards quality improvement programmes in the Eastern Cape Province, South Africa.

Hwang & Park (2013) revealed that a significant lack of skills in the use of QI methods (PDSA cycle and QI tools) were most prominent in graduating nurses without QSEN competencies. In addition, a high incidence in clinical errors among the lower categories of nurses existed, hence, an increasing need for in-service in QI programmes is imperative (Hwang & Park 2013). In clinical evaluation, it has been noted that the scores of

undergraduate student nurses were drastically lower than that of nurse managers (Hwang & Park 2013). Recommendations for education, training and management strategies during undergraduate student nurse training were proposed as a resolution to these problems (Dondashe-Mtise 2011, Kovner *et al.* 2010).

For the past nine years, the researcher conducting this study facilitated a 2 session (90-minute) lecture on quality assurance to second and third year undergraduate student nurses at the Nursing Campus at the public hospital under study. No practical skills accompany the theoretical content as their training programmes do not accommodate such practice. A consistent finding by the researcher during Quality Assurance (QA) content facilitation with each new group of students was that undergraduate student nurses have very few skills, knowledge or understanding of quality assurance/improvement or accreditation at this stage of their training. The need to conduct and evaluate a QI training programme for these students using the tools and methodologies prescribed by the Whittaker (2011) and the NDOH (2007) above were thus confirmed. This study was executed to determine the effect of QI Training on the awareness, knowledge, skills, understanding and the support for QI, quality assurance initiatives and QI project development in undergraduate student nurses at the public hospital under study.

### **1.5. AIM OF THE STUDY**

The aim of the study was to conduct outcomes evaluation of a Quality Improvement Training initiative for undergraduate student nurses, at a public hospital in the Kwazulu-Natal Midlands, South Africa.

### **1.6. RESEARCH OBJECTIVES**

- To determine undergraduate student nurses' levels of awareness of QI and its effectiveness in the clinical field at a public hospital in the KwaZulu-Natal Midlands.
- To determine the knowledge level of undergraduate student nurses with regards to QI post QI training at a public hospital in the KwaZulu-Natal Midlands
- To make recommendations for future QI training initiatives for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands

### **1.7. RESEARCH QUESTIONS**

- How aware are student nurses' of QI and of its effectiveness in the clinical field at a public hospital in the KwaZulu-Natal Midlands?

- What is the level of knowledge of undergraduate student nurses with regards to QI post QI training at a public hospital in the KwaZulu-Natal Midlands?
- What recommendations are proposed for future QI training initiatives for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands?

## **1.8. SIGNIFICANCE OF THE STUDY**

### **1.8.1. Nursing practice**

QI training is necessary for the development of knowledge, skills, abilities, attitudes and morale of health professionals where the effectiveness and efficiency of health provision is concerned (Jacobs 2010). Through QI training, (QA) can be more easily interwoven into all levels of health care and more accessible in institutions (Jacobs, 2010). QI training for undergraduate student nurses in countries abroad have shown significant improvement in skills, knowledge and understanding of QI methodologies (Kyrkjebo & Hannestad 2003; Krykjebo; Hansson & Highland 2001; Van Eps; Cooke; Creedy & Walker 2006; Murray; Douglas; Gridley & Jarzemsky 2010; Hwang & Park 2013). Therefore, it is perceived that undergraduate student nurses may also benefit from QI training in the workplace in South Africa.

### **1.8.2. Nursing research**

Evaluating the impact of QI training on undergraduate student nurses' in a South African health care institution will yield valuable information with regard to their perceptions but not the actual impact (long term outcomes) on the quality of health care delivered by this specific group of nurses in the entire country (Jacobs 2010). Furthermore, research as to the benefit of QI training for undergraduate student nurses in South Africa will determine the need for its inclusion in their curricula. There is a further need to explore these learners' awareness of the importance of continually improving the quality of the care they give to their clients and their level of knowledge, skills and understanding of QI. Research has indicated that newly qualified professional nurses need to have acquired the skills, knowledge and abilities of QI in order to practice efficiently at the outset (Draper *et al.* 2008, Flores *et al.* 2013). This implies that these attributes need to be acquired during their training (Flores *et al.* 2013). Seeing that this is a short-term outcomes evaluation, more research is required to determine the impact (long term outcomes) of QI training initiatives on undergraduate student nurses' clinical skills.

### **1.8.3. Nursing education**

Consideration of the inclusion of QI training into undergraduate nurse training at an earlier level such as combining QI with the Nursing Process or introducing QI methodologies as a practical session in education may significantly contribute to their knowledge of QI. This inclusion may not only increase knowledge but also skills and abilities in QI, and the student nurses' confidence in participating in QA and accreditation (Draper *et al.* 2008).

The gap in knowledge identified is that undergraduate student nurses lack knowledge of these QI initiatives and QI project development. Further to this, a lack of awareness of their expectations during internal and external evaluation in hospital accreditation is noted (Health Foundation 2012). This results in a lack of support for QI programmes by the total nursing population in hospitals in KwaZulu-Natal and South Africa (Dondashe-Mtise 2011, Hwang & Park 2013). Nurse Managers, Quality Assurance Coordinators and Trainers need to also be alerted to the gap in regard to quality improvement training for undergraduate student nurses in the selected hospital and in health institutions in South Africa (Dondashe-Mtise 2011).

## **1.9. CONCEPTUAL MODEL**

This study will adopt the Logic Model in order to gauge the value of QI training for undergraduate student nurses in health institutions in South Africa.

### **1.9.1. Defining a Logic Model**

The most basic Logic Model is a snapshot /picture of how a programme works (CDC 2009). The model makes use of words and/ or pictures to explain the order of activities (series of events) envisaged to cause change and shows how these activities are related to the results the programme expects to acquire or is meant to function (Kellogg Foundation 2004; CDC 2009; Innovation Network Incorporation 2016). The Logic Model serves as a basis for programme planning and evaluation (Innovation Network Incorporation 2016). The theory of change shown below explains the general underlying idea of how one believes their intervention will bring about change (Operation AmeriCorps no date).

### **1.9.2. Using the Logic Model for programme evaluation:**

CDC (2009) asserts that in using the logic model for programme evaluation, whatever is measured will get done. Moreover, the main intention of any evaluation is to improve how an activity works and not just about proving that it was achieved (CDC 2009).



### **1.9.3. The Components of a Logic Model:**

**1.9.3.1. Inputs, activities and outputs** on the left side of the logic model display a program's processes or implementation. Inputs are the resources available/required for a programme e.g. funding, staff, infrastructure, partnerships, and so forth. Activities are what a program actually does to bring about intended change e.g. surveillance, partnerships, training etc. Outputs are the products or direct services resulting from the programme activities (CDC 2009, Operation AmeriCorps (no date), Innovation Network Incorporation 2016). Outputs are often shown numerically or quantified in some way e.g. numbers of staff trained, improvement in surveillance methodology, number of patient visits per year and numbers attending workshops (CDC 2009; Operation AmeriCorps (no date); Innovation Network Incorporation 2016).

**1.9.3.2. Changes expected to result from these processes are termed outcomes** which are displayed on the right side of the logic model or the outcomes side (Innovation Network Incorporation 2016). Outcomes are the changes in learning, knowledge; attitudes, awareness, condition, skills, etc. are short term outcomes. Behaviour, procedures, practice etc. are intermediate outcomes and social, economic, civil, health etc. are long term outcomes (CDC 2009; Operation AmeriCorps (no date); Innovation Network Incorporation 2016).

### **1.9.4. Approaches to the logic model**

The logic model development may assume two main approaches namely: Reverse logic (right to left) which asks "but how" questions e.g. what are the desired long term outcomes? These are newly qualified professional nurses with knowledge and ability to participate in QI activities and initiatives, improved health outcomes for the public....But how? What is the desired short-term outcome? The training of undergraduate student nurses.

Forward logic (left to right) uses "if...then" statements (Operation AmeriCorps (no date) where certain (resources/inputs), e.g. undergraduate student nurses and QI trainers are needed to operate your programme. If you have access to them then you can use them to accomplish your planned (activities) e.g. QI Training of undergraduate student nurses in the institution

### 1.9.5. What is a programme's theory of change?

Theory of change is the underlying idea of how one believes their intervention will effect change (Operation AmeriCorps 2016). According to Operation AmeriCorps (2016), three main elements determine this. These are a community problem/need; a specific intervention and an intended outcome.

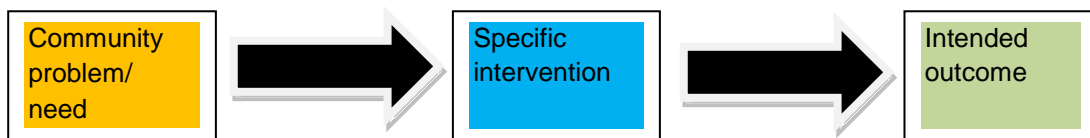


Figure 1- 1.1: Theory of Change: Three main elements

The intended change in this QI training intervention was found in the outcomes, which yielded a QI training initiative for undergraduate student nurses; interest and ability in QI in undergraduate student nurses and knowledge of QI in undergraduate student nurses.

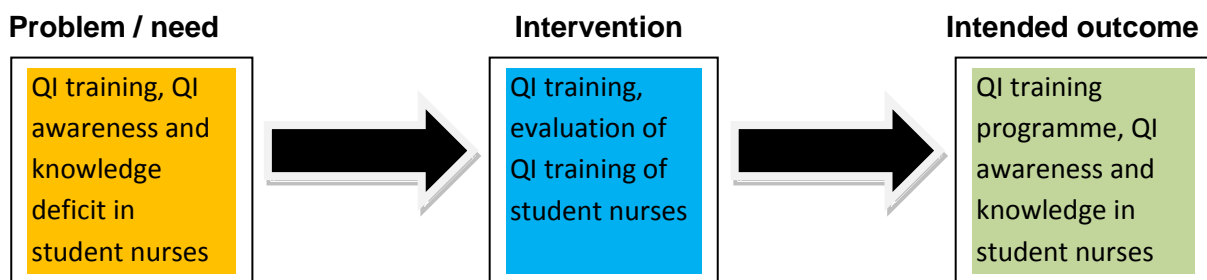


Figure 2- 1.2: Theory of change: Evaluation of a QI training programme for undergraduate student nurses.

### 1.10. Why is evaluation necessary?

Evaluation is an on-going learning cycle and a process that begins with planning, then data collection, then analysis and reflection and lastly action and improvement (Innovation Network Incorporation 2016, De Vos 2011). The latter is indicative of the aim and objectives of this study. Evaluation is necessary because it supports programme and strategic planning (Innovation Network Incorporation: 3: 2016). Thus, evaluation may contribute to the planning of future QI training for undergraduate student nurses in the hospital and possibly in the province and country. Outcomes of evaluation serve as important decision making tools when used to identify gaps and make necessary amendments to activities, strategies and budgets (CDC 2009).

#### 1.10.1. Deciding what to evaluate:

The different types of evaluations (discussed below) with appropriate evaluation questions asked at different stages of the evaluation process will focus on specific

questions. The different types of evaluations that can be completed using the Logic Model as depicted above are:

- **Process evaluation** focuses on how the programme is implemented or how well it functions. Data gathered will determine this. Questions will revolve around components, activities and target groups (CDC 2009).
- **Outcomes evaluation** focuses on the differences or changes the programme activities have made. Evaluation questions to be asked here and will focus on short, mid-term and long term outcomes (CDC 2009; De Vos 2011). Stakeholders determine what to evaluate. A range of questions need to be formulated together with the information required to answer these questions (CDC 2009). A suggestion such as 'planners should ask what strategic decisions can be made from the data that will be made available' may emerge (CDC 2009). The outcomes evaluation done in this study is described in step 2 in the Framework for Programme Evaluation below.

#### **1.10.2. A framework for programme evaluation**

Workable programme evaluation uses a step by step series of actions to improve public health activities by applying useful, viable, ethical and accurate procedures (CDC 2009). A practical, non-prescriptive six step framework with standards for effective evaluation is a tool that was designed to sum up and arrange the important components of programme evaluation. The steps involve:

- Step 1. Describe the programme
- Step 2. Create a logic model
- Step 3. Focus the evaluation design
- Step 4. Gather credible evidence
- Step 5. Justify conclusions
- Step 6. Ensure use and share lessons learnt.

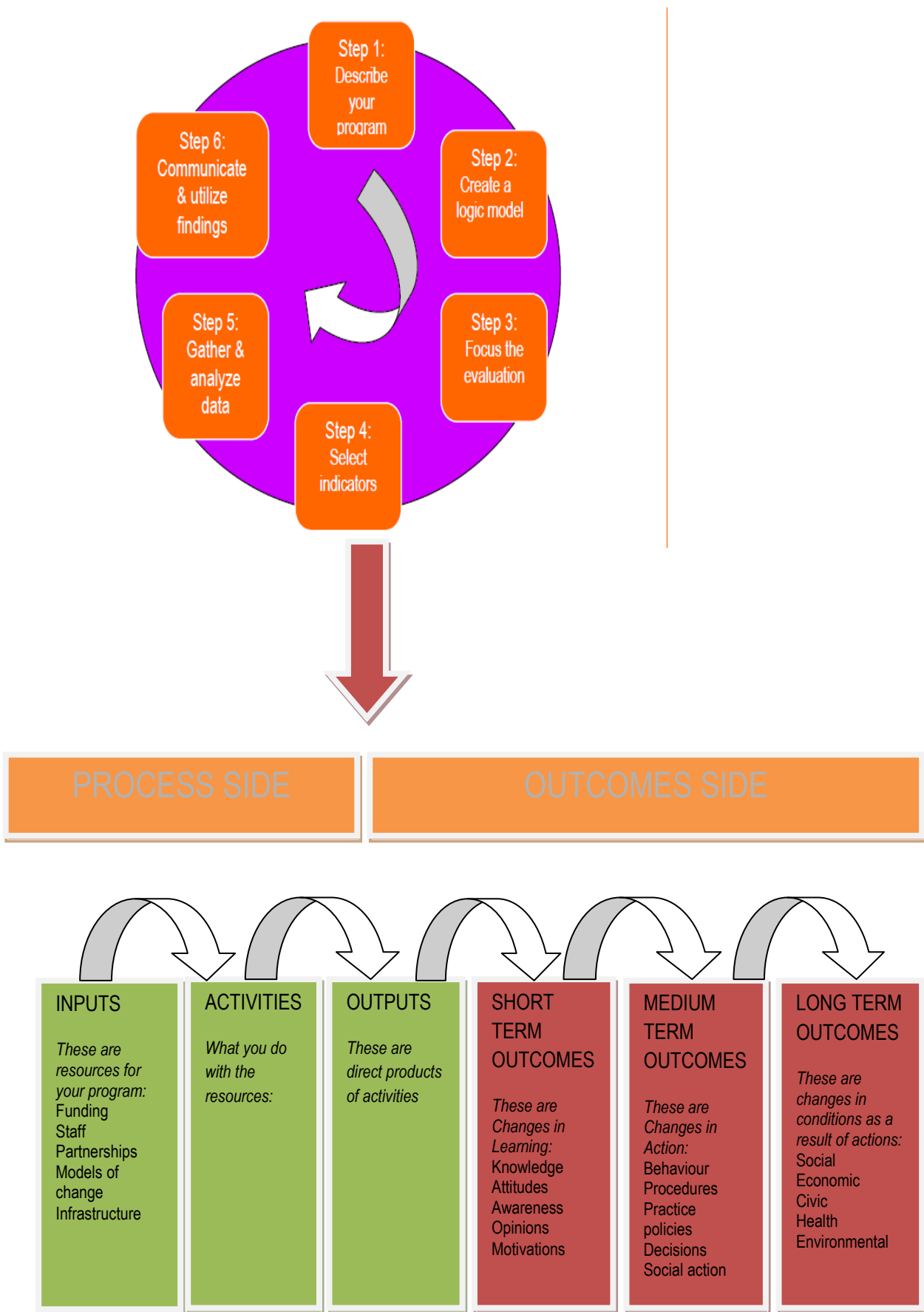


Figure 3- 1. 3: A Generic logic model layouts (CDC 2009)

The Centers for Disease Control and Prevention (CDC 2009) model in programme evaluation which was used as benchmark for programme evaluation was merely used as a guide to plan and execute this study. However, this study did not follow the exact same comprehensive pathway that the CDC model in programme evaluation does as it was a one day QI training workshop evaluation and not an entire training programme development and evaluation.

### **Step 1: Describe the programme**

This step addresses the mission and objectives of the programme which, if not done correctly, will result in ineffective evaluation (CDC 2009). The programme description includes the need, expected effects, activities and resources, stage of development, context and logic model (CDC 2009). The aim of the study was to conduct an outcomes evaluation of a one-day QI training workshop for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands, according to the need identified by the researcher. The resources required were the education and clinical authorities; QI Trainers, undergraduate student nurses (R425 and R683 nursing programmes), a QI Training programme and teaching plan, and QI training of undergraduate student nurses. The first four resources are described in the activities below. The researcher liaised with the QA manager in planning the evaluation of the teaching programme.

The Training programme consists of the aim and the content and the teaching plan described as follows: The aim was mentioned in 1.3. above (Grey's QI Training Manual, 2014:3), the content which comprises the objectives of the course; a presentation on QIP; Introduction to QI; Building a QIP; Problem Solving Techniques; Analytical Tools; Environmental Hygiene; Waste Management Audits; Preparation and Facilitation and QI Programme Presentations by the trainees. The teaching plan consists of PowerPoint presentations; group discussions; waste audits; group QI project development and presentation by the trainees (see annexure E). The QI teaching programme and teaching plan was adapted and approved by the hospital QA manager from the hospital QI training programme. The QA manager was delegated this duty by the medical manager who is the executive QA manager of the hospital.

The training arranged for undergraduate student nurses was a one-day QI training workshop which was facilitated by a QI trainer assisted by lecturers who supervised group work and data collection. The training consisted of a programme from 08h00 to 16h00 where two groups comprising 29 and the other 37 students respectively were trained on two separate days due to the large numbers requiring supervision for their QI project presentations. The

training programme for the hospital staff spans two days hence students had minimal time to build and present their QI programmes.

The trainees were seated in groups of six and seven students in semi-circles. Times for presentations and breaks were arranged and ground rules were set as follows: The training commenced at 08h30 and concluded at 16h00. Students were allowed five minute breaks every 40 minutes and ice-breakers to introduce team involvement; a twenty minute tea break and a 30 minute lunch break for refreshments. The content presented was that of the QI training content for the hospital as well as an introduction to the Plan-Do-Check-Act that was to be introduced in the next training programme for the hospital staff.

Presentations were made using power point slide shows on quality assurance and evaluation of quality initiatives in the clinical field followed by group activities involving QI programme development and presentations by student nurses. The power point presentations were in the form of lectures and discussions of the different aspects of QI mentioned in the description of the programme above. Two visual stations that displayed cleaning of floors and sharps disposals where students had to identify gaps and report on it in their groups with solutions were also part of the training. These two areas were included as topics for QI projects for groups to present at the end of the training. The practical sessions were group activities using QI tools and methodologies to build QI projects as well as present these projects in the classroom.

## **Step 2: Create a logic model**

The outcomes logic model using the forward logic is appropriate for this study as outcome evaluation is directed towards the initial phases of programme planning and tries to relate the resources and /or activities with the intended results and the theory of change in an executable programme (Kellogg Foundation 2004, CDC 2009). Forward Logic was applied since a QI training programme for undergraduate student nurses had to be planned and conducted by the QI team in order for the researcher to evaluate the training at the public hospital. Short, intermediate and long term outcomes using set out activities are accomplished in the forward logic model (Kellogg Foundation 2004, De Vos 2011). This study accomplished short-term outcomes in the one-day QI training workshop as intended.

Activities engaged in were the post-test QI knowledge evaluation of undergraduate student nurses after the QI training initiative and a course evaluation by undergraduate student nurses. On acquisition of ethical clearance from the University of KwaZulu-Natal, the researcher proceeded to obtain written consent from the stakeholders mentioned above with the research proposal and an abstract of the study, to conduct the proposed research at the Nursing Campus.

The outputs are the percentage of undergraduate student nurses trained in QI, post-test scores of undergraduate student nurses' knowledge of QI and number of undergraduate student nurses' aware of QI and its effectiveness in the clinical field in the institution. All of the outputs and outcomes are discussed in chapter 4 in the findings of the study.

The effectiveness or outcomes of the programme were evaluated against its aims, the impact against its objectives and process against its activities; processes and resources. In this study an outcomes evaluation was conducted on some of the short term outcomes of the QI training initiative for undergraduate student nurses which are the level of knowledge of these students after a one day QI training workshop and the need for further training initiatives of this nature for these students. These are discussed in chapter five of this study. Outcomes yielded were a QI training initiative for undergraduate student nurses; interest and ability in QI in undergraduate student nurses and awareness and knowledge of QI in undergraduate student nurses.

The impacts expected are recommendations and decisions by institution and education authorities regarding QI training of undergraduate student nurses in the future; improved health outcomes for the public and newly qualified professional nurses who acquire knowledge and ability to participate in QI activities and initiatives. See figure 4 below:

## PROCESS SIDE

## OUTCOMES SIDE

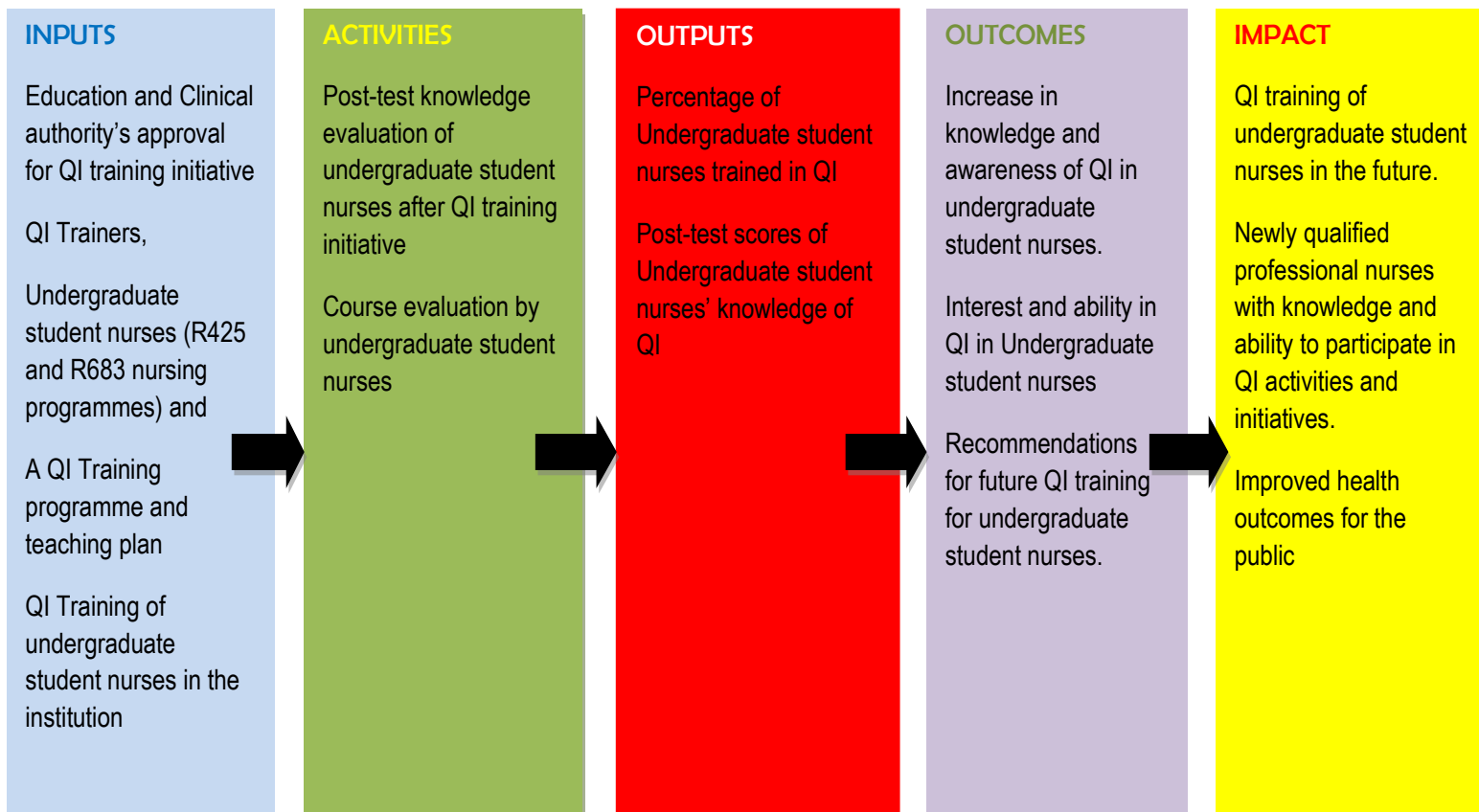


Figure 4- 1. 4: The outcomes Logic Model used in this study.

### Step 3: Focus the evaluation design

This step describes the programme design which involves the methodology of the evaluation programme. It includes the purpose, the users, the uses, questions asked and the agreements as to how the evaluation plan was conducted, ethical considerations and cost effective use of available resources (CDC 2009). (See research design in research methodology Chapter 3).

### Step 4: Select indicators

Indicators are the specific, measurable characteristics or changes that represent achievement of an outcome. Indicators are measurable and observable and answer the question: How will I know it? (Kellogg Foundation: 2006). The indicators in this study are the QI training records showing undergraduate student nurses that have received QI training, the evaluation questionnaires, the QI training program for undergraduate student nurses, the



change in QI knowledge, awareness of QI, and its effectiveness in the clinical field of undergraduate student nurses. The objectives, indicators and data sources were viewed together for correlation in the data collection phase (see chapter 3 table 1) and during the data analysis phase, the results of which are presented in chapter 4 of this study.

### **Step 5: Gather and analyze data**

This step involves the collection of data. A QA trainer and two lecturers from the nursing campus participated in this stage by observing the data collection process to enhance the credibility of the process and to strengthen the evaluation. These findings will be discussed with the QA manager who is more likely to comment on the findings and recommendations as an important stakeholder (CDC 2009). Outcome data was collected from the post-test evaluation questionnaire by the researcher (CDC 2009). The data gathered was useful in answering the evaluation questions (CDC 2009). The data was analysed using the SPSS 24 statistical analyses package.

### **Step 6: Communicate and utilize findings:**

This is discussed in the ethical considerations in chapter 3.2. Recommendations for QI training for undergraduate student nurses will be made in relation to the outcomes of the study.

## **1.11. Conclusion**

This chapter introduced and addressed the background of QI and QI training in both South Africa and internationally. The international community was reviewed related to QI training for undergraduate student nurses due to the lack of evidence available locally. The hospital under study is currently conducting QI training in South Africa but does not include undergraduate student nurses in their QI training programme. The aim; objectives, research questions, significance, problem statement, and conceptual framework applicable to the study was discussed and presented in this chapter. The logic model (conceptual framework) is also explained in detail for readers to understand the reason for application of the outcomes logic model and why it is best suited this study. Furthermore, the readers would be able to differentiate between the types of logic models.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Purpose of the Literature Review**

The literature review aims to render an overview of relevant literature sources, which will provide information pertinent to the evaluation of quality improvement training of undergraduate student nurses.

## **2.2. Scope of literature review**

The literature review in this study addresses the introduction to the literature review; background of improvement in health care; overview of Quality improvement training for nurses; Quality improvement and the nursing process; the nursing process and the PDSA cycle; the need for training in quality improvement methodologies for nurses globally; improving health care systems; Quality Improvement initiatives in South Africa; Quality and safety Education for Nurses.

## **2.3. Literature search**

An internet search using various electronic searches of library databases including EBSCO HOST: Academic search complete, Nursing / Academic Edition; CINAHL and PUBMED; and search engines: GOOGLE; GOOGLE SCHOLAR; GOOGLE CHROME, and FIREFOX were accessed by the researcher. The search terms used were: '*quality improvement AND student nurses*', '*quality assurance AND student nurses*' , '*training in quality FOR nurses*', '*quality improvement initiatives FOR nursing*', '*education on quality FOR nurses* ', '*Quality improvement training for undergraduate student nurses*' and '*quality management IN nursing*' , '*Quality improvement training for Health Care Workers*', *Plan to Do Check Act (PDCA) or Plan Do Study Act (PDSA) cycle, six sigma, lean management and curriculum, curricula, teach, learn, education, train,*

## **2.4. Introduction**

Student nurses who qualify as registered nurses need to gain knowledge, skills and experience in using tools, flow charts and root cause analysis charts to monitor, evaluate, and take remedial action in terms of quality improvement (Kovner *et al.* 2010). Studies reviewed by Kovner *et al.* (2010) reveal that hospital quality managers make great use of quality improvement methods such as root cause analysis, PDSA, Six Sigma, Statistical Process Control (SPC), 90 day improvement cycles and Toyota's lean thinking techniques in their institutions (Kovner *et al.* 2010). However, evidence that new nurses have little to no participation in QI processes or initiatives indicate that QI appears to be more of a management prerogative than of that for lower categories of nurses (Kovner *et al.* 2010, Dondashe-Mtise 2011).

Evidence that newly qualified nurses have little to no participation in QI processes or initiatives, , is also available, indicating that QI appears to be more of a management prerogative (Kovner *et al.* 2010, Dondashe-Mtise 2011, Hwang & Park 2013). Hwang & Park (2013) recognized the need for nurse managers to support lower categories of nurses in their acquisition of knowledge and skills on QI and evidence based practice. They also recommend that nurse managers develop education and training programmes or make

provision for nurses to be involved in existing QI programmes (Hwang & Park 2013). Furthermore, the authors mention that education programmes must be suited to the age, educational level and job position of nurses (Hwang & Park 2013).

In addition, Kovner *et al.* (2010) recommend that training programmes for registered nurses include Quality Improvement education as it is vital for newly qualified registered nurses to be involved in quality assurance activities from the outset, without relying on the institution for knowledge and experience once qualified. The authors further advocate that QI be included into undergraduate student nurses training as early as in their orientation to nursing and that it be included in their curriculum and clinical teaching at the outset (Kovner *et al.* 2010). According to Murray, Douglas, Girdley & Jarzemsky (2010) undergraduate nurses do not feature very well on this list. No national studies were available for review in the USA in terms of the type of quality assurance training in the workplace for registered nurses or any QI training during their undergraduate courses. Furthermore, the authors found no studies that reflected the impact of education on outcomes such as hospital acquired infections and therefore, the authors pursued their study (Kovner *et al.* 2010).

Provision for nurses to be involved in existing QI programmes (Hwang & Park 2013). Furthermore, the authors mention that education programmes must be suited to the age, educational level and job position of nurses (Hwang & Park 2013).

The need for student nurses to engage in quality improvement education and activities is stressed, which will urge them to develop conscientious attitudes towards achieving and maintaining high standards of care when they qualify (Spade 2013; QSEN; 3:2013; Hwang & Park 2013). Similar sentiments have been issued by Kovner *et al.* (2010) regarding students who were taught to collect data using the Plan, Do, Act (PDCA model) and analyse and disseminate data from previous projects or from planned projects prior to QI education. The results of this education were that students successfully practiced the QI methodologies taught to them (Flores *et al.* 2013). The teaching involved an academic-practice partnership mentoring of the students (Flores *et al.* 2013). Flores *et al.* (2013) therefore suggest that a group of qualified nurses participate in quality improvement activities in institutions in lieu of the fact that without QI education, not many have the required skills, knowledge or attitudes to advance or initiate quality improvement strategies once problems are identified.

Clinicians were put through randomized and non-randomized controlled and time-series studies on the effectiveness of teaching quality improvement concepts in terms of skills, attitudes and behaviours (Romsai; Win dish; Chakra borty; Feldman; Rubin and Bass, 2007). The study showed that the majority of quality improvement curricula produce effective outcomes in terms of increased knowledge and ability to engage in QI activities (Romsai *et*

*al.* 2007). Recommendations for more studies to prove whether teaching methods are beneficial to clinical practice were made (Romsai *et al.* 2007).

## **2.5. Background of Quality Improvement in health care**

There are minimal recent studies on quality improvement training for undergraduate student nurses. The Health Foundation (2012) report that a great deal has been written on the need for professionals to increase quality in health care, more so for doctors (more than 5000 articles). However, many articles are related to training approaches and not any specific levels of nurses being trained (Health Foundation 2012). The Health Foundation's study entitled Evidence Scan is a secondary literature source which provides a literature review of articles on quality improvement training for health professionals. All the studies in this review were conducted before 2005 hence, only a few were accessed for review, and have all been evaluated in the study done by the Health Foundation (2012).

According to the Health Foundation (2012) and Hwang & Park (2013:8) the fast pace of advancements in technology and medicine has placed an increasing demand on health care facilities to heighten the quality of their services. The Health Foundation (2012) adds that population growth has expanded and lifespan has increased, yet people's health suffers amid inadequate human and financial resources. These significant changes therefore lead to a greater emphasis on comprehensive patient-focused care as well as patients receiving their money's worth where health care is concerned (Health Foundation 2012). The priority therefore is the need that all health care workers have sufficiently developed knowledge and skills to execute quality patient care (Health Foundation 2012).

The Health Foundation (2012: 8) reiterate that "Quality Improvement is not just about improving the existing things and making a better effort but needs a fresh type of knowledge and skills to make quality improvement". The components of this knowledge include: "the wider context; human behaviour; needs and preferences of people who use health service; health care as a process and the nature of knowledge" (Health Foundation, 2012: 8). In Norway and the USA, a significant increase in knowledge and skills in quality improvement in undergraduate student nurses after exposing them to practical quality assurance activities and introductory theory courses was noted (Kyrkjebo *et al.* 2001).

Pre-tests and post-tests were part of the educational process (Kyrkjebo *et al.* 2001; Van Eps: 1 Cooke, Creedy & Walker 2006; Murray *et al.* 2010). Presentations in the form of reports, flow charts, cause and effect diagrams, the quality assurance process, results, quality improvement tools, a storyboard (a graphic illustration of the project using the QI process) and recommendation criteria were made by the undergraduate student nurses (Kyrkjebo

et.al. 2001; Murray *et al.* 2010; (Blake, Kohler, Culler, Hawley & Rask, 2012, Van Eps: 1 *et al.* 2006).

Overall, learners reflected a greater level of readiness for practice in their undergraduate capacities and maintained the necessity of quality and safety competencies for nursing practice (Durham & Van Hofwegen 2014). The development of professional identity, professional growth and correlation of theory to practice, which fostered a preparedness to transition to qualified/registered nurses had also emerged (Blake *et al.* 2012; Van Epps *et al.* 2006). During Quality and Safety Education in Nursing (QSEN) sessions in healthcare for undergraduate student nurses, the effectiveness of root-cause analysis was noted. The nurses made significant progress in dealing with problems such as medicine errors (Dolansky & Moore 2013). These specific skills, knowledge and abilities clearly defined what had to be included in the undergraduate nurse training courses (Durham & Van Hofwegen 2014). Twenty two schools of nursing in San Francisco Bay Area, showed an increase in academic- clinical cooperation and success in the implementation of the QSEN content into the nursing programmes (Durham & Van Hofwegen 2014).

## **2.6. Overview of Quality Improvement training for nurses**

Clinical nurses are expected to implement quality improvement measures in their practice (Dondashe-Mtise 2011), however, it has been noted that a very small percentage or none of the undergraduate nurses are exposed to quality improvement training or experience in their coursework (Murray *et al.* 2010, Hwang & Park 2013). Studies conducted in Korean hospitals expressed the necessity of improving QI abilities to lower clinical errors by nurses (Hwang & Park 2013).

Undergraduate student nurses are trained and practice the use of the nursing process; which is a means to promote and achieve quality nursing care. However, they lack the ability to apply it as required (Uys & Haberman 2005, Hagos; Aleseged; Balcha; Berhe & Aregay 2014). Problem solving and decision making is also meant to be part of their nursing care activities, but as mentioned above, they are not able to put this into practice (Uys & Haberman 2005). Clinical professionals themselves reveal that there are deficiencies related to their skills and knowledge, state the need for continuing medical education (CME) and other methods of learning for improved performance (The Health Foundation 2012). Clinical errors were found to be lower among nurses with high QI scores (Hwang & Park 2013).

Clinical professionals themselves reveal that there are deficiencies related to their skills and knowledge, state the need for continuing medical education (CME) and other methods of learning for improved performance (The Health Foundation 2012). Clinical errors were found to be lower among nurses with high QI scores (Hwang & Park 2013).

Newly qualified nurses were used in a study in 2008 in hospitals from 51 metropolitan areas in the Bureau of the Census Designated areas and 9 metropolitan rural areas in 34 states and the District of Columbia (DC) (Kovner *et al.* 2010: 30).

Responses to perceptions of preparedness to practice as registered nurses with QI knowledge and skills received in their basic education were as follows: 38, 6% thought that they were poorly to very poorly prepared or had never heard of QI; 95, 6% thought they were very well or reasonably well prepared to prevent nosocomial infections and only 23, 3% indicated that QI training was very helpful for their jobs (Kovner *et al.* 2010). Kovner *et al.* (2010) report that training programmes for registered nurses should include Quality Improvement education.

## **2.7. Quality improvement and the nursing process**

The nursing process is part of the course content in all undergraduate nursing programmes in the institution studied (DOH: KwaZulu-Natal 2012). Undergraduate student nurses are trained and practice the use of the nursing process; which is a means to promote and achieve quality nursing care. However, they lack the ability to apply it as required (Uys & Haberman 2005, Hagos; Aleseged; Balcha; Berhe & Aregay 2014). Problem solving and decision making is also meant to be part of their nursing care activities, but as mentioned above, they are not able to put this into practice (Uys & Haberman 2005). Uys & Haberman's (2005) review of research where several countries have adopted the nursing process in their nursing care, have revealed that although it is the most effective way of executing comprehensive patient care, many deficiencies are evident in their implementation thereof. Unlike the quality improvement cycle/process, the nursing process does not include the step of remedial action to address problems in nursing practice. The phases in the nursing process are: 'collecting and assessing the problem, planning the care and defining the relevant objectives for nursing care; implementing actual interventions and evaluating the results' (Uys & Haberman, 2005, Meyer; Naude; Shangase & Van Niekerk 2009: 40-76). The Quality Improvement process, however, comprises of steps such as setting standards, performance evaluation and remedial action (Muller 2010, Meyer, *et. al.* 2009).

The researcher perceived that QI training is not offered to undergraduate student nurses at the hospital under study due to the application of the nursing process in nursing practice. The nursing process may not suffice in making nurses aware of the need to improve the quality of patient care seeing that documentation may not always reflect actual care given (Uys & Haberman 2005).

Krykjebo & Hanestad (2003) demonstrated the similarity and the difference in the focus of the nursing process to the PDSA cycle in terms of defining a problem, having knowledge of

the process, detecting the cause, finding solutions, making small changes and performing a test on their subjects. The research process is also compared here but does not have a change or remedial action phase (Krykjebo & Hanestad 2003). The nursing process may only address issues of individualized errors relating to patient care whereas PDSA (QI) is related to systems errors in human (staff) and material resources (equipment and supplies) (Dolansky & Moore 2013, De Jonge et.al. 2011). A suggestion is that QI processes be incorporated with the nursing process in undergraduate nurse training programmes was also made by authors Krykjebo & Hanestad (2003).

## **2.8. The need for training in Quality improvement methodologies for nurses globally**

The World Health Organization decreed a global priority for quality in health care in 2003 (Adindu 2010, The Health foundation 2012). The address to the global community, particularly to the member states in Sub-Saharan Africa, called for the need to develop national quality care programmes; evaluation processes and training of health care workers with skills, attitudes and knowledge to enhance the quality of care in developing countries (Adindu 2010, Hwang & Park 2013).

A subsequent action was an outcome based evaluation of the quality of care in these countries (Adindu 2010, Stavropoulos & Stroubouki 2009). Authors of The Health Foundation (2012) noted that various initiatives and practices have been applied to healthcare to improve quality. These include QI cycles; clinical audits, guidelines; evidence-based medicine among others, all of which require new and improved skills and knowledge (The Health Foundation 2012). The Health Foundation (2012) has learned that education and training approaches are not always focused on to meet these needs, yet they see training as having a significant impact on quality in health care.

## **2.9. Improving health care systems**

'Systems thinking' is an approach that acknowledges entire system errors as the most common reason for mistakes in organizations, however, individual errors are also noted to occur (De Jonge *et al.* 2011:4). This approach also connotes that care comprises of related actions that impact on each other and on the end result of patient intervention goals (De Jonge *et al.* 2011:4). Studies done by the Leapfrog group in the United States of America have deduced that most hospitals in the country show minimal improvement in quality and safety. They noted that this has been apparent from over a decade ago (Institute of Medicine 2011), hence, there a need to improve the country's health care system (Dolansky & More 2013). The reports namely: 'To Err is Human: Building a Safer Health System', and thereafter, 'Crossing the Quality Chasm' created an impact on health care professionals to

improve health care effects (Dolansky & Moore 2013: 3, Health Care Reform 2012). National Initiatives such as The Institute for Healthcare Improvement (IHI): 'Transforming Care at the Bedside', '5 Million Lives Campaign' and 'The Triple Aim' were developed to address the quality and safety issues in health care with a view to improve them (Dolansky & Moore 2013: 3).

Regulatory agencies have also started such as the National Patient Safety Goals, Core Measures and Hospital Acquired Conditions (HAC), and Never Events in the last ten years in the US (Dolansky & Moore 2013). To name but a few examples illustrated here, there are reports of thousands of central intravenous line infections annually (Dolansky & Moore 2013, Kusek 2012). Other safety issues include patient falls, which is also a critical problem in health care institutions. The Centers for Disease Control and Prevention (CDC) report that falls in patients over the age of 65 years are the major cause of injury in this patient population (Christopher Trotter; Strong; Dubendorf 2014).

Patients with heart failure in institutions where patient education by nursing staff is not implemented (for various significant reasons), display the highest incidence of 30 day re-admission rates (Stamp; Machado & Allen 2014). A similar study conducted in 45 hospitals in Australia, which focused on a learning project, devised to achieve better outcomes with regard to discharge management of patients with acute cardiac conditions to improve patient compliance to treatment, education and referrals (The Health Foundation 2012). Medical errors account for one of the top ten causes of deaths in America every year (98000 deaths) (De Jonge *et al.* 2011).

The National Health System of London saw it fit to implement a dashboard system of measuring quality devised by an organization called The Southeast Coast Quality Observatory (Riley & Cheema 2010). This system of monitoring quality would gear health care organizations towards improvements together with an 'early warning system' for health care associated infections (HCAI) and serious untoward incidents (SUIs), (Riley & Cheema 2010). The focus of the quality monitoring system was on safety in health care where more than 80 benchmarking tools as well as products and analyses for use in the health institutions were developed (Riley & Cheema 2010). Some of the critical areas for measurement mentioned in this paper are the monitoring of Multi Resistant Staphylococcus Aureus (MRSA), Clostridium Difficult Associated Disease (CDAD); catheter associated urinary tract infections (UTI's); in-hospital patient falls and drug administration errors (Riley & Cheema 2010).



## **2.10. Quality improvement initiatives in South Africa**

The South African National Department of health is in the process of conducting a pilot study on six flagship government hospitals to implement the new National Health Insurance package. This quality initiative is based on an updated quality assurance programme termed the 'Make me look like a hospital project' in line with a strategy called The National Core Standards (NCS) (NDOH: South Africa 2011; Whittaker *et al.* 2011). Seven domains (patients' rights, patient safety, clinical governance & clinical care, clinical support services, public health, leadership and corporate governance, operational management and facilities, and infrastructure) were identified as the areas that pose serious risks to quality or safety in health care institutions according to the World Health Organization (DOH 2011); Whittaker *et al.* 2011). Within the seven domains, quality improvement is in domain five, which are Leadership and Corporate Governance although quality and safety form part of every domain (NDOH South Africa 2011).

### **2.10.1. The National Health Insurance Initiative:**

The South African National Department of health is in the process of conducting a pilot study on six flagship government hospitals to implement the new National Health Insurance package. This quality initiative is based on an updated quality assurance programme termed the 'Make me look like a hospital project' in line with a strategy called The National Core Standards (NCS) (NDOH South Africa 2011; Whittaker *et al.* 2011). The National Health Insurance is an initiative by the government, non-governmental organizations and the private sector to afford all South African citizens equality in terms of health care (DOH: South Africa 2011). A public-private partnership is necessary to drive this process hence, the need to introduce this type of health package where private institutions may be available to all South African citizens (DOH: South Africa 2011).

Public hospitals therefore, need an upgrade with regard to quality service delivery using quality standards for human and material resources (DOH: South Africa 2011). Previous quality assurance programmes led by the Council for Health Services Accreditation of South Africa (COHSASA) aided in the improvement of health standards to an extent. The National Minister of Health, Doctor Aaron Motsoaledi, together with provincial and district heads of departments have put together this new initiative coupled with the 'Make Me Look Like A Hospital Project' to fortify quality in health care (NDOH South Africa 2011). There is no evidence of training in quality improvement for undergraduate student nurses in the hospital mentioned, yet they are also included in initiatives and evaluation of health services such as accreditation.

### **2.10.2. The National Core Standards (NCS)**

Seven domains (patients' rights, patient safety, clinical governance & clinical care, clinical support services, public health, leadership and corporate governance, operational management and facilities, and infrastructure) were identified as the areas that pose serious risks to quality or safety in health care institutions according to the World Health Organization (NDOH South Africa 2011); Whittaker *et al.* 2011). To fast track quality of care at health institutions, six patient centred priority areas identified from patient satisfaction surveys (NDOH South Africa 2011); Whittaker *et al.* 2011). Nurses are key persons in ensuring that these six priorities namely: Values and attitudes of staff, reducing waiting times, cleanliness of hospitals and clinics, patient safety, prevention of infection and making medicines, supplies and equipment available for patients (NDOH South Africa 2011); Whittaker *et al.* 2011). Nurses are also expected to ensure that the set standards in these areas are met and are involved in the evaluation processes (NDOH South Africa 2011); Whittaker *et al.* 2011).

### **2.10.3. The Mother-Baby friendly hospital initiative**

This initiative (formerly known as the baby-Friendly Hospital Initiative or BFHI) is a strategy that focuses on the holistic of mother and baby in the facility and the community (DOH: 2001). The BFHI was established in 1993 in line with the WHO/UNICEF policy and guidelines 'Ten steps to successful breastfeeding' with the aim to promote, protect and support breastfeeding (NDOH: South Africa 2001). The WHO recorded between 3000 and 4000 infant deaths globally due to a decline in breastfeeding. The selected hospital has adopted the BFHI strategy and has continued with the assessment and evaluation of maternal and child health practices accordingly, yet many maternity staff remains unaware of the BFHI concept (NDOH: South Africa 2001, 2012). One of the ten steps to successful breastfeeding include the training of all health care workers in the skills necessary to implement this policy (NDOH: South Africa 2012).

### **2.10.4. The Waiting Times Survey**

This survey involves periodic evaluations of patient waiting times at outpatient facilities to improve patient waiting times which impacts on the accessibility, effectiveness and efficiency of health care services delivered to outpatients. Guidelines regarding mechanisms to measure and improve patient waiting times are laid out in the DOH Policy on Outpatient Waiting Times. Since the patient waiting time standard is 2 hours from the inception of entering the facility to the time the patient leaves, the facility is expected to comply to prevent inaccessibility of health services and a greater demand on the health system (NDOH: South Africa 2015).

### **2.10.5. The Negotiated Service Delivery Agreement (NSDA)**

Another quality improvement initiative presently under way in South Africa is the Negotiated Service Delivery Agreement (NSDA) which is a primary health care engineered programme introduced in October 2010 (Whittaker *et al.* 2011). This agreement falls in line with the Millennium Development Goals (MDGs) which are global initiatives to address all the issues related to an increased morbidity and mortality of the international population especially, in lower socio-economic countries (Whittaker *et al.* 2011). The NSDA seeks to increase the life expectancy of adults and children by addressing the HIV/AIDS pandemic, Tuberculosis, strengthening the effectiveness of health systems and improving the quality of care given at all spheres of the healthcare system in South Africa (Whittaker *et al.* 2011). It is therefore imperative that all health professionals (of which undergraduate student nurses belong to as training professionals) be given formal quality improvement training to increase their knowledge and skills on quality improvement project and initiatives, (NDOH: South Africa 2007).

'Targeting quality assurance interventions' addresses interventions aimed at different categories of people namely health professionals, patients, the community and systems ((NDOH: South Africa 2007:6). Jadali; Jamal; Dimassi; Ammar & Tchaghchaghian (2008) and Draper *et al.* (2008) note that nurses play a pivotal role in providing quality care to patients and have a passion for producing favourable patient outcomes. Nurses are trained to recognize quality improvement needs and implement these corrective measures after evaluations are completed for accreditation (Jadali *et al.* 2008).

There is no mention of the category of nurses and their training needs in the study by Jadali *et al.* (2008). This is also seen in the case of newly qualified registered nurses in certain hospitals in the USA (Kovner *et al.* 2010). These nurses are expected to acquire quality improvement skills from their basic training in order to be effective as registered nurses (Kovner *et al.* 2010). This however, is not the case in the hospital under study as QI training is not included in basic training neither are undergraduate nurses included in on-the-job QI training at the hospital. It has however been noted, that quality improvement is solely the concern of nurse managers (Draper *et al.* 2008, Dondashe-Mtise 2011:22-23).

The qualitative enquiry among nurse managers and exploring their attitudes towards QI programmes was chosen due to its relevance to QI training for nurses as a whole. From this study, it was elicited that QI training and implementation is also seen as a nurse manager's responsibility (Dondashe-Mtise 2011). Knowledge deficit in terms of QI implementation was one of the problems that contributed to the negative attitudes of nurse managers towards QI programmes (Dondashe-Mtise 2011). The rationale behind this finding was the lack of QI

training programmes to upgrade staff on QI programmes (Dondashe-Mtise 2011). Comments such as staff not being aware of how to conduct QI programmes; no updated courses and a need to conduct these courses more frequently, were made by participants (Dondashe-Mtise 2011).

#### **2.10.5. The infant and peri-natal mortality meetings**

These are meetings held by all health professionals working in the obstetrics, paediatrics and neonatal units at the institution under study. This initiative is prescribed by the national department of health for all government health institutions and is in operation for many decades. The above-mentioned staff members meet quarterly to discuss issues around infant and peri-natal morbidity and mortality and how to improve management of this patient population ((NDOH: South Africa 2012-2016: 16).

#### **2.11. Quality and safety Education for Nurses**

Quality and Safety Education for Nurses Initiative (QSEN) initiative (QSEN Institute) funded by the Robert Wood Johnson Foundation was formulated in 2005 by leaders from nursing schools throughout the US. This initiative designed six QSEN competencies with undergraduate and graduate skills and knowledge and attitudes criteria for each competency (Dolansky & Moore 2013). These competencies are: patient-centred care, teamwork and collaboration, evidence-based practice, quality improvement and informatics (Dolansky & Moore 2013).

The QSEN Institute who initially provided education for undergraduate nurses have only now taken on the challenge of including quality and safety education for all nurses (Dolansky & Moore 2013; Durham & Van Hofwegen 2014; Haas 2012). This move is to ensure skills, knowledge and attitudes for improved quality and safe care by re-planning the way they practice nursing care (Dolansky & Moore 2013). The authors mention the need for a migration from individual care and personal drive to care of the system and systems thinking to speed up the improvement process (Dolansky & Moore 2013). From the studies in the literature review, there appears to be no proof regarding the effectiveness of training registered or trained nurses versus that of student nurses in quality improvement but it is speculated that both categories of nurses will benefit from the training (Health Foundation 2012).

Quality and safety of health care systems can be enhanced by the utilisation of data to evaluate the results of care and exercise corrective measures to ensure a sustained process of improvement (Centers for Medicaid: cms.gov. 2012. p. 6). The Plan-Do-Study-Act is recommended for nurses to execute their QI activities as a form of advanced knowledge in

QI (Institute of Medicine 2011). This modern QI methodology is an elementary cycle of setting aims, evaluating, reflecting, and revising or changing methods of care (Institute of Medicine 2011).

## **2.12. Recommendations for the need for Quality improvement training for undergraduate student nurses in South Africa.**

The researcher had identified that student nurses in the hospital studied are not trained formally in QI. From the literature studied, nurse managers and leaders in institutions felt strongly that lower categories of nurses require quality improvement training in order to be more effective in their practice (Price; Fitzgerald; Kingsman 2007). Dondashe-Mtise (2011) found that one of the factors that resulted in negative attitudes were that of QI education and training or the lack thereof (Dondashe-Mtise 2011). Nurse managers felt that there was a lack of, no training or training that was not revised or timeously updated (Dondashe-Mtise 2011). No specific category of nurses were mentioned in the institutions in South Africa, hence, it is not known whether student nurses are included as clinical nurses. Since students are not always considered the work force in some health institutions they may not be included in the staff establishment (Dondashe-Mtise 2011).

Other nurse managers related that all staff needed to be trained (Dondashe-Mtise 2011, Kovner *et al.* 2010). The reason for this assertion was that lower categories of staff did not want to take responsibility for QI (Dondashe-Mtise 2011, Kovner *et al.* 2010). Lower categories of staff felt this due to the training being offered to managers only and that QI is the business of managers only (Dondashe-Mtise 2011, Kovner *et al.* 2010). Certain staff members were of the opinion that managers steer the programmes but create added work for lower categories of nurses (Dondashe-Mtise 2011). Another manager stated that in-service training on the QI programme and mentorship on how to implement the QI program are not conducted regularly (Dondashe-Mtise 2011). Yet other nurses state that they have knowledge of QI but will not be involved in it, owing to the fact that it is a manager's responsibility to carry out (Dondashe-Mtise 2011). One nurse manager commented that staff do not know about QI, therefore she educates them and sees the need for QI training for them (Dondashe-Mtise 2011).

Studies reviewed internationally have reflected specific QI training for undergraduate nurses with more positive than negative outcomes (Kyrkjebo *et al.* 2001, Kovner *et al.* 2010 Murray *et al.* 2010; Dolansky & Moore, 2013; Durham & Van Hofwegen 2014). There is however, a need to evaluate the impact of Quality Improvement training for undergraduate students in a hospital in Kwazulu-Natal.

### **2.13. The need for the study on the evaluation of a Quality improvement training programme for undergraduate nurses at a public hospital in the KwaZulu- Natal Midlands, South Africa.**

The studies reviewed internationally have reflected specific QI training for undergraduate nurses with more positive than negative outcomes (Kyrkjebo et.al 2001; Kovner *et al.* 2010 Murray *et al.* 2010; Dolansky & Moore 2013; Durham & Van Hofwegen 2014). There is however, a need to evaluate the impact of Quality improvement training for undergraduate students in a hospital in Kwazulu-Natal.

The researcher had decided to pursue this study since a gap was identified in her institution regarding the knowledge, skills and experiences of student nurses related to quality improvement initiatives and activities. It is further noted that students are not included in quality improvement training in the institution studied, hence the need to enlighten the managers on this. The study on nurse's expectations of quality improvement training done in post graduate studies reflected the need for QI training to increase knowledge, skills and abilities (Stavropoulos & Stroubouki 2009). These sentiments are also echoed by authors (NDOH: South Africa 2007); Flores (2013); Kovner *et al.* (2010) and Dondashe-Mtise (2011). As mentioned above, the study by Stavropoulos & Stroubouki (2009) was not done on undergraduate but post graduate student nurses. However, it is evident that the expectations match those of any education or training programme.

The study also informed the researcher whether the support of student nurses will aid in strengthening these quality improvement initiatives. In addition to the gap in skills, knowledge and attitudes of student nurses in QI, the researcher has identified students as not being an integral part of quality improvement training and initiatives such as accreditation (Dondashe-Mtise 2011). There is no evidence to show student nurse training in quality improvement at hospitals in South Africa, however, this was the only study located that mentioned QI training requirements for nurses in South Africa. The researcher therefore decided to conduct this study to suggest that QI training for undergraduate student nurses be considered in order for health initiatives such as the Make Me Look Like A Hospital Project, the National Core Standards, the National Health Insurance and many other national health initiatives to be strengthened and supported (2011). The researcher also attempted to explore whether QI training can be included in student nurse training in the course evaluation questionnaire and recommendations.

### **2.14. Conclusion**

Chapter two focused on a literature review of quality improvement training for nurses; quality improvement and the nursing process; the nursing process and the PDSA cycle; the need

for training in quality improvement methodologies for nurses globally; improving health care systems; quality improvement initiatives in South Africa; quality and safety education for nurses and the need for quality improvement training for undergraduate student nurses in South Africa. The information extracted from the sources provided valuable input regarding QI training; its impact on the knowledge and skills on nurses and particularly student nurses and its value in health care.

## **CHAPTER 3: RESEARCH METHODOLOGY**

### **3.1. Introduction**

The research methodology utilized in this study is aligned to its aim, which is an outcomes evaluation of a QI training initiative for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands. The training programme (See appendix E) involved a one-day QI training workshop, which was modified from the two-day hospital QI training course. This course is held annually for all categories of staff excluding undergraduate student nurses. The intention of the research was to gauge the level of awareness of QI in undergraduate students prior to the training and their knowledge level post the QI training. A recommendation for future QI training of this nature for undergraduate student nurses is also intended by this study. A full day's QI training of four and a half hours of theoretical presentations and one and a half hours of practical group work and presentations by the students was and successfully conducted. The research followed a quantitative, non-experimental descriptive evaluative design. The instrument used was a self-administered structured questionnaire, which was handed to the students after the training and collected within two weeks of the study.

### **3.2. Research paradigm**

A positivist research paradigm underpinned the study. The positivist paradigm (positivism/ logical empiricism) which maintains that scientific knowledge can only be acquired through the use of logical deductive reasoning, examining details of a whole with the intention to generalize these parts to the entire population or universe (Burns & Grove 2009) was applied in this study. An objective stance was adopted by the researcher (by not interacting with the subject/s) in the research study to prevent any form of bias (Burns & Grove 2009). The researcher moved from the known to the unknown by discovering the effect and relevance of QI training on undergraduate student nurses in the chosen hospital and in health care provision (Burns & Grove 2009). This, which may apply to the greater population of student nurses in South Africa and countries not practicing QI training for undergraduate student nurses.

### **3.3. Research approach**

A quantitative approach was used to conduct this study. Quantitative research is based on positivism, which assumes a formal, objective and systematic course of action, using numerical data to access information on a subject (Burns & Grove 2009).



### 3.4. Research design

The study assumed a non-experimental, quantitative descriptive, post-test only evaluative design using a structured questionnaire. The intention of the researcher was to assess the awareness of QI and QI initiatives and to describe the level of knowledge of undergraduate students after quality improvement training at a public hospital in the KwaZulu-Natal Midlands, and assess the need for future training of this nature for undergraduate students. The descriptive approach in quantitative research probes the state of a phenomenon in its present condition (Williams 2007). Due to its objective nature; the descriptive quantitative approach eliminates researcher bias (Burns & Grove 2009). A post-test only design is simple and easily understood; it may be conducted with one group (no comparison group) or two groups (comparison group) of participants (University of Minnesota accessed 2016).

Studies showing the benefits of QI training in undergraduate student nurses quoted in this study were mostly non-experimental pre-and post-test design applications (see background and literature review) hence, the researcher did not anticipate weaknesses in the post-test only non-experimental design without a comparison group or a pre-test.

The QI training was the intervention implemented, followed by a short survey (the post-test) (University of Minnesota 2016) to evaluate the students' level of knowledge and the need for further QI training initiatives for these students at the hospital under study, and possibly in the province and country. This study did not include a comparison group. Participants were asked questions such as "what was the impact of the intervention?" The Provincial Centre of Excellence for Child and Youth Mental Health at CHEO (CHEO 2008). The surveys will be used to provide feedback and plan and make changes for future intended QI training initiatives (University of Minnesota 2016). The survey which is highly reliable being a structured questionnaire as well as its ability to obtain both factual and attitudinal data (Burns & Grove 2009) was well suited to this study.

Although non-experimental designs are the weakest in terms of internal validity for demonstrating causality (assessing the cause-effect relationship between a programme and its outcomes) (Bamberger 2011, Brink, van der Walt, van Rensburg 2015) it is the least expensive and may be strengthened by constructing a plausible argument and controlling for contextual and confounding factors (Evaluation Design ppt. 2016). Non-experimental designs are very useful in generating knowledge in many different situations where it is difficult or unethical to conduct experimental research (Brink *et al.* 2015). The reason for threats to internal validity in a study of this nature is the difficulty in establishing whether some students were already exposed to QI information in well-established QI departments or that students read information on QI before the training. The post-test only design was used

due to the delay in ethical clearance obtained for the study. Time was limited as the data collection was planned to take place during the students' four-week stay for their theory sessions at college. Data collection took place on the 4th and 12th September 2016.

### **3.5. Research site/setting**

The campus, attached to a level three (tertiary) public hospital, which is the workplace of the participants, (an urban area) in the KwaZulu-Natal Midlands, constituted the research setting where undergraduate student nurses underwent the first QI training conducted for student nurses at this institution. Nursing courses made available at the campus are the (SANC Regulation 425), a four year diploma leading to registration as a professional nurse, the two year bridging course (SANC Regulation 683) from an enrolled nurse to registration as a professional nurse, a one year post basic diploma in midwifery (SANC Regulation 254) and a two year bridging course from an enrolled nurse auxiliary to enrolled nurse (SANC Regulation 2175).

A tertiary institution is a level within South Africa's public health system. South Africa's public health system is a three tier system which provides primary, secondary and tertiary health services (Cullinan 2006). Primary health care services consist of primary health clinics that are the first point of entry for health care for South African citizens (Cullinan 2006). Secondary health care consists of the district (level 1) and regional (level 2) care hospitals that receive referrals from the primary health care clinics as the next level of health care services (Cullinan 2006). District hospitals are the first level of referral from the primary health care clinics. Regional hospitals provide care by specialists and general practitioners (Cullinan 2006). Tertiary health care services consist of academic hospitals that deliver specialised and advanced health care and training for health care professionals (Cullinan 2006).

The selected hospital comprises of twenty-one 14 to 27 bedded mixed male and female wards, a casualty and an outpatient department. Included in the 21 wards are medical, surgical, obstetrics, gynaecology, paediatrics, intensive care, cardiac care, renal, neurology and oncology units. The staff complement at the institution is as follows: professional nurses: 431, enrolled nurses: 107, enrolled nursing assistants: 94, undergraduate student nurses: 4 year diploma: 200 (30 third year without QA content and bridging course: 80 (first year: 40, second year: 40).

## **3.6. Research participants (population and sampling)**

### **3.6.1. Study population**

The study population initially comprised of the two classes of undergraduate student nurses 77. The two groups of undergraduate nursing students were: 1) second year students in the R683 nursing programme who complete 2 years of training to qualify as registered nurses and had a former 2 year training to qualify as enrolled nurses (Nursing Act 33 of 2005). These students initially did not meet the minimum criteria to qualify as registered nurses and hence had to train for 2 years for enrolled nurse qualifications (Nursing Act 33 of 2005). Enrolled nurses are expected to function on a lower level than registered nurses and assume lesser responsibility due to the calibre of their training. 2). Third year student nurses in the R425 nursing programme who meet the criteria to qualify as registered nurses and engage in a 4 year training course were chosen as the second group of nurses for the sample required.

These 2 groups of student nurses receive Q A theory in their Ethos and Professional Practice lectures and may not be included in the QI training that the hospital staff engage in. However, the sample was reduced to 69 due to the demotion of a substantial number of R 683 second year student nurses. These students were demoted after not meeting their first-year summative theory examination requirements, which prevented them from progressing to their second year of training. The number of second year undergraduate students in the R683 nursing programme anticipated for the study thus reduced from 40 to 16. A second group of third year students in the R425 programme were included in the study. Thus, the number of respondents available for the study was 69.

### **3.6.2. Sampling**

Sampling was discussed in consultation with the UKZN statistician and in consideration of previous studies of this nature which included international respondents using a similar type of population and sample.

### **3.6.3. Sampling technique/method**

This sampling method, consecutive sampling, where study participants chosen are all the people from the accessible population that meet the eligibility criteria or a specific time interval or for a specified sample size was utilized for this study (Polit & Beck 2012: 278). Examples are selecting all patients in an intensive care unit over the period of time (Polit & Beck 2012: 278). Third year undergraduate student nurses in the R425 nursing programme and second year bridging course student nurses in the

R683 nursing programme who were in class and accessible to the researcher at the period of time provided a consecutive sample for the study.

### **3.6.4. Inclusion and exclusion criteria**

#### **3.6.4.1. Inclusion criteria**

Third year male and female undergraduate student nurses in the R425 South African Nursing Council (SANC) programme, not trained in QI and second year male and female undergraduate student nurses in the R683 (SANC) nursing programme and not trained in QI participated in the study.

#### **3.6.4.2. Exclusion criteria**

Third year male and female undergraduate student nurses trained in QI and second year male and female student nurses in the R683 programme, trained in QI were not allowed to participate in the study.

### **3.7. Data collection**

This step involves data collection, which must prove credible to the stakeholders. Data collection is a means of choosing participants for a study to gather data (peculiar to a particular study and specific to that study design and analysis), (Burns & Grove 2009). The data was gathered manually by the researcher seeing that computerized data gathering involves intensive preparation, skill in computer literacy and an added cost for the researcher (Burns & Grove 2009: 434 - 435).

As stated in the problem statement paragraph the QI training was authorised and arranged at the beginning of the year 2016 by the hospital QA manager in consultation with the researcher and QI trainer in accordance with the hospital QI training programme and course objectives.

The participants chosen for the study were introduced to the researcher at the beginning of their QI Training Workshop on the 2 separate days of the training sessions (08:00 hours). The researcher introduced herself to the participants and asked them if they would participate in the study. The researcher then informed the students about the study, handed the information document (Appendix A) to the student nurses and explained what was required of them after the training. Students who had received QI training at the hospital were asked not to participate in the study. All the students reside in KwaZulu-Natal and none of the institutions in this province conduct QI training.

The students in the R683 nursing programme who worked at the selected hospital as enrolled nurses prior to their registered nurse training were more likely to have been trained in QI. None of these students worked at the selected hospital, hence had not been trained in QI. The students were informed of their right to refuse participation, choose not to provide information they were not comfortable with and withdraw from the study whenever they felt the need to. Seeing that the researcher and the assistants are educators at the institution where the study took place, the handing out of the questionnaires, information and consent documents were done in the presence of the hospital QI trainer. This was done to prevent coercion or obligation by the students to participate or provide information they perceived the researcher may require from them.

Each student was given a copy of the questionnaire and a consent form (Appendix B & C) to fill in after the training. A self-administered structured questionnaire was used to collect data from the participants (Appendix C). Participants were given 20 minutes to read the information and consent forms prior to answering the questionnaire. The questionnaire took approximately 15 to 20 minutes to fill in. Only a few students had completed the questionnaire on the day of the training and were given 5-10 minutes more to maximize completion of the questionnaire. The researcher collected the remaining tools from the majority of the participants after 16:00 hours every day for two weeks until the desired sample size was reached.

From the students that agreed to participate, those that completed the questionnaire on the day of the training, filled in their information and consent forms giving their consent to participate in the study at the end of the training. The information letters and consent forms were separated into 2 different envelopes during the collection process and stored separately to maintain anonymity of the participants. The remaining students handed in their information and consent forms within the 2 weeks after the training.

### **3.7.1. Data Collection/Research Tool:**

The tool was designed by the researcher using examples from the book by Creswell; Ebersohn; Eloff; Ferreira; Ivankova; Jansen; Niewenhuis; Pietersen; Plano Clark; Van der Westhuizen (2010); questionnaires from studies using the logic model in programme evaluation (Darling, 2015, Crawford, 2012, Labeau; Vandijck; Claes; Van Aken; Blot 2007; Ferrazzano 2014) and tools used in the provincial Mother-Baby Friendly Hospital Initiative. The instrument was modified to address the aim; objectives and research questions of the study. Questions in the tool were aligned to the content in the QI training manual (Appendix E) designed by the hospital under study. Each student was handed a copy of the training manual to keep at the

beginning of the training. The manual is accessible to all departments on the hospital information system.

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All participants answered the same questions in English as the language of communication in the study setting. Fifty-one (51) simple and easily understood close-ended questions requiring ticking the correct answers in answer boxes and tables were framed. The questions ranged from simple yes and no, true and false answers to five point Likert scales, which required to be ticked in their respective boxes. The Likert scale, the most commonly used scale yields an ordinal measure of a respondent's attitude (Creswell *et al.* 2010). The scores were reversed where negative attitudes were assessed ranging from positive to negative e.g. from strongly agree, agree, uncertain, disagree to strongly disagree, the latter rating being the lowest (Creswell 2010). Topics included in the one-day QI training programme (see Annexure E) all of which were tested in the post-test evaluation tool are discussed in 1.10.5: steps 2- describe the programme.

The questionnaire was designed to elicit the following information:

Section A of the tool addressed the demographic data which is based on the study population, age, gender, racial group, home language, designation, years of nursing experience and knowledge of QI.

Section B of the tool consisted of questions related to the awareness of QI and its effectiveness in the clinical field in undergraduate student nurses and a post-test questionnaire to test their knowledge on QI theory facilitated in the course.

Section C of the tool comprised a course evaluation questionnaire for the students' evaluation of the training. This evaluation will be utilized to provide feedback and to

plan and make changes and recommendations for the future intended QI training initiatives (CDC 2009).

The draft questionnaire was presented to my supervisor and various members of UKZN staff for comments/ suggestions and the QA manager, an expert at programme evaluation at Greys hospital. The QA manager was instrumental in amending and adding in appropriate questions for the trainees' level of training aligned to the training manual and content presented. My supervisor and fellow UKZN staff gave direction as to the focus of the questionnaire in terms of alignment to the aim, objectives and research questions of the study.

The table below shows research objectives in relation to the questionnaire and the Logic model.

**Table 1- 3.1: Showing research objectives in relation to data collection tool and Logic Model**

Objective	Tool	Model
1.4.1. To determine undergraduate student nurses' awareness of QI and of its effectiveness in the clinical field at a public hospital in the KwaZulu-Natal Midlands.	Questionnaire Sec A: Q 3.1.1 – 3.2., Sec C: Q 1.1. – 1.10.	Logic Model: Activity
2. To determine the knowledge level of undergraduate student nurses <u>post</u> QI training attendance at a public hospital in the KwaZulu-Natal Midlands	Questionnaire Sec B: Q 3	Logic model: process/activities
3. To make recommendations for future QI training initiatives for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands.	Questionnaire Sec B: 2.2. Sec C: Q 4.	Logic Model: Outcome

### 3.7.2. Pilot study

A pilot study is a smaller version of the actual study, which is conducted to develop and/or improve the methodology such as the instrument or data collection process (Burns & Grove 2009). The pilot study was conducted on a small sample of four fourth year undergraduate student nurses in the R425 programme. These student nurses had completed their third-year modules without being exposed to the QI training. The researcher examined the pilot questionnaires by checking each question to see whether the students understood the questions and answered them appropriately. Minor amendments to the questions were made as follows: question 8 (e) in which



the expected responses were given incorrect ratings was rectified before handing out the questionnaire to the study respondents.

### **3.7.3 Validity and Reliability**

The above pilot study was used to assess the clarity of the questions to determine the students' ability to understand and answer the questionnaire and to ensure the validity and reliability of the answers obtained. This sample group was not included in the sample for the study. There were no changes with regard to the reliability of the tool, however, the validity aspect (checking each question to see whether the students understood the questions and answered them appropriate) mentioned in the pilot study above, was attended to.

**Validity** refers to the ability of an instrument/tool/measure to measure exactly what it is expected to measure (Creswell et. al. 2010). Face validity is merely about what an instrument appears to measure rather than what it actually measures (De Vos et. al. 2005.) In this study face validity was examined by the QA manager of the institution who is an evaluation expert, the researcher's supervisor and academic staff of the University of KwaZulu-Natal. Amendments were made according to suggestions forwarded by the above persons (Creswell et. al. 2010). The QA manager added Kaizen (DOH 2014), a QA methodology as one of the responses required for Section B question 5 and in Section C question 4 she added 4 (a) as a recommendation.

**Content validity** measures how appropriate the content of the instrument is, meaning whether the questions are accurate in terms of what the researcher wants to know (Creswell et. al. 2010). Content validity was evaluated by taking representative questions from each part of the questionnaire from the pilot study and measuring them against the objectives/ outcomes of the study in conjunction with the Outcomes Logic Model used in the study (Creswell et. al., 2010). The instrument designed was also guided by findings from literature. The content validity of the instrument was maintained by using tools that have already been used by other researchers as a guide while preparing the questionnaire (Cleland 2001). Only information needed for the research was solicited. Consultation with my supervisor regarding designing the tool was also ensured. All participants were informed about the importance of honesty and truthfulness before the questionnaire was administered.

**Reliability** is the consistency or the ability of an instrument/measure/tool to yield the same results if the study is repeated on the same sample (Creswell *et al.* 2010). The pilot-test as mentioned in 3.5.2 above determined errors incurred in the questionnaire

that were corrected promptly to ensure reliability of the instrument (Burns & Grove 2009, De Vos *et al* 2005). Pretesting of the instrument also ensured its reliability, because the participants were given the opportunity to comment on the clarity of the questions and to make suggestions on further inputs and additions to the questionnaire. Pretesting was also necessary to eliminate ambiguity, difficult wording, and unacceptable questions. The students that participated in the pilot study had similar characteristics with those of the sample students that participated in the study. The pilot study students were not part of the study. The instrument was distributed to the complete population hereafter (De Vos *et al.* 2005). The Cronbach's Alpha coefficient is most commonly used to measure the reliability of an instrument (Creswell *et al.* 2010). A Cronbach's Alpha test was performed on sections of the questionnaire on the sample and a result of 0.740 was found.

#### **3.7.4. Data analysis**

Data analysis allows for an understanding of the data collected by separating elements of the data and studying their relationships with each other (Vithal & Jansen 2010). Data was coded and analyzed using the latest version SPSS 24 (Creswell *et al.* 2010) in consultation with the University of Kwazulu-Natal's statistics department. Data analysis preparation was done prior to ethical clearance in consultation with the statistician. Statistical analysis using descriptive statistics where frequencies and percentages were used to determine the awareness and knowledge level of undergraduate student nurses on QI was conducted. The differences in these levels were also analysed in the two different groups of undergraduate student nurses using the Analysis of Variance (ANOVA) test where QI knowledge and awareness in relation to experience and age in the two classes of undergraduate students constituted some of the relationships measured. Tables and graphs were used to display the findings post data analysis.

#### **3.7.5 Data Management**

Data collected was kept confidential during and after the study. The questionnaires and information of respondents' documents were collected separately and kept apart from each other to ensure absolute anonymity and confidentiality. Hence, the respondents' data was unidentifiable. Coding of respondents' identity and data also ensured anonymity and confidentiality as mentioned in the data collection phase. Access to data in the data collection phase was only available to the researcher and two lecturers that assisted with collection of the tools. The raw data were kept in a locked cupboard in the researcher's possession until data analysis was conducted. During the data analysis phase, data was stored on the researcher's computer where

protection was assured by a password accessible only to the researcher and the statistical analyst. The completed questionnaires, information and consent documents will be stored at the University of KwaZulu-Natal in a safely locked cupboard for five years according to the institutional policy. These documents will be destroyed by the university thereafter.

#### **3.7.6. Data disposal**

Data disposal will follow the course mentioned below: all data stored on the researcher's personal computer and back up on other hard drives like memory sticks and CDs, questionnaires and information and consent forms will be kept for a period of five years at the University of KwaZulu-Natal and destroyed thereafter. Memory sticks/USB devices will be formatted and CDs will be destroyed by crashing. All of the questionnaires will be destroyed by shredding (Burns & Grove 2009).

### **3.8. Ethical approval**

Ethical permission for the study was obtained from the Ethics Committee at the University concerned (Appendix I, Ethics number: HSS/0918/016M), the Department of Health and KwaZulu-Natal College of Nursing authorities before initiation. Written informed consent from the participants was obtained. The framework comprising the ethical principles and benchmarks suggested by Emmanuel; Wander; Killen & Grady (2004) was used to ensure that the study fulfilled and maintained ethical requirements throughout.

#### **3.8.1. Collaborative partnership**

A collaborative partnership (Emmanuel *et al.* 2004) amongst the researcher; the Nursing Campus Principal; the KwaZulu-Natal College of Nursing (Nursing Education Head Office) Director, hospital management and staff from the clinical facilities; the department of health; the QA manager, QI trainers of the hospital and the undergraduate students under study was ensured. Letters requesting permission to conduct this study provided these stakeholders with information pertaining to their roles in this relationship emphasizing guarantees of non-exploitation (Appendix G: 1.2.3.4) (as mentioned in the data collection phase above). Gatekeeper Permission from the above stakeholders were obtained (Appendix H: 1.2.3.4). 3.8.1. Gatekeeper permission: Marker 1: (f)

Gatekeepers are persons who control or limit access of the researcher to conduct research e.g. the manager or senior or chief executive officer (CEO) of the organization or the person within a group or community who makes the final decision for research to take place (McFadden & Rankin 2016). In this study the gatekeepers were the head of the department of the KZNCN, the CEO of the hospital and the

head of the provincial department of health who granted permission for the research to be conducted at the institution.

### **3.8.2. Social Value**

Benefits to the patient and the institution such as improved knowledge and understanding of QI in undergraduate student nurses was considered a way of recognizing the social value of the research population and community served by the hospital under study (Emmanuel *et al.* 2004). Communication of research results to all stakeholders at QI meetings, Quality Day and Open Day presentations, research presentation gatherings; journal publications, and community meetings according to opportunities created will be conducted (Emmanuel *et al.* 2004).

A copy of the study will be handed to the hospital manager who will liaise with the QA manager and QI team regarding the findings. Feedback will be given to the participants via the campus principal who will be presented with a copy of the study on completion of the research project. This may be done either on her visits to the students whilst they are in campus or at their student representative council meetings. QI training for undergraduate student nurses in the institution may possibly be viewed as a smaller part of a broader research study in health service delivery issues, adding to a continued cooperative process (Emmanuel *et al.* 2004).

### **3.8.3. Scientific Validity**

The study intends to bring about change in terms of the quality of care the selected hospital delivered to its clients. The participants of this study are nurses and not clients hence, the community's health entitlements will not be jeopardized but rather assumed to be improved (Emmanuel *et al.* 2004).

### **3.8.4. Respect for recruited participants and study communities**

The information of the respondents' documents addressed the following aspects: There was no guarantee of absolute confidentiality of information (Emmanuel *et al.* 2004). Anonymity was affirmed by a list of the respondents' names with an assigned numerical code (coding) (Burns & Grove 2009). This list, together with the consent and authorization forms, was safely and separately locked away from the completed questionnaires. These were only disclosed to the researcher (Burns & Grove 2009).

No coercion or obligation to participate in the study occurred, to protect 'the right to self-determination' of the respondents (Burns & Grove 2009). Hence, respondents were allowed the liberty to participate or withdraw from the study at any point they felt

uncomfortable to continue (Burns & Grove 2009) as described in the data collection process in 3.7 above. Confidentiality and anonymity was ensured as mentioned in the data collection and analysis phase above showing the researcher's concern for the respondents' physical and psychological security. The respondents will also receive information on the results of the research and a copy will be made available at the library in the institution for their reference as well as to assure them of the confidentiality of the results. They will also have access to the researcher's contact details should they require any further explanation regarding the findings of the study.

#### **3.8.5. Fair selection of subjects/the right to justice or fair treatment**

The ethical principle of justice signifies that every individual deserves fair and equal treatment which is owed to him/her (Burns & Grove 2009, Emmanuel et. al 2004) hence, the selection of respondents as per the sampling process was not open to bias (Burns & Grove 2009). The whole population of students that fit the inclusion criteria was used in the study.

#### **3.8.6. Favourable risk-benefit ratio**

This study is about QI training which carried no physical risk, however, a psychological risk may arise should the post-test scores be disclosed. This was prevented by maintaining confidentiality and anonymity as mentioned in data collection and data management above. The study would rather offer greater benefits than risks as mentioned in social value above.

#### **3.8.7. Informed consent**

Provision was made by the researcher for voluntary consent of the human research subjects according to the Nuremberg Code (Burns & Grove 2009). Spheres of consent were accounted for in the study through the information sheet, explanation of the requirements of the participants in the study and the informed consent document completed and signed by the participants (Emmanuel et. al. 2004).

#### **3.8.9. Data Dissemination**

Data dissemination will be conducted as mentioned in 3.8.2 and 3.8.4 above. The researcher also has an intention of publishing a copy of the study in an approved South African Nursing journal and a distribution of printed copies to the UKZN and hospital manager and campus manager as mentioned above.

### **3.9. Limitations of the study**

The numbers of students in the two groups of undergraduate student nurses selected for the study were unbalanced due to the demotion of the second year students, as a result, only 16 of these students were accommodated for the study. The training scheduled for the 4th

August 2016 was thus cancelled as the QA manager and QI trainers reported that it was not cost effective to conduct the training with one group that consisted of 16 students only. The initial population of 77 students eligible for the study decreased to 69; hence the researcher utilized all the third-year undergraduate students available at the time. The failure rate of students in the R683 programme was not anticipated as this was the first of its kind in the entire province of KZN. However, the findings of the study were not determined by the numbers of students in each group.

### **3.10. Conclusion**

Chapter 3 discussed how the researcher conducted the study in terms of the methodology. The methodology involved a description the research site/setting of the selected hospital and how it was accessed by the researcher; the applicability of the quantitative research approach used; the positivist research paradigm applicable to this study; the descriptive design and its purpose for this study; the study population of undergraduate student nurses suitable for the study and sample and consecutive sampling technique; data collection and the data collection tool used ; the pilot study; validity and reliability of the research tool; data analysis; data management, ethical considerations; and the limitations of the study. Feasibility was met in terms of the time being adequate, the respondents readily available and willing to participate, the instruments for data collection were valid and reliable, ethical approval was easily obtainable, and the researcher had the expertise, motivation and interest in the study (Brink *et al.* 2015).

## **CHAPTER FOUR: RESULTS**

### **4.1. Introduction**

This chapter presents the findings of the data analysis concerning the study. The data collection instruments (questionnaires) were analyzed in accordance with the study's objectives, which reflected data collected from the study's selected population. The study objectives were as follows: to determine undergraduate student nurses' levels of awareness of QI and of its effectiveness in the clinical field at a public hospital in the KwaZulu-Natal Midlands; to determine the knowledge level of undergraduate student nurses with regards to QI post QI training attendance at a public hospital in the KwaZulu-Natal Midlands; and to make recommendations for future QI training initiatives for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands.

The entire study population of third-year undergraduate student nurses in the R425 and second year undergraduate student nurses in the R683 nurse training programmes respectively answered the questionnaires at the selected hospital. Sixty-nine (N=69) respondents were available to attend the one-day QI training workshop, which was modified from the hospital's QI training programme for staff at the institution. Undergraduate student nurses are not included in this training at the institution under study. The above nurses were selected based on not being exposed improvement training. Seventy seven (77) respondents were projected for the training; however, only 69 were available due to the high failure rate of second-year undergraduate student nurses in the R683 nurse training programme at the selected hospital. Consecutive sampling was utilized in the choice of the total population of second-year (R683 programme) and third-year (R425 programme) undergraduate student nurses for the study. The students were asked to complete a questionnaire, which comprised of a post-test evaluation and course evaluation questions after the training. The respondents returned sixty-seven (67) questionnaires. Sixty-six (66) questionnaires were analyzed and one was spoilt. The response rate for the questionnaire returns was 95%.

### **4.2. Data analysis and interpretation**

Data from the questionnaires was captured onto SPSS 24. Statistical analysis using descriptive statistics with frequencies and percentages was used to determine the awareness and knowledge level of undergraduate student nurses on QI. The differences in these levels were also analyzed in the two different levels of undergraduate student nurses mentioned above using Analysis of Variance (ANOVA).

Three sections on the instrument were examined namely Section A which consisted of the demographic data, Section B, the awareness of QI in the sample and the post-test evaluation. Section C, consisted of the course evaluation questions.

### **4.3. Demographic details**

Demographic data of the sample is displayed in terms of the following aspects: position held at the institution, years of nursing experience, type of hospital, age, gender, racial group, and home language.

**Years of Experience** and age was excluded from the analysis as ranges were incorrectly specified on the research instrument which would have impacted on the reliability of the instrument.

**Position held in the institution:** 81.8% (n=54) of the sample (n=66) represent third-year undergraduate student nurses in the R425 nursing programme and 18.2% (n=12) represented second-year undergraduate student nurses in the R683 nursing programme.

**Type of hospital:** 3.0% (n=2) of the students were working at district hospitals; 1.5% (n=1) at a regional hospital and 95.5% (N=63) at a tertiary hospital indicating that the majority of students place of work was at a tertiary hospital at the time of the study.

**Age of respondents:** 57.6% (n=38) students were representative of the 18-28 year age group; 30.3% students were (n=20) of the 29-38 year age group and 12.1% (n=8) represented the 39 years and above age group. It is thus evident that the majority of students used in this study were of the 18-28 year age group.

**Gender of respondents:** 71.2 % (n=47) female student nurses represented the majority of the sample and 28.8 (n=19) represented the male population in the sample..

**Racial groups of respondents:** 89.4% (n=59) students were Black; 7.6 (n=5) respondents were Indian and 3.0% (n=2) were Coloured and no White respondents.

**Home language of respondents:** 78.8% (n=52) of the respondents spoke Zulu as their home language; 15.2% (n=10) spoke English; 4.5% (n=3) spoke Xhosa and 1.5% (n=1) spoke another language which is Sotho.



**Table 2 - 4.1: Demographic details of undergraduate students at a public hospital in the KZN Midlands**

<b>Position held in the institution</b>	<b>Percent</b>
Third year undergraduate student nurse (R425)	81.8
Second year undergraduate student nurse (R683)	18.2
<b>Type of hospital of work</b>	
District level	3.0
Regional level	1.5
Tertiary level	95.5
<b>Age groups</b>	
18-28years	57.6
29-38years	30.3
39years and above	12.1
<b>Gender</b>	
Male	28.8
Female	71.2
<b>Racial groups</b>	
Black	89.4
Indian	7.6
Coloured	3.0
<b>Home language</b>	
IsiZulu	78.8
English	15.2
IsiXhosa	4.5
Other	1.5

## **4.4. Awareness of QI**

### **4.4.1. Awareness of QI before reading the information consent and questionnaire**

The awareness of QI was measured by determining the awareness of QI training offered at the respondents' hospital, and the awareness of QI concepts, programmes and initiatives.

**Table 3 - 4.2: Undergraduate students' awareness of QI training at the hospital before reading the information, consent and questionnaire at a public hospital in the KZN Midlands**

Answer	Frequency	Percentage
Yes	47	<b>71.2</b>
No	19	28.8
Total	66	100.0

71.2% (n=47) of the respondents have heard or read about QI and 28.8% (n=19) respondents have neither heard nor read about QI.

#### **4.4.2. Awareness of the QI training offered at the hospital**

**Table 4- 4.3: Undergraduate student nurses' awareness of Quality Improvement Training offered at the selected public hospital in the KZN Midlands**

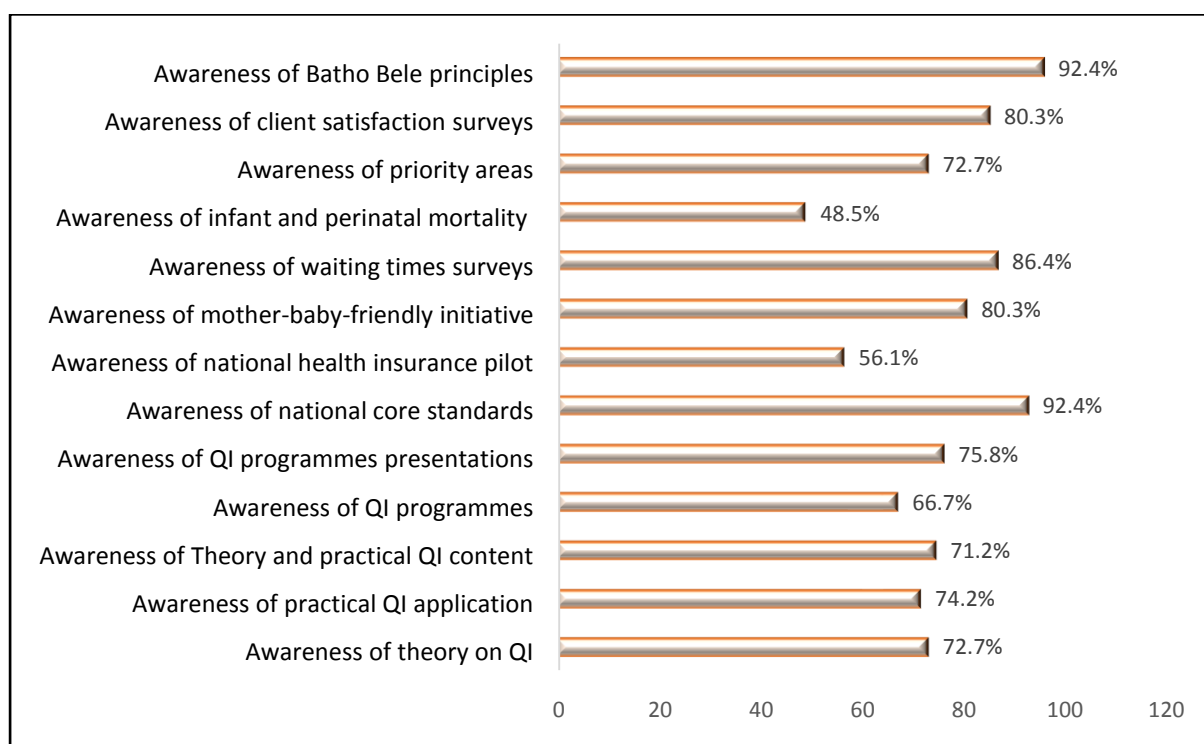
Answer	Frequency	Percentage
Aware	31	<b>47.0</b>
Unaware	18	27.3
Not sure	17	25.8
Total	66	100.0

47% of the respondents are aware of QI training at the hospital whilst 27.3% are unaware of it. 25.8% of the respondents are not sure whether QI training is offered at the hospital.

#### **4.4.3. Awareness of the QI concepts, programmes and initiatives**

In order to determine the respondents' awareness of the QI concepts, programmes and initiatives, descriptive analysis were performed after the recoding of the variables into "unaware" and "aware", initially coded "unaware", "slightly aware", "moderately aware" and 'extremely aware.'" The re-coding was performed for every concept, program and initiative (see figure below).

## Awareness of QI concepts, programmes and initiatives

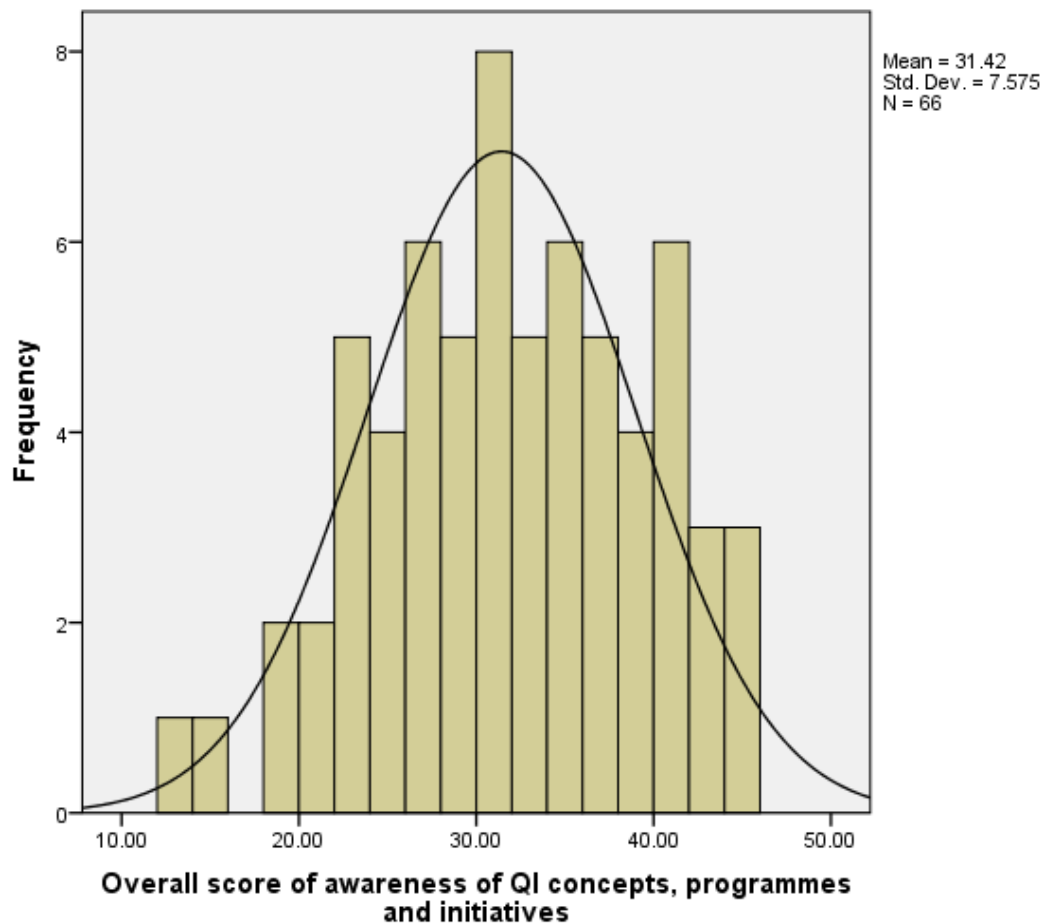


**Figure 5- 4.1: Awareness of QI concepts, programmes and initiatives of second and third year undergraduate student nurses at a public hospital in the KZN Midlands.**

The results show that more than 75% of the respondents were aware of QI concepts, programmes and initiatives; 92.4% of the respondents were aware of the Batho Pele principles; 80.3% were aware of the Client Satisfaction Surveys; 72.7% were aware of the Priority areas while 86.4% were aware of the Waiting Times Surveys; 80.3% were aware of the Mother-Baby-Friendly Initiative and 56.1% were aware of the National Health Insurance Project, 92.4% of the respondents were aware of the National Core Standards, 75.8% were aware of the QI programme presentations, 66.7% were aware of the QI programmes, 71.2% were aware of the QI theory and practical QI content, 74.2% were aware of practical QI application and 72.7% were aware of theory on QI. Lastly, only 48.5% were aware of the Infant and Perinatal Mortality Meetings.

Furthermore, an overall score of the awareness of QI was created. It is noted that the higher the score, the higher the number of respondents are aware of the QI concepts, programmes and initiatives.

### 4.4.4. Overall score of awareness of QI concepts, programmes and initiatives



**Figure 6- 4.2: Overall score of undergraduate student nurses awareness of the QI concepts, programmes and initiatives at a public hospital in the KwaZulu-Natal Midlands.**

The graph above shows that most of the respondents were aware of QI concepts, programmes and initiatives with a minimum score of 13 and a maximum score of 45; the mean being 31.42 and the standard deviation 7.575.

**Table 5- 4.4: Association between the awareness of QI and the position held of second and third year undergraduate student nurses at a public hospital in the KZN Midlands.**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.388	2	12.694	.216	<b>.806</b>
Within Groups	3704.733	63	58.805		
Total	3730.121	65			

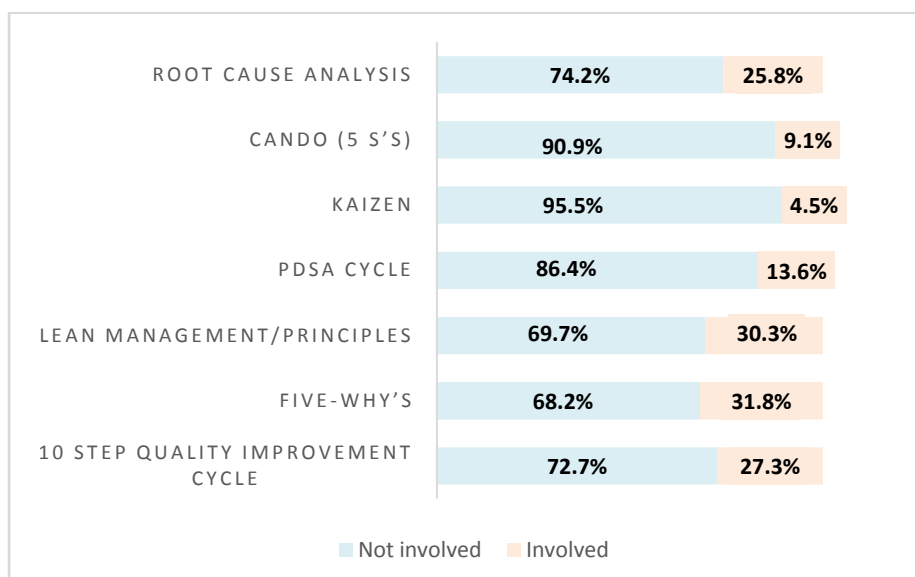
The table above shows that there is no statistical significance between the awareness of the QI and the position held in the institution ( $p=0.806 > 0.05$ ).

#### 4.5. Effectiveness of QI in the clinical field

For the respondents to report on the effectiveness of the QI in the clinical field, they were required to have been involved in the QI methodologies or in the QI activities.

##### 4.5.1 Involvement in the QI methodologies in the sphere of work (n=20)

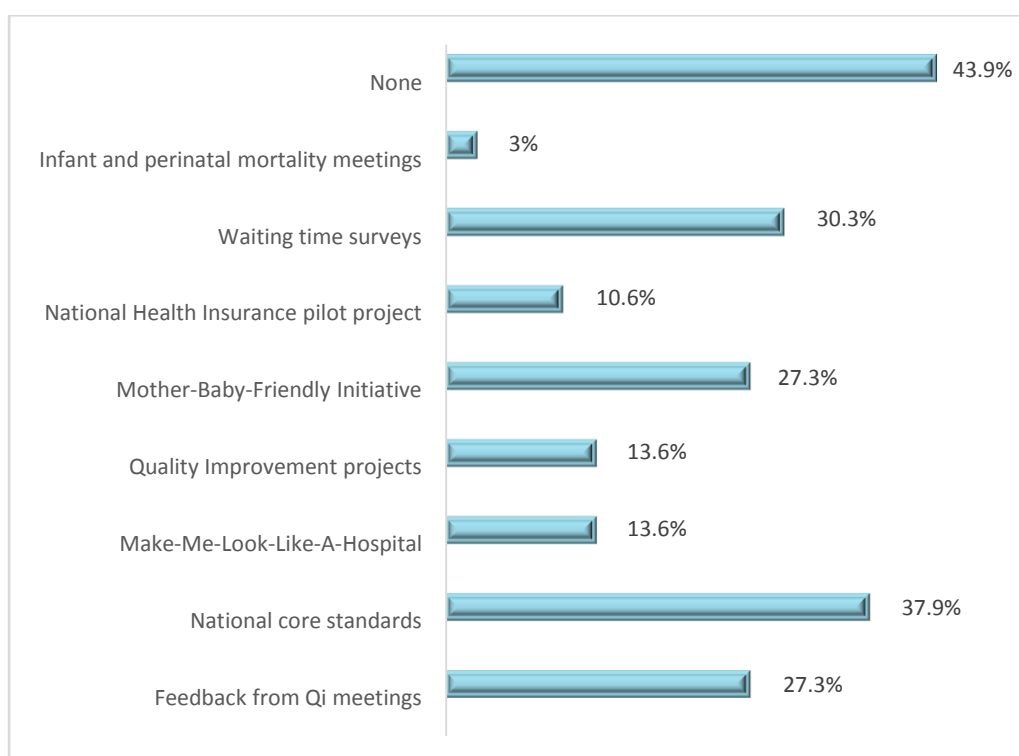
The results are displayed in the figure 4.3 below



**Figure 7- 4.3: Involvement in QI methodologies in the sphere of work of undergraduate student nurses at a public hospital in the KZN Midlands.**

The results showed that more than 70% of the respondents were not involved in the QI methodologies in their sphere of work. Participants were involved for each methodology, as follows: 74.2% of the respondents were not involved in the Root cause analysis methodology while 90.9% were not involved in CANDO. 95.5% were not involved in Kaizen and 86.4 % were not involved in the PDSA cycle and 72.7% were not involved in the 10-step QI cycle. However, 30.3 % were involved in the Lean Management principles and 31.8% were involved in the Five-Why's.

**Involvement in QI activities in the sphere of work (n=20)**



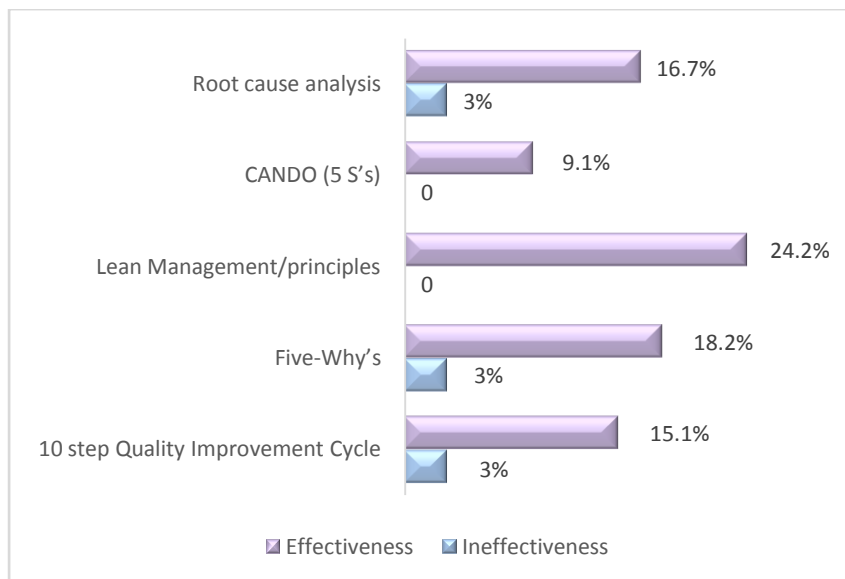
**Figure 8- 4.4: Involvement in QI activities in the sphere of work of undergraduate student nurses at a public hospital in the KZN Midlands.**

The results above showed that 43.9 were not involved in QI activities. More than 50% of the participants were involved. The findings of those involved are as follows: Waiting time surveys: 30.3%; Infant and Perinatal Mortality Meetings: 3%; the National Health Insurance Pilot Project: 10.6%; the Mother-Baby- Friendly Initiative: 27.3%; Quality Improvement Projects: 13.6%; the Make-Me-Look-Like-a-Hospital Project: 13.6%; were involved in the National Core Standards: 37.9% and Feedback from QI meetings: 27.3%.

#### 4.5.2. Effectiveness of the QI methodologies and initiatives (n=20)

To measure the effectiveness of the QI methodologies, we cross tabulated the involvement with in the QI methodologies and the effectiveness of these methodologies. Only the responses of those who were involved in the methodologies were considered during the analysis. The results are displayed in the chart below.

#### Effectiveness of the QI methodologies and initiatives (n=20)

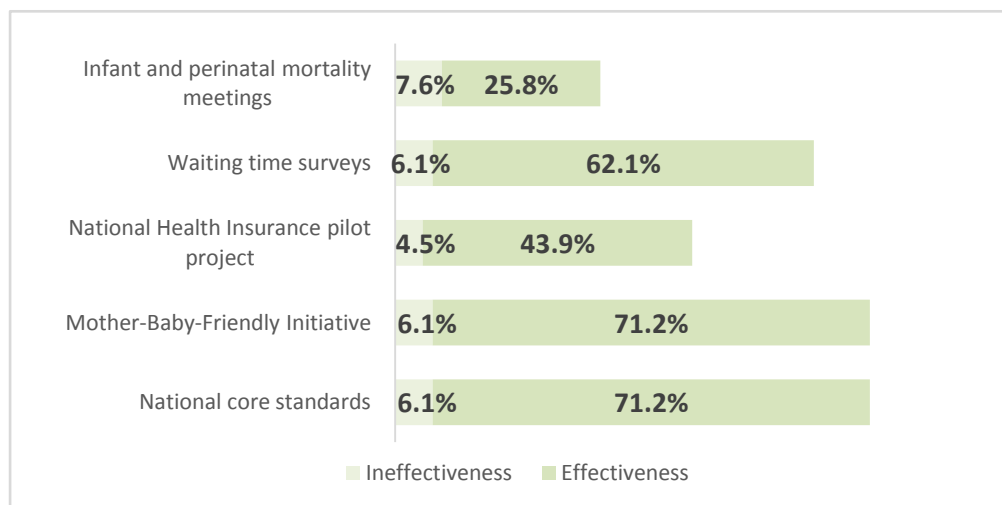


**Figure 9- 4.5: Effectiveness of QI methodologies of work of undergraduate student nurses at a public hospital in the KZN Midlands.**

The percentages of participants that found methodologies effective were as follows: The Root cause analysis: 16.7%; the CANDO: 9.1%; the Lean management principles: 24.2%; the Five Why's: 18.2% and the 10 Step QI cycle: 15.1%. The respondents that found the methodologies ineffective were as follows: the Root cause analysis: 3%; CANDO: none; the Lean management principles: none; the Five Why's: 3%; and the 10 Step QI cycle: 3%.



### Effectiveness of the QI initiatives in developing knowledge and awareness of QI (n=20)



**Figure 10- 4.6: Effectiveness of the QI initiatives in developing knowledge and awareness of QI in undergraduate student nurses at a public hospital in the KZN Midlands.**

The respondents that were involved in QI methodologies reported that the QI initiatives in the clinical field were somewhat effective in developing their knowledge and awareness of QI as seen in the figure above.

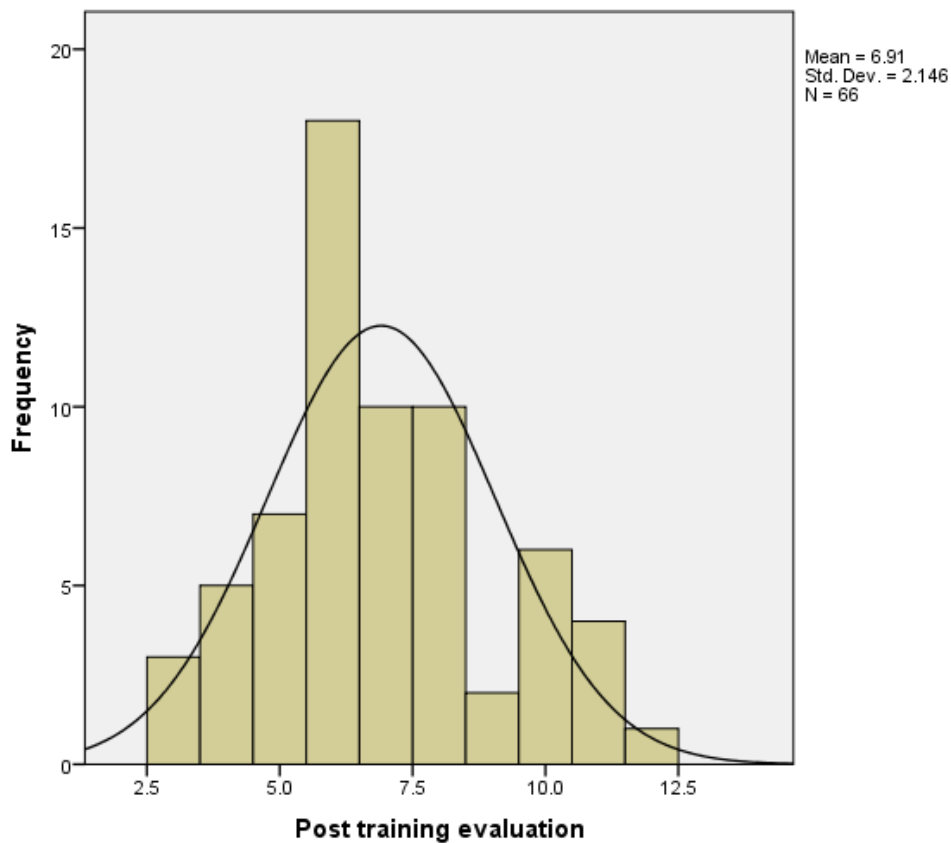
The results showed that the respondents involved in the following methodologies found them effective in developing their knowledge and awareness of QI: The Infant and Perinatal Mortality Meetings: 25.8%; the Waiting Time Surveys: 62.1%; the National Health Insurance Pilot Project: 43.9 %; the Mother-Baby-Friendly Initiative: 71.2% and the National Core Standards: 71.2 %.

The respondents involved in the following methodologies found them ineffective in developing their knowledge and awareness of the QI: The Infant and Perinatal Mortality Meetings: 7.6%; the Waiting Time Surveys: 6.1%; the National Health Insurance Pilot Project: 4.5%; the Mother-Baby-Friendly Initiative: 6.1% and the National Core Standards: 6.1%.

#### **4.6. Knowledge level of undergraduate student nurses post QI training attendance at the public hospital**

After the training, the knowledge of the respondents was assessed by a questionnaire. They were required to tick the right answer for the 13 questions asked.

**Overall score of the post training evaluation:**



**Figure 11- 4.7: Overall score of the post training evaluation of undergraduate student nurses at a public hospital in the KZN Midlands.**

The chart above illustrates the evaluation. The results showed that the majority of respondents ticked the wrong answer after the training with scores ranging from 2.5 to 12.5, the mean being 6.1 and a standard deviation of 2.146.

An (ANOVA) was performed to see if any association existed between the knowledge after training and their home language.

**ANOVA**

**Home language of the respondents and post-test knowledge for groups**

**Table 6- 4.5: Association between the post training evaluation and the home language of undergraduate student nurses at a public hospital in the KZN Midlands.**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.850	9	1.206	1.978	.059
Within Groups	34.135	56	.610		
Total	44.985	65			

A final ANOVA test was conducted to see the statistical association between the respondents' knowledge after training and their home language. The p-value 0.59 (>0.05) indicates that there is a marginal association between home language and the results of the post-test evaluation.

#### 4.6.2. Home language of the respondents: post training evaluation:

##### ANOVA

#### Home language of the respondents and post- test knowledge for each language group

**Table 7- 4.6: Association between the knowledge and their home language after training of undergraduate student nurses at a public hospital in the KZN Midlands.**

	Mean	N	Std. Deviation	Minimum	Maximum
IsiZulu	6.60	52	2.003	3	11
English	8.10	10	2.283	5	11
IsiXhosa	8.67	3	3.055	6	12
Other	6.00	1		6	6
Total	6.91	66	2.146	3	12

The isiZulu speaking respondents language appear to be the most affected, followed by isiXhosa, Sesotho and English. IsiZulu speaking students (n=52) showed a severe lack of knowledge when answering the post-test questions. They answered questions 3-11 very poorly. Of the IsiXhosa speaking students (n=3) only 1 answered question 12 poorly. The English speaking (n=10) and the Sesotho speaking (N=1) answered all the questions fairly.

The findings reveal that the isiZulu speaking respondents (n=52) had the most difficulty in understanding QI, with the mean of 6.60, standard deviation of 2.003, a minimum score of 3 and maximum score of 11 followed by isiXhosa (n=3) with the mean of 8.67; standard deviation of 3.055; a minimum score of 6 and maximum score of 12 and English (n=10) with the mean of 8.10; standard deviation of 2.283; a minimum score of 5 and a maximum score of 11. The other language was Sesotho (n=1) with a mean of 6.00; no standard deviation; a minimum score of 6 and a maximum score of 6. The scores appear minimal; however, they are significant in understanding the post-test scores of the students related to their home language.

## Home language of the respondents and post-test scores

**Table 8- 4.7: Association between the knowledge and their home language for post-test evaluation questions 3 to 12 of undergraduate student nurses at a public hospital in the KZN Midlands.**

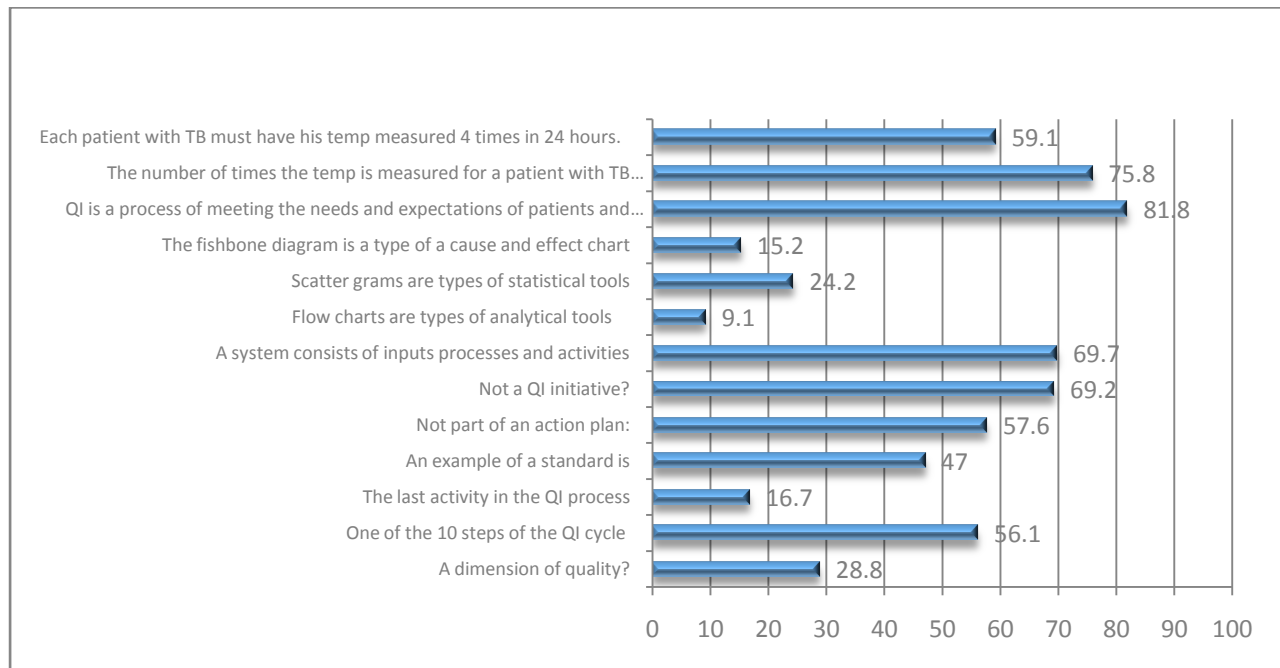
Post training evaluation	Mean	N	Std. Deviation	Minimum	Maximum
3	1,00	3	,000	Zulu	Zulu
4	1,00	5	,000	Zulu	Zulu
5	1,14	7	,378	Zulu	English
6	1,56	18	1,149	Zulu	Other
7	1,00	10	,000	Zulu	Zulu
8	1,50	10	,972	Zulu	Xhosa
9	1,00	2	,000	Zulu	Zulu
10	1,33	6	,516	Zulu	English
11	1,50	4	,577	Zulu	English
12	4,00	1		Xhosa	Xhosa
<b>TOTAL</b>	<b>1,35</b>	<b>66</b>	<b>,832</b>	<b>isiZulu</b>	<b>Other</b>

### 4.6.3. Incorrect answers from the post-training questionnaire

Questions 3-5 were answered very poorly. Zulu speaking students scored the lowest in questions 3,4,5,6,7,8,9,10 and 11 with means ranging from 1,00 to 4,00 and with standard deviations from 0,00 to 1,149. Xhosa speaking students answered question 12 poorly with a mean of 4 and no standard deviation. English speaking students fared the best overall.

For further recommendations, we undertook to have an overview of the wrong answer of each question to see the specific aspects that needed improvement in the training. The chart below illustrates it:

## Incorrect answers from the post-training questionnaire



**Figure 12- 4.8: Incorrect answers of undergraduate student nurses from the post-training questionnaire at a public hospital in the KZN Midlands.**

The results for each question from students that answered the following questions incorrectly are: question.1.1: 'Which of the following is a dimension of quality?': 28.8%;question 3.1.2: 'One of the 10 steps of the QI cycle is': 56.1%; question 3.1.3: 'The last activity in the QI process is': 16.7%; question 3.1.4: 'An example of a standard is': 47%; question 3.1.5: 'One of the following is not part of an action plan': 57.6%; question 3.1.6: 'Which of the following is not a QI initiative?': 69.2%; question 3.2.2: 'Flow charts are types of analytical tools': 9.1%;question: 'A system consists of inputs processes and activities' :69.7%; question 3.2.3: 'Scatter grams are types of statistical tools': 24.2%; question 3.2.4: 'The fishbone diagram is a type of a cause and effect chart':15.2%; question 3.2.5: 'Quality improvement (QI) is a process of meeting the needs and expectations of patients and health service staff': 81.8% and question 3.2.6: 'A standard may be stated as the number of times the temperature is measured for a patient with TB during a 24-hour period':59.1%; and question 3

The researcher conducted an ANOVA test to see the statistical association between the respondents' knowledge after training and the position held in the institution.

#### 4.6.4. Post training evaluation of the knowledge and the position held in the institution

##### ANOVA

#### Post training evaluation of the knowledge and the position held in the institution

Table 9- 4.8: An ANOVA test to determine the association between the knowledge and the position held in the institution of undergraduate student nurses after training at a public hospital in the KZN Midlands.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.705	1	1.705	.366	<b>.547</b>
Within Groups	297.750	64	4.652		
Total	299.455	65			

The p-value 0.547 ( $>0.05$ ) indicates that there is no statistical association between the knowledge and the position held in the institution after the QI training.

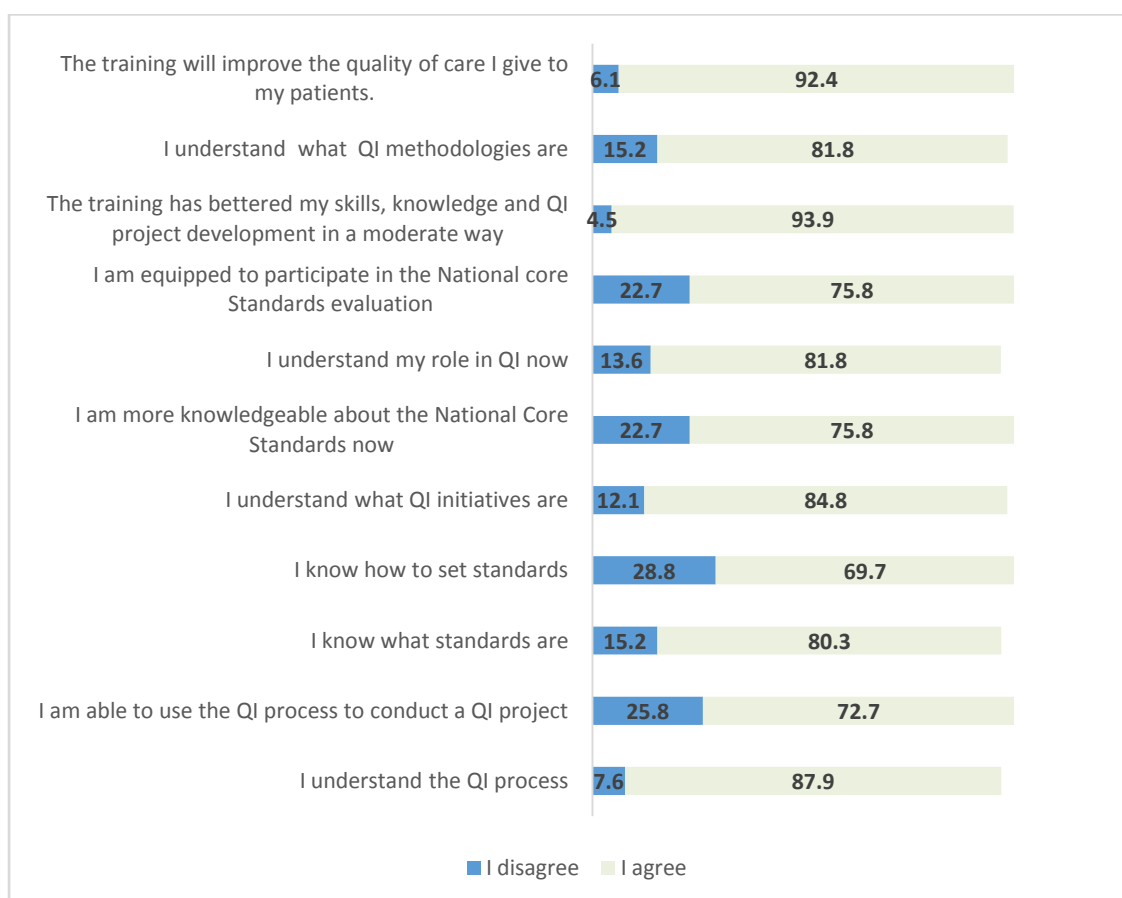
#### 4.7. Course evaluation

In the statement 'to improve the training or not', the respondents were asked to assess the course in terms of impact of the training and rate of the training.

##### 4.7.1. Impact of the QI training on the respondents

The respondents were asked to either agree or not agree on the statements. The chart below gives more details

## Impact of the QI training on undergraduate student nurses



**Figure 13- 4.9: Impact of the training on the undergraduate students after training at a public hospital in the KZN Midlands.**

The results showed that more than 75% of the respondents agree with all the statements. The values are as follows: ‘the training will improve the quality of care I give to my patients’: 92.4% agreed 6.1% disagreed whilst with it; 81.8% agreed with the statement ‘I understand what QI methodologies are’ whilst 15.2% disagreed; 93.9 % of the students agreed with the statement :‘the training has bettered my skills, knowledge and QI project development in a moderate way whilst, 4.5% disagreed; 75.8% of the students agreed with the statement ‘I am equipped to participate in the National Core Standards evaluation’ whilst 22.7% disagreed; 81.8% (n=54 agreed with the statement: ‘I understand my role in QI is now’ whilst 13.6% students disagreed; 75.8% agreed with the statement ‘I am more knowledgeable about the National Core Standards now’, whilst 22.7% students disagreed; 84.8% students agreed with the statement: ‘I understand what QI initiatives are’ whilst 12.1% disagreed; 69.7% (n=46) students agreed with the statement’ I know how to set standards’, whilst 28.8% (n=19) disagreed.; 81.8% (n=54) students agreed with the statement ‘I know what standards are’, whilst 15.2% (n=10) disagreed; 72.7% (n=48) agreed with the statement ‘I am able to use the QI process to conduct a QI

project', whilst 25.8% (n=17) disagreed and 87.9% (n=58).students agreed with the statement 'I understand what QI is' whilst 7.6% (n=5) disagreed

#### 4.7.2. QI training rating by the respondents

In the analysis of the rating of QI by the respondents, the responses 'very good' and 'good' were grouped to create the variable 'good'. 'Fair was changed to 'neutral' and 'poor' remained unchanged. These changes were made for analysis purposes. The respondents rated the training as noted on the Figure 14 below. More than 47% of the respondents said the training was good. In terms of the topic and content, 97% agreed that the training was good and 3% were neutral; 92.4% rated the presenters as good and 1.5% rated the presenters as poor; 63.6% rated the time allocated for each presentation as good and 18.2% rated the time allocated for each presentation as poor; 47% rated the time allocated for the entire programme as good and 30.3% (n=20) rated the time allocated for the entire programme as poor. 54.5% rated the time allocated for completion of project as good and 21.2% (n=14) rated the time allocated for completion of project as poor; 89.4% rated the teaching strategies/ presentations as good and 6.1% (n=4) rated the teaching strategies/ presentations as poor.

#### QI training rating by the respondents

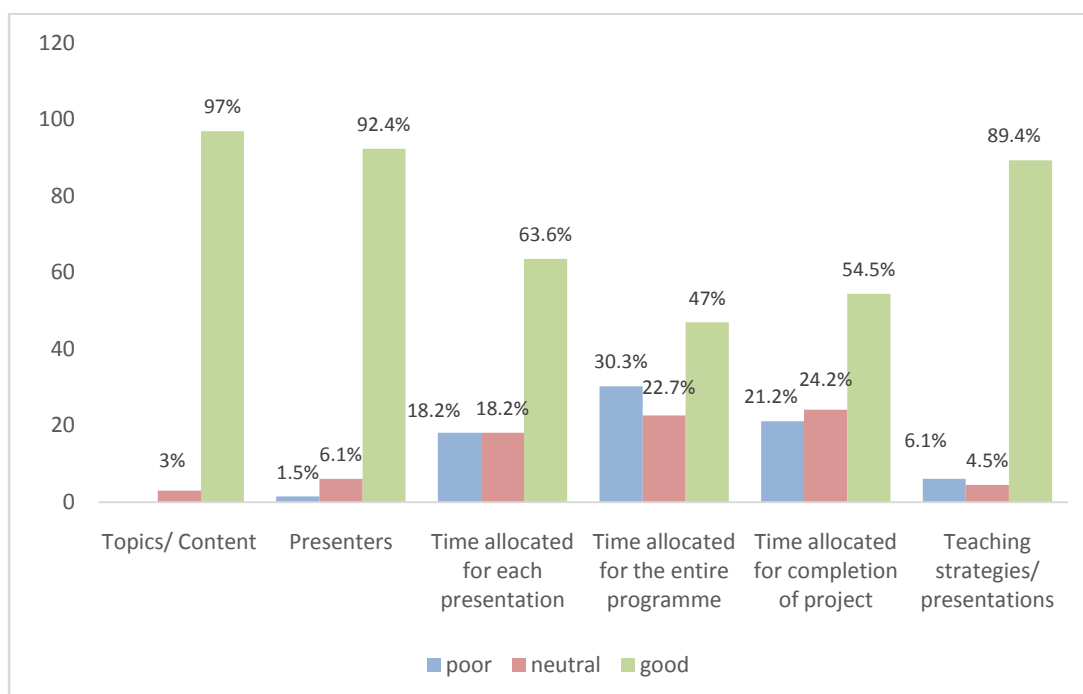


Figure 14- 4.10: Rating of the training by undergraduate student nurses after training at a public hospital in the KZN Midlands.



#### 4.8. Recommendations of QI training

The students made the following recommendations: The results showed that the 92.4% of the respondents reported to be interested in learning more about QI, whilst 7.6% were not. 97% answered yes to the impact of adopting Quality Improvement techniques in their work place on patient care and services offered, whilst 3% answered no. 95.9% of the respondents recommend this training for undergraduate student nurses in the future, whilst 4.5% do not.

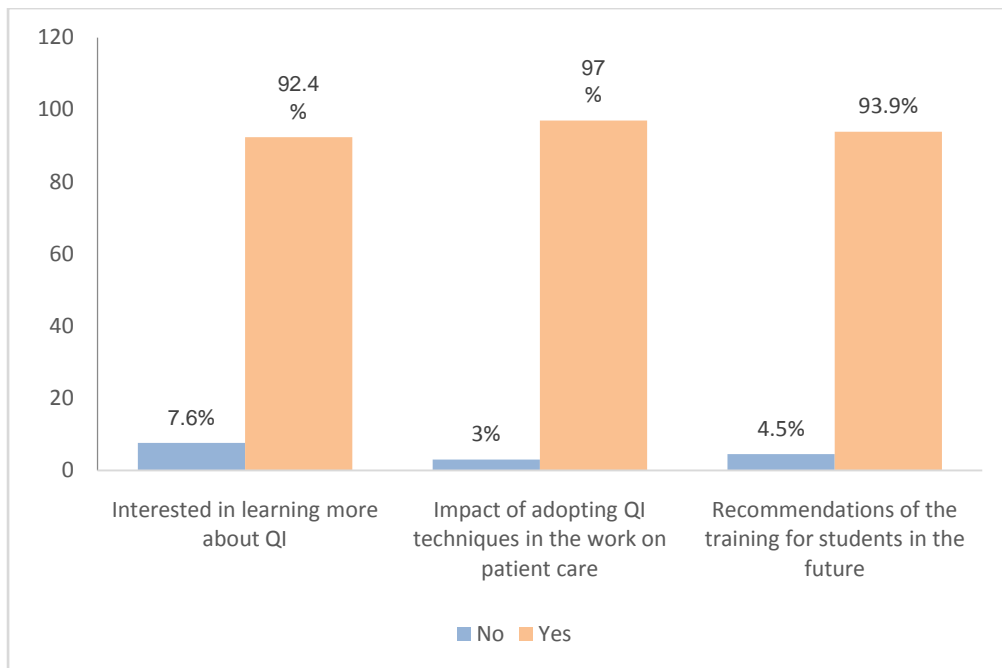


Figure 15- 4.11: Recommendations of QI training by undergraduate student nurses after training at a public hospital in the KZN Midlands

#### 4.7. Conclusion

The findings provided by this study show that whilst the QI training did not increase the knowledge of undergraduate student nurses as noted by Durham & Van Hofwegan (2014), an increase in awareness and abilities arose after exposure to QI content and methodologies. This did not negate the requirement for training in this group of students but rather a newfound interest in QI as reflected in the recommendations the students made after the training. There was no difference with regard to position held and awareness of QI, QI methodologies and QI activities in the students in the two different levels of training at the institution. The discussion in chapter 5 will shed more light into these findings.

## CHAPTER 5

### DISCUSSIONS OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1. INTRODUCTION

A discussion around the findings reflected in chapter 4 will ensue in this chapter. Chapter 4 contains the results of the awareness and involvement of undergraduate student nurses in QI, and the evaluation of a one-day QI training workshop for undergraduate student nurses from a post-test survey and a course evaluation questionnaire. Limitations, conclusions and recommendations for the study and for the selected hospital are also discussed in Chapter 5. The aim of the study was to conduct an outcomes evaluation of a one-day QI training workshop for undergraduate student nurses, a quality initiative at a public hospital in the Kwazulu-Natal Midlands, South Africa.

An on-going two-day QI training programme for all members of staff excluding undergraduate student nurses currently exists in the public hospital selected for the study. A questionnaire that required the participants' responses regarding their awareness and involvement in QI before the training with post-test and course evaluation questions was used to collect data for the study. At the end of the training, the researcher and two campus lecturers handed out the questionnaires in the presence of the QI trainer (to minimize researcher bias) for students to complete at their leisure after hours. After handing out the tools, the students received an explanation by the researcher on how to answer the research instrument. Some of the students filled in the tools at the end of the training whilst others did not. The respondents took up to two weeks to return the research instruments after the training.

##### **5.1.1. Findings of the study on application of the logic model**

In determining the effectiveness of the conceptual framework (the outcomes logic model) (Kellogg Foundation 2004; CDC 2009; Innovation network Incorporation 2016) used in this study, the researcher focused on inputs from education and clinical authorities; QI trainers, undergraduate student nurses (R425 and R683 nursing programmes) a QI training programme and a teaching plan, and QI training of undergraduate student nurses in the institution. These inputs were made available for the training required for the study as discussed in chapter 3.

The activities involved 'planning and approval for a QI training initiative for undergraduate student nurses' in the institution; a course evaluation by undergraduate student nurses; a post-test QI knowledge evaluation of undergraduate student nurses after the QI training initiative, and an approved QI training initiative for

undergraduate student nurses. These activities yielded outputs of the number of undergraduate student nurses' aware of QI and its effectiveness in the clinical field in the institution; the percentage of undergraduate student nurses trained in QI and the post-test scores of undergraduate student nurses' knowledge of QI.

The outcomes were achieved in the form of a 'planned and approved QI training initiative for undergraduate student nurses'; interest and ability in QI in undergraduate student nurses and knowledge of QI in undergraduate student nurses. The expected impact would be recommendations and decisions by the institution and education authorities regarding QI training of undergraduate student nurses in the future; improved health outcomes for the public and those newly qualified professional nurses attain QI awareness, knowledge and the ability to participate in QI activities and initiatives. Both the output and outcome for this objective was successfully accomplished seeing that the training initiative was planned and conducted accordingly.

The output which yielded QI training evaluation instruments which was achieved by designing the evaluation questionnaire used for data collection. The instrument however, needs review to enhance its reliability. The information obtained from the respondents on the data collection tool and the attendance register reflects the evaluation and training records of QI training of undergraduate student nurses. These records provide valuable information for the recommendations regarding QI training for undergraduate student nurses in the future and will add to the number of QI trained staff in the hospital.

The output: percentage of undergraduate student nurses trained in QI was achieved as N=69 (24%) of the total number of 280 undergraduate student nurses were trained. QI training for undergraduate student nurses has never occurred in this institution in the past. The post-test scores of undergraduate student nurses' knowledge of QI and undergraduate student nurses' indicating their interest and ability to participate in QI initiatives; activities and QI program development were accomplished. However, the outcomes for the knowledge post-test were not conclusive due to the reasons mentioned above (Durham & Van Hofwegan 2014). These scores tie up with the recommendations for future QI training of this nature.

The outcomes expected will be a decision by the institution and education authorities regarding QI training of undergraduate student nurses. The findings of this study, when presented to the stakeholders mentioned in chapter 1 and 3 (the Nursing Campus Principal; the Director of the KwaZulu-Natal College of Nursing (Nursing

Education Head Office), hospital management; the department of health; the QA manager, and the QI trainers of the hospital) will determine the decisions to be made in this regard.

There is however, a need to evaluate the impact of Quality Improvement training for undergraduate students in a hospital in Kwazulu-Natal. This initiative thus needs further research as the impact is a long-term outcome and may take at least one to five years.

## **5.2. DISCUSSION OF FINDINGS**

### **5.2.1. Demographic data of student nurses**

Demographic data features in terms of position held in the institution; types of hospitals; age group of the respondents; respondents' gender and home language. (These are demonstrated in chapter 4: table 4.1)

#### **5.2.1.1. Position held in the institution**

Regarding the position held in the institution, the majority of student nurses represented the third-year undergraduate student nurse position in the SANC Regulation 425 (R425) nursing programme. The reason for this finding is that the number of second year undergraduate student nurses in the SANC Regulation 683 (R683) programme that were to participate in this study had altered due to the high failure rate of this group of undergraduate students in their first year, hence, only sixteen graduated to the second year. The latter occurrence resulted in the exclusion of twenty-nine (29) students in the R683 nursing programme from the study.

The findings of this study also reflect a lack of QI knowledge in nurses in the R683 programme. Flores, *et al* (2013) mention that undergraduate student nurses were not exposed to QI knowledge, skills or attitudes to fully participate in QI twenty-two or more years ago hence, looking at the outcomes of this study one sees that there is a knowledge deficit in the older nurses that trained all those years ago on the post-test scores when compared to their younger counterparts in the R425 programme. Table 4-9 illustrates this in showing no statistical association between the years of position and the knowledge after the QI training.

Years of Experience of participants was omitted in the analysis (as mentioned in Chapter 4 above).

#### **5.2.1.2. Gender**

A large majority of students were represented by females because nursing is a predominantly female career. The hospital establishment list for the selected hospital for September 2016 displays this. The South African Nursing Council nurses register for 2015 reflects 253576 females and 25461 male nurses out of a total number of 279037 nurses in South Africa (SANC 2015). These statistics show that males are still entering the nursing profession but in very low numbers when compared to females.

#### **5.2.1.3. Racial groups**

When racial groups and home languages of participants were analyzed, it was noted that the majority of respondents were black South Africans. Indians and Coloureds were minimal and no white student nurses were in training. The reason for this is the quota system of recruiting in South Africa that requires a black majority according to the population census in the different regions of the country (Department of Labour: South Africa 2004: 9-10). Indians, Coloureds and Whites are then divided equally to form the remaining percentage of staff recruited for employment. Nurses in South Africa are recruited and selected according to this Act. Author Oosthuizen and Naidoo (2010) found that employees of different races other than Black South Africans felt that due to the employment equity policy in South Africa, there is no room for advancement in other races. Interviews with the different race groups showed more negative than positive results where brain drain of the different race groups to other counties, reverse discrimination and White south Africans leaving the country for better prospects (Oosthuizen and Naidoo 2010). These may be some of the reasons people of other races other than Black South Africans do not apply for nursing.

#### **5.2.1.4. Home language**

The questionnaires reflected Zulu as the predominant home language followed by English, Xhosa and Afrikaans. This showed that most Zulu students are recruited for nursing whilst the least number of English and Afrikaans speaking nurses are in training (Department of Labour: South Africa 2004: 9-10). English is a requirement for nursing; however, the majority of students in KwaZulu-Natal are Zulu speaking (Manson 2014). Another expectation was that a lack of awareness, knowledge and effectiveness of QI

in these students may be attributed to a language barrier in terms of knowledge about QI.

Table 4.9 indicates that there is a marginal association between home language and QI knowledge on the post-test scores. This finding shows that there may be some difficulty in comprehension and knowledge acquisition of QI concepts and methodologies due to language barriers. The Zulu speaking respondents appears to be the most affected, followed by IsiXhosa, Sesotho and English speaking respondents. Zulu speaking respondents (n=52) showed a severe lack of knowledge when answering the post-test questions. They answered questions 3-11 very poorly. The English speaking (n=10) and the Sotho speaking (n=1) answered all the questions fairly well. This finding may be due to the fact that English is not the home language of non-English speaking participants and that the training course and material are in English. Should the training and material have been in Zulu, their scores may have been better. However, one can argue this point seeing that English may not be the home language for most South African citizens. Moreover all student nurse lectures are facilitated in English and exams are written in English due to it being a universal language. Of the Xhosa speaking respondents (n=3) only 1 answered question 12 poorly. The English speaking (n=10) and the Sotho speaking (n=1) answered all the questions fairly well. Manson (2014) posited that nurses in training performed at a lower level where English was not a home language for matriculants entering nursing. She further added that nurses who had higher matriculation English results on entry to nursing obtained better academic results in first year nursing exams. Roos (2014) reported that 29.6% of undergraduate student nurses at universities dropped out due to academic reasons however did not mention the actual reasons for academic deficiencies.

#### **5.2.2. Objective one: To determine undergraduate student nurses' level of awareness of QI and its effectiveness in the clinical field at a public hospital in the KwaZulu-Natal Midlands.**

According to the results (see tables 4.1 and 4.2) the majority of undergraduate student nurses had not read or heard about QI before reading the information and consent questionnaire. This finding makes one aware of the lack of knowledge of QI in most undergraduate student nurses in the hospital. Dondashe-Mtise (2011), Murray et.al (2010); Hwang & Park, (2013) echo the same sentiments. Stavropoulos & Strobouki (2009) describe that the majority of respondents had no previous

experience and were never involved in QA initiatives or seminars. Kovner *et al.* (2010) reiterate that 38.6% of undergraduate student nurses were unaware of QI before the QI training.

#### **5.2.2.1. Awareness of Quality Improvement Training**

Table 4.3 demonstrates that more than half of the students were unaware of such training in the institution. This was also noted in Kovner *et al.* (2010) study. The findings of the current study reveal that only 47% of undergraduate student nurses were aware of QI training in the hospital. The remaining 53% were either unaware or unsure of it. This leaves the researcher with questions such as why were these students not well informed about QI training in the institution? The assumption is that due to the QI training not being available to undergraduate student nurses, these students were not made aware of such training (Durham & Van Hofwegan 2014). It is also possible that QI training may not be a concern to undergraduate student nurses or that their superiors, management or QI trainers did not see the necessity to make these students aware of the training in the wards and units as also seen by authors (Dondashe-Mtise 2011, Kovner *et al.* 2010, Draper *et al.* 2008).

#### **5.2.2.2. Awareness of QI concepts programmes and initiatives (figure 4-1; 4.-2 and table 4-4).**

In the responses received on the awareness of QI concepts, programmes and initiatives, scores were very high. Batho Pele principles rated the highest in this category. The overall scores revealed that over 75 % of undergraduate student nurses were aware of the QI concepts, programmes and initiatives, however, when asked about their awareness of QI in the initial question, the majority answered no. It is thus evident that these students are unable to associate QI concepts with the term QI (Murray *et al.* 2010, (Dondashe-Mtise 2011, Hwang and Park 2013).

Seeing that these students were not able to equate, associate and relate concepts such as Batho Pele; the waiting times survey; priority areas and other QI concepts to QI implies that students are unable to understand the meaning of QI. To determine the association between the awareness of QI and the position held in the institution, a non-parametric test (ANOVA) was conducted. The researcher expected a statistical association between the awareness of the QI concepts, programmes, initiatives and the position held in the institution. The results showed no statistical association as depicted in table 4.4 in the results.

### 5.2.2.3. Involvement in and effectiveness of QI methodologies and initiatives in the respondents' sphere of work:

Chapter 4 (Figure 4.6 and 4.7) above informs us that the respondents were required to have been involved in QI to report on the effectiveness of the QI in the clinical field hence, their involvement and non-involvement in the QI methodologies and/ or in the QI activities were analyzed. More than 70% of the respondents were not involved in QI methodologies and fewer than 50% were not involved in QI activities in their sphere of work (Durham & Van Hofwegan 2014). However, some of the respondents did not clearly understand the question which read "if you were involved in these methodologies how effective were they in your sphere of work? The assumption is that these students may have read the question in this manner: 'Had you been involved in QI? How effective do you think these methodologies/activities would have been?' Hence, some of the students' responses would not have been congruent to their previous response of non-involvement in QI. However, the analysis revolved around the respondents that had initially indicated that they were involved in QI activities/ methodologies, which amounted to less than half of the respondents.

The researcher and statistical analyst therefore cross-tabulated the QI involvement of the student nurses with the effectiveness of the above-mentioned methodologies. Respondents answered according to their involvement in the different types of QI methodologies and activities. This also reflects that students were not aware of and were not involved in the application of QI methodologies and therefore found QI methodologies and activities ineffective in their sphere of work (Murray *et al.* 2010; Hwang & Park 2013, Durham & Van Hofwegan 2014) found the same to be true in their studies. The findings revealed the following information where none or a very small percentage of undergraduate nurses are exposed to quality improvement training or experience in their coursework

The root cause analysis and lean management are the two most popularly used methodologies in the institution; however, students were barely involved in the use of these and did not find them effective (Murray *et al.* 2010); Hwang & Park 2013). A likely reason for this may be a lack of in-service training; lack of interest in or use of these methodologies (Draper 2008). An obvious conclusion here is that the students who were not aware of or involved in the QI methodologies such as the CANDO and Lean Management found them to



be ineffective Kovner *et al* (2010) and van Epps *et al* (2006). The researcher sees a very small percentage of students involved in the QI methodologies, resulting in a small percentage finding these QI methodologies effective. After the training, the students were able to use these methodologies successfully. The charts they prepared and presented in their small group activities reflected this. Kovner *et al* (2010) and van Epps *et al* (2006) that students could use these methodologies successfully after their QI training and accompaniments.

#### **5.2.2.4. Effectiveness of the QI initiatives in developing knowledge and awareness of QI**

For the respondents that were involved in QI initiatives such as the Infant and Perinatal Mortality Meetings; the Waiting Time Surveys; the National Health Insurance Pilot Project; the Mother-Baby-Friendly Initiative and the National Core Standards, it was found that these were somewhat effective in developing their knowledge and awareness of QI (Flores *et al* 2013). The Mother-Baby-Friendly Initiative and the National Core Standards featured as the highest percentages in terms of developing knowledge and awareness of QI in these students. These amounted to (71.2%) each, followed by the waiting times survey at 62.1%; the National Health Insurance Pilot Project at 43.9 % and the Infant and Perinatal Mortality Meetings at 25.8%. These findings therefore imply that QI initiatives have the potential of being successfully implemented and may yield effective results in developing the knowledge and awareness of QI in undergraduate student nurses and possibly all nurses in the clinical field Flores *et al* 2013, Kovner *et al* (2010) and van Epps *et al* (2006)

#### **5.2.3. Objective 2: To determine the knowledge level of undergraduate student nurse of QI post QI training attendance at a public hospital in the KwaZulu-Natal Midlands.**

Students were required to answer yes or no to 13 knowledge questions derived from the content of the training (see tables 4.5 to 4.8 and figures 4.7 to 4.8). An overview of the incorrect answers for each question was undertaken and revealed that, of all the incorrect answers given, students still did not grasp the meaning of a standard and an indicator. For the questions on the monitoring of a TB patient's temperature, 59.1% of the students answered the following question wrongly: 'A standard may be stated as the number of times the temperature is measured for a patient with TB during a 24-hour period'. 75.8% of the students responded incorrectly to the question "an indicator prescribes that each patient with TB must have his/ her temperature measured 4 times in 24 hours". The respondents were not able to differentiate

between a standard and an indicator. Hence it is deduced that these are the areas that the students need development in which can be facilitated by more QI knowledge and experience acquisition during their training.

The overall scores reflected that the majority of students did not benefit from the training in terms of knowledge acquisition (Durham & Van Hofwegan 2014). A reasonable explanation for the poor overall scores may be the fact these students were exposed to QI training content and QI project development over a one-day period, as opposed to a two-day course that is usually facilitated for staff in the hospital. Other reasons may be language barrier as noted earlier in the discussions and that students had taken the questionnaires away for obvious reasons and may have only answered the post-test questionnaire just before they handed the questionnaire in. This took them up to two weeks to return as some of the students were in the clinical field at the time. Seeing that students are not generally aware of, or exposed to QI in the clinical field, makes it a new experience and concept to them as seen in Flores *et al* (2013). This would therefore demand more time and the ability to grasp QI education and practice in a training session such as this. Flores *et al* (2013:13) and Durham Van Hofwegan (2014) found that despite attempts to integrate QSEN into undergraduate student nurses' curricula, there was still a lack in terms of preparation for implementation of QI measures and techniques.

An ANOVA test was completed to gauge the statistical association between the respondents' position held in the institution and the knowledge level after the training. Both these tests confirmed that no statistical association existed between the variables compared (Durham & Van Hofwegan 2014). This indicates that QI knowledge was lacking in both groups of undergraduate student nurses despite the position held and the years of experience acquired as nurses. Here again the expectation that the second year undergraduate student nurses in the R683 programme would have exhibited better post-test knowledge of QI due to their position of seniority and more years of experience as opposed to the third year students proved inconclusive. Students in the R683 programme (second year students with more experience in the clinical field) demonstrated a greater lack of knowledge than those in the R425 nursing programme (third year students with less experience in the clinical field).

## **5.4. Course evaluation:**

### **5.4.1. Impact of the QI training on the respondents:**

The course evaluation questions formed part of the data collection instrument and were required post training. Closed-ended questions regarding the impact the QI training had on undergraduate student nurses were answered. The aspects included were the quality of care they would give; their understanding of the QI methodologies; the development of their nursing skills, knowledge and QI development abilities, their abilities to participate in QI initiatives; their knowledge about the National Core Standards; their understanding of and application of QI initiatives, standards, and the QI process (see Figure 13). More than 75% of the respondents agreed with these statements, indicating their interest in being involved in QI in the future (Murray; Douglas; Girdley and Jarzemsky 2010; Hwang and Park 2013). Their recommendations indicated learning more about QI and receiving more QI training (discussed below) is an indication of this fact.

### **5.4.2. QI training rating by the respondents:**

Figure 14 displays the rating of the training by undergraduate student nurses. The ratings were required in terms of the topic and content, the presenters, time allocated for each presentation and the teaching strategies/ presentations. The majority of students responded positively to all these aspects. The highest ratings of over 90% were in favour of the presenters; over 89% of the ratings favoured the teaching strategies and presentations; over 60% were in favour of the time allocated for the presentations. Over 50% were in favour of the time allocated for project completion and over 47% rated the time allocated for the entire course as favourable. These findings reveal the success of the QI training workshop; however, a prominent finding is that the time allocated for the training should be reviewed.

### **5.4.3. Objective 3: To make recommendations for future QI training initiatives for undergraduate student nurses at a public hospital in the KwaZulu-Natal Midlands**

#### **5.4.3.1. Respondents' recommendations for future QI training in the institution:**

As seen in Figure 4-12, Over 90% of the respondents reacted positively to learning more about QI, the impact of adopting Quality Improvement techniques in their work place on patient care and services offered. They also recommended this training for undergraduate student nurses in the future. This has made a positive impact on the research team and the QA trainers in that QI training for undergraduate student nurses may be considered for the future and for inclusion in their curricula. Flores *et al* (2013) recommend that

nurse educators and hospitals foster a partnership for more effective QI education implementation and that QI projects become a specific requirement for graduation.

## **5.5. Recommendations from the study:**

### **5.5.1. Recommendations for research**

The Evaluation of the impact of QI training on undergraduate student nurses' in a South African health care institution yielded valuable information with regard to its effect on the quality of health care delivered by this specific group of nurses. Furthermore, this research on the benefit of QI training for undergraduate student nurses in the South African context determined the need for its inclusion in their curriculum. There is also the need to explore these learners' awareness of the importance of continually improving the quality of the care they give to their clients and their level of knowledge; skills and understanding of QI (Krykjebo & Hanestad 2003). Research has pointed out that newly qualified professional nurses needed to have acquired the skills, knowledge and abilities of QI in order to practice efficiently at the outset (Draper *et al.* 2008, Flores *et al* 2013, Dolansky & Moore 2013). This implies that these attributes needed to be acquired during their training (Flores *et al.* 2013, Dolansky & Moore 2013). Seeing that this was a short term outcomes evaluation, more research is required to determine the long term benefits of QI training initiatives on undergraduate student nurses' clinical skills acquisition. Post test only was conducted in the study for reasons mentioned, however a Pre Test Post Test evaluation would be more beneficial in determining the outcomes of QI Training for undergraduate students in the future (Kyrkjebo *et al* 2001; Van Eps, Cooke, Creedy & Walker 2006; Murray *et al* 2010)

### **5.5.2. Recommendations for education**

Consideration of the inclusion of QI training into undergraduate nurse training (Dolansky & Moore 2013) at an earlier level such as combining QI with the Nursing Process or introducing QI methodologies as a practical session in education is assumed to fortify their knowledge skills and abilities in QI, and increase their confidence in participating in QA and accreditation (Draper *et al* 2008). The gap in knowledge here is ignorance of undergraduate student nurses to these QI initiatives, QI project development, and their expectations for internal and external evaluation in hospital accreditation (The Health Foundation 2012). Hence, there is a lack of support of the total nursing population for QI programmes in hospitals in KwaZulu-Natal and South Africa (Dondashe-Mtise 2011, Hwang & Park 2013).

There is little evidence of student nurse training in quality improvement at the training hospitals in South Africa. Dondashe-Mtise's (2011) study was the only study identified that mentioned QI training requirements for nurses in South Africa. The researcher therefore used this study to suggest that QI training for undergraduate student nurses be considered in order for health initiatives such as the "Make me look like a hospital project, the National Core Standards, the National Health Insurance" and many other national health initiatives to be strengthened and supported (NCS: SA 2011). The researcher also explored whether QI training can be included in student nurse training.

### **5.6.3. Recommendations for nursing practice:**

There are no available records on QI training conducted on undergraduate student nurses at South African health institutions. The post-test scores did not reflect a successful change in knowledge (Durham & Van Hofwegan 2014), however, the recommendations proposed by the respondents showed the need for this type of initiative in the hospital. As mentioned in the significance of the study in Chapter 1, evidence of the improvement in skills, knowledge and understanding of QI methodologies after QI training of undergraduate student nurses was found in countries abroad (Kyrkjebo & Hannestad 2001; Kyrkjebo *et al* 2001; Van Eps *et al.* 2006; Hwang & Park 2013; Murray *et al* 2010). Hence, it is perceived that undergraduate student nurses may also benefit from QI training at the workplace in the South African context.

### **5.6.4. Recommendations for management**

Inclusion of undergraduate student nurses in QI training may fortify, support and fast track the implementation and success of quality initiatives (NCS: SA 2011). Nurse managers and quality improvement programme coordinators need to be made aware of this omission in the institution and therefore make a decision as to the necessity of QI training of student nurses in the hospital under study (NCS:SA 2011). This may bring about significant improvements in the implementation of QI initiatives in the institution; may effect a change in the knowledge, skills and attitudes of student nurses regarding quality health service delivery, and may fast track quality improvement and assurance initiatives in health care.

### **5.6.5. Limitations to recommendations for the study**

Limitations to recommendations for the study include student nurses' clinical and theoretical training requirements, which may not allow room for inclusion of QI training in their curriculum. Quality Improvement and research are similar in many ways. The nursing process also contains elements of QI. Consideration of whether

this training will create confusion in the minds of student nurses is essential. The reason for this issue is that research and QI are conducted in their third year of training. The researcher has thus defined QI and research and the nursing process to add clarity to the understanding of both processes. These definitions are found in the definition of terms section of this paper. The reason the researcher suggested including some information/training in quality assurance in the first year of nursing is because quality care is expected from the very outset of nursing.

There will also be a need to conduct more quality improvement training sessions in the institution annually, which impacts on service delivery as trainers will be out of their departments more often than before. Hence, a discussion regarding the feasibility of the including student nurses in the QI training may need to be explored. Train the trainer programmes will also need to be increased to increase the number of trainers to accommodate more students for training, this will also impact on service delivery (NCS: SA 2011). All of these aspects need to be considered carefully when planning training. The levels of training should also be appropriate for the different level of student nurses. This study was quantitative. Future research involving interviews and focus group discussions are recommended to explore the effects of this QI training in clinical practice.

## **6. LIMITATIONS/DELIMITATIONS OF THE STUDY**

The questionnaire (developed by the researcher) had many errors which may have contributed to a lack of rich evidence on the study. The small sample size limited the findings.

An alarmingly large number of learners of the proposed population for this study failed their summative examinations. The study population thus consisted of more learners in the R425 programme than in the R683 programme resulting in a smaller number of second year undergraduate student nurses participating in the study.

## **7. CONCLUSION**

Evidence is apparent that student nurses in the hospital studied are not formally trained in QI. From the literature, nurse managers and leaders in institutions felt strongly that lower categories of nurses require quality improvement training in order to be more effective in their practice (Price *et al.* 2007). In a qualitative study by Dondashe-Mtise (2011), in the East London hospital complex, Eastern Cape Province, South Africa, nurse managers were interviewed to gauge their attitudes towards quality improvement. One of the factors that

resulted in negative attitudes were that of QI education and training or the lack thereof, Dondashe-Mtise (2011), Nurse managers felt that there was either a lack of, no training or training that was not revised or updated timeously (Dondashe-Mtise 2011). No specific category of nurses were mentioned in the institutions in South Africa hence, it is not known whether student nurses are included as clinical nurses since students are not always considered part of the work force in some health institutions, Dondashe-Mtise (2011).

The QI training initiative for undergraduate student nurses conducted in this study was the first of its nature at the selected public hospital. This was a new experience for the QA manager, the QI trainer, the campus staff, the students (respondents) and the researcher. The programme was lengthy and conducted in a shorter period than is usually required for training of this nature. QI training is usually facilitated to all other members of staff at the institution. Undergraduate student nurses were never included in this training in the past as they are considered a separate entity from the hospital's permanent staff as seen in the studies conducted by Flores *et al* 2013). From the results displayed, it was noted that the students with more experience were more aware of QI whereas they were not as knowledgeable as their juniors who reflected better results in the post-test knowledge evaluation. More than 50% of the students found the training, the content, the presentation and presenters and the time allocated for QI projects good. However, more than 40% of the students noted that the time allocated for the course was poor. The post-test evaluation revealed that students did not fair very well with the knowledge recall, however, the recommendations they made alluded to the need for this training in the future.

The studies reviewed internationally have reflected specific QI training for undergraduate nurses with more positive than negative outcomes (Kyrkjebo *et al* 2001, Kovner *et. al.* 2010 Murray *et al* 2010; Dolansky & Moore 2013; Durham & Van Hofwegen 2014).

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## 9. APPENDICES:

### APPENDIX A: INFORMATION TO RESPONDENTS

School of Health Sciences  
Howard College  
Nursing Management

Date:

Dear Respondent

Masters in Nursing Management: Research Project

Researcher: Marlene Naidoo

Supervisor: Dorien Wentzel

Marlene Naidoo hereby invites you to participate in a research project entitled “The inclusion of undergraduate student nurses in quality improvement training at a selected government hospital in the province of KwaZulu-Natal”.

Your participation in the study is completely voluntary. You may decline to participate or withdraw from the study at any time with no negative consequences. There are no monetary incentives for participating in the study. Confidentiality and privacy will be maintained by the researcher and the School of Health Sciences and your responses will not be used for any purposes outside of this study.

In the event of any problems or concerns/questions you may contact the researcher or the Supervisor:

Contact details of researcher:

Marlene Naidoo, tel.: 0720773503

Contact details of supervisor:

Mrs. D. Wentzel, tel.: (031) 260-3729 or email [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za).

Yours sincerely

Marlene Naidoo, tel.: (0720773503)

Researcher signature:



## **APPENDIX B: INFORMATION SHEET AND CONSENT TO PARTICIPATE IN RESEARCH**



### **INFORMED CONSENT FORM**

School of Health Sciences

Howard College

Nursing Management

Date:

Good day and thank you for your time and in assisting me in whatever may be necessary for my study.

My name is Marlene Naidoo. I am a nursing lecturer at Grey's Nursing Campus in Pietermaritzburg. I am in the process of completing my Masters in Nursing Management: Research Project at the University of KwaZulu-Natal, Howard Campus under the supervision of Mrs. Dorien Wentzel, a lecturer at UKZN. Our contact numbers are as follows:

You are being invited to participate in a study that involves research in the evaluation of a quality improvement training programme at a public hospital in the KwaZulu-Natal Midlands. The aim and purpose of the study is to make provision for an increase in the knowledge, skills and understanding of undergraduate student nurses in quality assurance by conducting and evaluating a one (1) day quality improvement workshop as a quality initiative for undergraduate student nurses at hospital mentioned above.

The study will pose no risks or discomforts in any way whatsoever. We hope, however, that the study will create the following benefits: Inclusion of undergraduate students into the hospital Quality Improvement (QI) Training; inclusion of QI training in the education programme/curriculum for undergraduate student nurses and an increase the awareness; knowledge; skills and experience of undergraduate student nurses in QI in order to improve the quality of care patients receive, and to meet required standards of nursing education and practice. The study will also increase the confidence and knowledge of nurses in participation of QI initiatives and hospital evaluation.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (Ethics approval number: HSS/0918/016M).

Note that participation in this research is voluntary and that you are at liberty to refuse to participate or withdraw from the study at any point. Refusal or withdrawal from participation will not result in any negative consequences whatsoever. Should you wish to refuse or withdraw from the study, a letter addressed to the researcher requesting your desire to do so will be appreciated as a procedure for orderly withdrawal? The researcher will deem it necessary to withdraw any participant from the study only if the participant refuses to comply with the requirements of the research at any point in the study. The researcher will in no way coerce any participant to participate in the study if he/she so wishes not to.

No costs will be incurred should the respondents decide to participate in the study. There are no incentives or reimbursements for participating in the study.

#### DECLARATION OF INFORMED CONSENT

I, \_\_\_\_\_, [full name(s) of respondent] hereby confirm that I understand the contents of this document and the nature of the research project, and hereby consent to participate. I understand that I am at liberty to withdraw from the research project at any time, should I so desire without any negative consequences.

Respondent signature: \_\_\_\_\_

Date: \_\_\_\_\_

## **HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**

**Research Office, Westville Campus**

**Govan Mbeki Building**

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31- 2604557- Fax: 27 31- 2604609

Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

In the event of any problems or concerns/questions you may contact the researcher at (provide contact details) or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

Researcher: Marlene Naidoo cell number 0720773503, e-mail address: marlz.naidoo@yahoo.com

Supervisor: Mrs. Dorien Wentzel: telephone number 031-2603729, e-mail address: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za).

## APPENDIX C: RESEARCH TOOL: QUESTIONNAIRE



School of Health Sciences

Howard College

Nursing Management

Date:

Dear Respondent

### **QUESTIONNAIRE:**

Respondents: Undergraduate student nurses exposed to a quality improvement training initiative at a public hospital in the KwaZulu-Natal Midlands

## INSTRUCTIONS:

- Please note that there is a post-test questionnaire which is based on some of the content facilitated in the QI training and is available in the training manual provided for the course.
- Please answer all questions.
- Be as honest as possible in answering questions.
- Ensure that you sign the declaration of consent.

## SECTION A:

### 1. Biographical details

Please respond by placing a tick () in the appropriate box.

#### 1.1. Your position held in the institution:

- Third year undergraduate student nurse (R425) programme
- Second year undergraduate student nurse (R683) programme
- Fourth year undergraduate student nurse (R425) programme (pilot study only)

#### 1.2. Years of nursing experience

- 0-10 years
- 10-20years
- 20-30years
- 30years and above

1.3 Which one of the following best describes the classification of the hospital in which you work?

District Level  Regional Level  Tertiary Level  Central Level  Specialized TB   
Psychiatry

#### 1.4. Your age:

- 18-28
- 29-38
- 39 and above

#### 1.5. Your gender:

- Male
- Female

1.6. Your racial group:

- Black                       White                       Indian  
 Coloured  Other (please specify): \_\_\_\_\_

1.7. Your home language:

- IsiZulu                       English                       Afrikaans  
 IsiXhosa                       Other (please specify): \_\_\_\_\_

## Section B: Awareness, Effectiveness and Knowledge of Quality Assurance

### Awareness of QI Training in the hospital:

1. Prior to reading this informed consent and questionnaire, have you ever heard or read about Quality Improvement?

**Please indicate your response to the question by ticking (☑) the appropriate box.**

- Yes                       No

2. Are you aware of any Quality Improvement training offered in the hospital?

- Aware                       Unaware                       Not sure

### 3. Fill in the correct responses in the columns below:

How aware are you of the following QI concepts, QI programmes and QI initiatives?

**Please use the following codes:** 1: *Totally Unaware*;

2: *Slightly Aware*;

3: *Moderately Aware*;

4: *Extremely Aware*.

**EXAMPLE**



Theory on Quality improvement	1
Practical QI application	2

	Code Number
Theory on Quality improvement	
Practical QI application	
Theory and practical QI content	
QI programmes/projects	
QI programme presentations	
National Core standards	
National Health Insurance pilot project	
Mother-Baby-Friendly Initiative	
Waiting times survey	
Infant and prenatal mortality meetings	
Priority Areas	
Client Satisfaction Survey	
Batho Pele principles	

4. Please indicate where you heard or read about Quality Improvement?

- Colleagues in the hospital
- Internet search
- While studying for your course
- Newspaper
- Other: \_\_\_\_\_

5. How familiar are you with the following Quality improvement methodologies?

**Please use the following codes:**

*1: Not familiar; 2: Slightly Familiar; 3: Moderately Familiar; 4:Extremely Familiar*

QI cycle	Code Number
Five-Why's	
Lean Management/principles	
CANDO (5 S's)	
Kaizen	
PDSA cycle	
10 step Quality Improvement Cycle	
Root cause analysis	

6. Have you been involved in any of these QI methodologies in the clinical wards/departments?

**Please indicate your response to the question by ticking (☑) the appropriate columns**

Methodology	Yes	No
10 step Quality Improvement Cycle		
Five-Why's		
Lean Management/principles		
PDSA cycle		
Kaizen		
CANDO (5 S's)		
Root cause analysis		

7. Are you aware of what categories of staff are trained?

- All categories staff (staff nurses assistants)   
  Professional nurse   
  Enrolled nurses   
  Enrolled nursing   
  Undergraduate student nurses  
 Not sure

**8. Effectiveness of QI methodologies:**

**Fill in the correct responses in the columns below:**

a. If you were involved in these methodologies, how effective were they in your sphere of work? **Please use the following codes:** 1: N/A; 2: Totally ineffective; 3: slightly effective; 4: moderately effective; 5: extremely effective.

QI cycle	
Five whys	
Identifying and assessing waste (Lean Management)	
CANDO (5 S's)	
Root cause analysis	



**b. Please indicate your response to the question by ticking (☑) the appropriate columns.**

If you were involved with these QI methodologies, would you recommend any of these in the practical field?

Methodology	Yes	No	N/A
QI cycle			
Five whys			
Identifying and assessing waste (Lean Management)			
CANDO (5 S's)			
Root cause analysis			

**c. Please indicate your response to the question by ticking (☑) the appropriate box.**

Which of these QI activities have you been involved in within the unit/hospital?

- Feedback from QI meetings
- National Core Standards
- Make-Me-Look-Like-A Hospital
- Quality improvement projects
- Mother-Baby-Friendly Initiative
- National Health Insurance pilot project
- Waiting times survey
- Infant and prenatal mortality meetings
- None

**d. Please indicate your response to the question by ticking (☑) the appropriate columns.**

If you were involved in any of these initiative(s), what was the extent of your involvement?

<b>Methodology</b>	Ward audits	Hospital Audits	Ward QI project	Research project	N/A
National Core standards					
National Health Insurance pilot project					
Mother-Baby-Friendly Initiative					
Waiting times survey					
Infant and prenatal mortality meetings					
Other					

**e. Fill in the correct responses in the columns below:**

**How effective were these initiatives in developing your knowledge and awareness of QI? Please use the following codes: 1: N/A; 2: Totally Ineffective Slightly effective; 3: Moderately effective; 4: Extremely effective.**

National Core standards	
National Health Insurance pilot project	
Mother-Baby-Friendly Initiative	
Waiting times survey	
Infant and prenatal mortality meetings	
Other	

### **3. Knowledge: Post - test QUESTIONNAIRE**

**3.1. Choose the correct answer:**

**Please indicate your response to the question by ticking (☑) the appropriate column.**

<b>Questions:</b>	<b>Answer</b>	<b>tick (☑)</b>
<b>3.1.1. Which of the following is a dimension of quality?</b>		
a. equity	a.	
b. systems	b.	
c. Standards	c.	
d. Efficiency	d.	
e. Data	e.	
<b>3.1.2. One of the 10 steps of the QI cycle is:</b>		
a. Training	a.	
b. Communicating standards	b.	
c. Pre-tests	c.	
d. post-tests	d.	
e. Policy Making	e.	
<b>3.1.3. The last activity in the QI process is:</b>		
a. Choosing and designing a solution	a.	
b. Analyzing and studying the problem	b.	
c. Designing a system for data collection	c.	
d. Choosing a team	d.	
e. Implementing the solution	e.	
<b>3.1.4. An example of a standard is:</b>		
a. the vision	a.	
b. policies	b.	
c. Safety	c.	
d. Data	d.	
e. Effectiveness	e.	
<b>3.1.5. One of the following is not part of an action plan:</b>		
a. Implementing the solution	a.	
b. Choosing and designing a solution	b.	
c. Defining the problem	c.	
d. Developing indicators	d.	
e. managing information systems	e.	
<b>3.1.6. Which of the following is not a QI initiative?</b>		

a. Feedback from QI meetings	a.	
b. National Core Standards	b.	
c. Make-Me-Look-Like-A Hospital	c.	
d. National Health Insurance pilot project	d.	
e. Infant and prenatal mortality meetings	e.	

**3.2. Please indicate your response to the question by ticking (☑) the appropriate column.**

QUESTION	TRUE	FALSE
3.2.1. A system consists of inputs processes and activities		
3.2.2. Flow charts are types of analytical tools		
3.2.3. Scatter grams are types of statistical tools		
3.2.4. The fishbone diagram is a type of a cause and effect chart		
3.2.5. Quality improvement (QI) is a process of meeting the needs and expectations of patients and health service staff.		
3.2.6. A standard may be stated as: the number of times the temperature is measured for a patient with TB during a 24 hour period.		
3.2.7. An indicator prescribes that each patient with TB must have his/ her temperature measured 4 times in 24 hours.		

**Section C: Course evaluation Questionnaire.**

***Please use the following codes:***

*1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree*

**1. What impact has the QI training had on you?**

1.1. I understand the QI process	
1.2. I am able to use the QI process to conduct a QI project	
1.3. I know what standards are	
1.4. I know how to set standards	
1.5. I understand what QI initiatives are	
1.6. I am more knowledgeable about the National Core Standards now	
1.7. I understand my role in QI now	
1.8. I am equipped to participate in the National core Standards evaluation	
1.9. The training has bettered my skills, knowledge and QI project development in a moderate way	
1.10. I understand what QI methodologies are	
1.11. The training will improve the quality of care I give to my patients.	

**2. How would you rate the training? *Please use the following codes: 1: Excellent; 2: Very good; 3: Good; 4: Fair; and 5: Poor***

2.1. Topics/ Content	
2.2. Presenters	
2.3. Time allocated for each presentation	
2.4. Time allocated for the entire programme	
2.5. Time allocated for completion of project	
2.6. Teaching strategies/ presentations	

**4. Recommendations for future training for undergraduate student nurses in this institution.**

a. Would you be interested in learning more about Quality Improvement?

Yes

No

b. Do you think by adopting Quality Improvement techniques in your work place will have an impact on patient care and services offered?

Yes

No

c. Would you recommend this training for undergraduate student nurses in the future?

Yes

No

Thank you for your participation!

## **APPENDIX D: POST-TEST MEMO:**

Masters in Nursing Management: Research Project

Researcher: Marlene Naidoo                      Contact number: 0720773503

E-mail: [marlene.naidoo@kznhealth.gov.za](mailto:marlene.naidoo@kznhealth.gov.za)

Supervisor: Dorien Wentzel                      Contact number: 031-2603729

E-mail: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za)

### **Post-Test MEMO:**

3.1.1. d.

3.1.2. b.

3.1.3. e

3.1.4. b

3.1.5. e.

3.1.6. a.

3.2.1. F

3.2.2. T

3.2.3. T

3.2.4. T

3.2.5. F

3.2.6. F

3.2.7. F

### **TOTAL: 13 MARKS**

Masters in Nursing Management: Research Project

Researcher: Marlene Naidoo.                      Contact number: 0720773503,

E-mail: [marlz.naidoo@yahoo.com](mailto:marlz.naidoo@yahoo.com)

Supervisor: Dorien Wentzel.                      Contact number: 031 260 3729

E-mail: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za)

## APPENDIX E: QUALITY IMPROVEMENT TRAINING PROGRAMME



health

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

### GREY'S HOSPITAL

## QUALITY IMPROVEMENT TRAINING PROGRAMME

**05 SEPTEMBER 2016**

**VENUE: GREY'S NURSING CAMPUS**

08h00 – 10h00	Welcome: Mrs M. Naidoo  Objectives: Mrs M Naidoo  QIP Presentation QI Trainer: Mrs L Chirkoot  Introduction to QI: QI Trainer: Mrs L Chirkoot  Building a QIP: QI Trainer: Mrs L Chirkoot
10h00 – 10h30	TEA
10h30 - 13h00	Problem Solving Techniques : QI Trainer: Mrs L Chirkoot  Analytical Tools: QI Trainer: Mrs L Chirkoot  Environmental Hygiene: QI Trainer: Mrs L Chirkoot  Waste Management Audits: QI Trainer: Mrs L Chirkoot
13h00 – 13h30	LUNCH
13h30 – 16h00	Preparation and Facilitation: Trainers/Trainees  Of Programme Presentations: Trainees  Summary and Way forward: Trainers and Mrs M Naidoo



**APPENDIX F: GREY'S HOSPITAL QUALITY IMPROVEMENT TRAINING  
MANUAL: 2016**



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

GREY'S HOSPITAL  
QUALITY IMPROVEMENT TRAINING MANUAL



**"DOING THE RIGHT THING RIGHT, RIGHT AWAY!" TQM**

**DATE COMPILED: 2002**

**DATE REVIEWED: SEPTEMBER 2015**

**NEXT REVIEW DATE: SEPTEMBER 2016**



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

## 1. INTRODUCTION

This manual was reviewed to address basic and practical issues in respect of Quality Improvement for Greys Hospital.

All national, provincial, and district quality initiatives have been consulted in the preparation of this document. These include:

- National Health Insurance
- National Core Standards
- Six priority domains for Health Institutions
- Make me Look like a Hospital Initiative
- Patient Rights Charter
- Batho Pele Principles

THE FOLLOWING CONCEPTS WILL BE COVERED.

- Quality and its dimensions
- Quality improvement process
- Building of a Quality Improvement Programme

This training is offered to all staff at Greys Hospital in order to promote quality awareness and instill a quality culture in everyday duties. The training includes lectures, practical sessions, team building, and the production of a departmental Quality Improvement Programme to address gaps in a specific ward and department.

The ultimate goal of this training programme is that of "Developing / empowering people to improve the quality of care for the people that they serve."

COMPILED BY THE QUALITY IMPROVEMENT TRAINING TEAM 2015

Approved by the Chief Executive Officer:  
Dr KB Bilenge

## APPENDIX G: LETTERS REQUESTING GATEKEEPER APPROVAL

### 1. Greys Hospital

249 Oribi Road  
Pelham  
Pietermaritzburg  
3201  
6 July 2016

The Hospital Manager  
Grey's Hospital  
Private bag X9001  
Pietermaritzburg  
3201

Dear Sir

#### RE: REQUEST TO CONDUCT A RESEARCH INITIATIVE AT GREYS HOSPITAL.

I, Mrs. M Naidoo, a lecturer at Grey's Nursing Campus am presently studying a Master's Degree in Health Science Nursing Management at the University of KwaZulu-Natal. My Research topic is *'an evaluation of a quality improvement training programme for undergraduate student nurses: a quality initiative at a public hospital in the Midlands, Kwazulu-Natal, and South Africa'*.

I do hereby request permission to conduct my study using a post-test-only quantitative evaluative design after a 1 day Quality Improvement (QI) workshop with 2 groups of undergraduate student nurses (a total of 77) on 3 and 4 August 2016 at Grey's Nursing Campus.

The objectives of the study are to gauge the value of QI Training for undergraduate student nurses with regard to knowledge, awareness and effectiveness of QI training and recommendations for future training at Grey's hospital, and possibly at South African Health institutions. At present no such training for undergraduate student nurses or studies of such a nature exists in South African health institutions. Studies done in the United States of

America, the United Kingdom, Norway, to name a few, have shown positive results in this area of interest.

Participants will be assured that no physical or emotional risks will be imposed on them by this study. Confidentiality of information and informed consent requirements will be adhered to. No participant will be coerced to participate and anyone may withdraw from the study at any time without any penalties. No benefits will be given for participation in the study.

Please contact me or my supervisor on the contact numbers listed below should you have any queries or need any further information pertaining to the study.

Consideration of my request will be greatly appreciated. And I look forward to a reply at your earliest convenience.

Thanking you.

**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**

**Research Office, Westville Campus**

**Govan Mbeki Building**

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

Researcher: Marlene Naidoo.

Supervisor: Dorien Wentzel.

Contact number: Cell 0720773503

Contact number: 031-2603729

Office number: 033-8973535

E-mail: [marlene.naidoo@kznhealth.gov.za](mailto:marlene.naidoo@kznhealth.gov.za)

E-mail: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za)

.....

Mrs. M. Naidoo

Lecturer: Grey's Nursing Campus

## 2. Grey's Nursing Campus

249 Oribi Road  
Pelham  
Pietermaritzburg  
3201  
6 July 2016

The Principal  
Grey's Nursing Campus  
C/O Grey's Hospital  
Private bag X9001  
Pietermaritzburg  
3200

Dear Sir/Madam

### RE: REQUEST TO CONDUCT A RESEARCH INITIATIVE AT GREYS HOSPITAL.

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Supervisor: Dorien Wentzel.

Contact number: Cell 0720773503

Contact number: 031-2603729

Office number: 033-8973535

E-mail: [marlene.naidoo@kznhealth.gov.za](mailto:marlene.naidoo@kznhealth.gov.za)

E-mail: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za)

**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**

**Research Office, Westville Campus**

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Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

.....

Mrs. M. Naidoo

Lecturer: Grey's Nursing Campus



### 3. KwaZulu-Natal College of Nursing

249 Oribi Road  
Pelham  
Pietermaritzburg  
3201  
6 July 2016

The Principal  
KwaZulu-Natal College of Nursing  
211 Pietermaritz Street  
Private bag X9089  
Pietermaritzburg  
3200

Dear Sir/Madam

#### RE: REQUEST TO CONDUCT A RESEARCH INITIATIVE AT GREYS HOSPITAL.

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Thanking you.

Researcher: Marlene Naidoo.

Supervisor: Dorien Wentzel.

Contact number: Cell (0720773503)

Contact number: 031-2603729

Office number: 033-8973535

E-mail: [marlene.naidoo@kznhealth.gov.za](mailto:marlene.naidoo@kznhealth.gov.za)

E-mail: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za)

## **HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**

**Research Office, Westville Campus**

**Govan Mbeki Building**

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

.....

Mrs. M. Naidoo

Lecturer: Grey's Nursing Campus

#### 4. KwaZulu-Natal Department of Health

249 Oribi Road  
Pelham  
Pietermaritzburg  
3201  
6 July 2016

The Provincial Health Research & Knowledge sub-component  
Department of Health KwaZulu-Natal  
Private bag X9051  
Natalia  
Pietermaritzburg  
3200

Dear Sir/Madam

#### RE: REQUEST TO CONDUCT A RESEARCH INITIATIVE AT GREYS HOSPITAL.

I, Mrs. M Naidoo, a lecturer at Grey's Nursing Campus am presently studying a Master's Degree in Health Science Nursing Management at the University of KwaZulu-Natal. My Research topic is *'an evaluation of a quality improvement training programme for undergraduate student nurses: a quality initiative at a public hospital in the Midlands, Kwazulu-Natal, and South Africa'*.

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Consideration of my request will be greatly appreciated. And I look forward to a reply at your earliest convenience.

Thanking you.

.....

Mrs. M. Naidoo

Lecturer: Grey's Nursing Campus

**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**

**Research Office, Westville Campus**

**Govan Mbeki Building**

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Researcher: Marlene Naidoo.

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E-mail: [wentzel@ukzn.ac.za](mailto:wentzel@ukzn.ac.za)

## APPENDIX H: GATEKEEPER LETTERS OF APPROVAL

### 1. Permission from Grey's hospital



health

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

GREYS HOSPITAL  
OFFICE OF THE CEO  
Private Bag X 9001, Pietermaritzburg, 3200  
Town Bush Road, Chase Valley, Pietermaritzburg, 3201  
Tel.: 033 – 897 3321 Fax.: 033 - 8973398  
www.kznhealth.gov.za

<b>To:</b> Mrs. Marlene Naidoo Nursing College – Grey's Hospital
<b>From:</b> Mrs. K.T. McKenzie Acting CEO - Greys Hospital
<b>Date:</b> 6 July 2016
<b>Re:</b> Request for permission to conduct research at Grey's Hospital: <i>An evaluation of a quality improvement training programme for undergraduate student nurses: a quality initiative at a public hospital in the Midlands, KwaZulu-Natal, South Africa</i>


Dear Mrs. Naidoo

Your request to conduct research at Grey's Hospital refers.

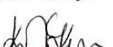
Permission to conduct the above study is hereby granted under the following conditions:

- Your provisional ethics approval and research protocol are assumed to be valid and final ethics approval is a prerequisite for conducting your study at our hospital. Once obtained, please submit a copy of the full ethics approval;
- You are also required to obtain approval for your study from the Provincial Department of Health KZN Health Research Unit prior to commencing your study at Grey's Hospital. You will find more information on their website: <http://www.kznhealth.gov.za/hrkm.htm>
- Confidentiality of hospital information, including staff and patient medical and/or contact information, must be kept at all times; Patient records are **not** to be removed from the hospital premises nor are you allowed to photocopy/ photograph them.
- You are to ensure that your data collection process will not interfere with the routine services at the hospital;
- You are to ensure that hospital resources are **not** used to manage your data collection, e.g. hospital staff collating data; photocopying; telephone; facsimile, etc.;
- Informed consent is to be obtained from all participants in your study, if applicable;
- Policies, guidelines and protocols of the Department of Health and Grey's Hospital must be adhered to at all times;
- Professional attitude and behaviour whilst dealing with research participants must be exhibited;
- The Department of Health, hospital and its staff will not be held responsible for any negative incidents and/or consequences, including injuries and illnesses that may be contracted on site, litigation matters, etc. that may arise as a result of your study or your presence on site;
- You are required to submit to this office a summary of study findings upon completion of your research.
- You are requested to make contact with the **Acting Principal, Mrs. Mzila**, at Grey's Hospital Nursing College, once you are ready to commence data collection.

Recommended by:

  
Dr. L. Naidoo  
Senior Manager: Medical Services

Approved by:

  
Mrs. K.T. McKenzie  
Acting Hospital CEO

uMnyango Wezempilo . Departement van Gesondheid

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## 2. Permission from Grey's Nursing Campus



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

Postal Address: Private Bag X 9001, Pietermaritzburg, 3200  
Physical Address: 201 Townbush Road, Northern Park, Pietermaritzburg, 3200  
Tel: 033 897 3503 Fax: 033 897 3500 Email: dudu.mzila@kznhealth.gov.za  
www.kznhealth.gov.za

**DIRECTORATE:**

Kwazulu Natal College of  
Nursing:  
Grey's Campus

19<sup>th</sup> July 2016

Mrs. M. Naidoo  
249 Oribi Road  
Pelham  
Pietermaritzburg  
3201

Dear Mrs. Naidoo

**Re: Request for permission to conduct research at Grey's Campus**

Permission is granted for you to conduct research at this Campus.

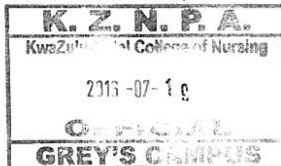
Kindly liaise with Mrs. M.S. Subhan HOD- Community Nursing Science at Grey's Campus to make the necessary arrangements for you to conduct research at this Campus.

You are wished all the best with your studies.

Yours Faithfully

*M. Subhan*

*p.p.* J.D. Mzila (Mrs)  
Acting Campus Principal



### 3. Permission from KwaZulu-Natal college of Nursing



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

Physical Address : 211 Pietermaritz Street , Pietermaritzburg 3200  
Postal Address: Private Bag X 9089 Pietermaritzburg 3200  
Tel: 033 264 7800 Fax: 033 394 7238 Email: sindizama.mthembu@kznhealth.gov.za  
www.kznhealth.gov.za

**DIRECTORATE:**  
KwaZulu-Natal College of Nursing

Reference: Dr. S.Z. Mthembu  
Date: 12 July 2016

Principal Investigator: Mrs. M. Naidoo  
Student No: 212532453  
University of KwaZulu-Natal

RE: Gate Keeper Permission to conduct research at the KZN College of Nursing.

**TITLE/TOPIC: AN OUTCOME EVALUATION OF A QUALITY IMPROVEMENT TRAINING INITIATIVE FOR UNDERGRADUATE STUDENT NURSES AT A PUBLIC HOSPITAL IN THE KWAZULU-NATAL MIDLANDS, SOUTH AFRICA.**

**Dear Mrs. Naidoo**

I have the pleasure in informing you that Gate Keeper permission has been granted to you as per the above request by the Principal of the KZN College of Nursing.

**Data Collection site(s): KZN College of Nursing :Greys Campuses**

Please note the following:

1. Please ensure that you adhere to all policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation of approval from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure this office is informed before you commence your research.
4. Permission is therefore granted for you to conduct this research at the above identified campus.
5. The KwaZulu-Natal College and its NEI's will not be providing you with any resources for this research.
6. You will be expected to provide feedback on your findings to the Principal of the KwaZulu-Natal College of Nursing.

**Thank You**

**Dr. S.Z Mthembu**  
Principal: KZN College of Nursing



#### 4. Permission from KwaZulu-Natal Department of Health



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

330 Langalibalele street,  
Private Bag X9051 PMB, 3200  
Tel: 033 395 2805/3189/3123 Fax: 033 394 3782  
Email: [hrkm@kznhealth.gov.za](mailto:hrkm@kznhealth.gov.za)  
[www.kznhealth.gov.za](http://www.kznhealth.gov.za)

DIRECTORATE:

Health Research & Knowledge  
Management (HKRM)

Reference: HRKM217/16  
KZ\_2016RP18\_522

26 July 2016

Dear Mrs M Naidoo  
(University of KwaZulu-Natal)

**Subject: Approval of a Research Proposal**

1. The research proposal titled 'AN OUTCOMES EVALUATION OF A QUALITY IMPROVEMENT TRAINING INITIATIVE FOR UNDERGRADUATE STUDENT NURSES AT A PUBLIC HOSPITAL IN THE KWAZULU-NATAL MIDLANDS, SOUTH AFRICA' was reviewed by the KwaZulu-Natal Department of Health (KZN-DoH).

The proposal is hereby **approved** for research to be undertaken at Greys Hospital Nursing Campus.

2. You are requested to take note of the following:
  - a. Make the necessary arrangement with the identified facility before commencing with your research project.
  - b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to [hrkm@kznhealth.gov.za](mailto:hrkm@kznhealth.gov.za)

For any additional information please contact Ms G Khumalo on 033-395 3189.

Yours Sincerely

**Dr E Lutge**

Chairperson, Health Research Committee

Date: 02/07/16

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## APPENDIX I: ETHICS APPROVAL:

### Human Social Sciences Research Ethics Council (HSSREC)



11 August 2016

Mrs Marlene Naidoo 212592453  
School of Nursing and Public Health  
Howard College Campus

Dear Mrs Naidoo

Protocol reference number: HSS/0918/016M

Project Title: An outcomes evaluation of a Quality Improvement Training initiative for undergraduate student nurses at a Public Hospital in the KwaZulu-Natal Midlands, South Africa

**Full Approval – Expedited Application**

In response to your application received 22 June 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

**PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

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

Yours faithfully

Dr Sheelika Singh (Chair)  
Humanities & Social Sciences Research Ethics Committee

/p m

Cc Supervisor: Mrs Dorien Wentzel  
Cc Academic Leader Research: Professor M. Mars  
Cc School Administrator: Ms Caroline Dhanraj

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Humanities & Social Sciences Research Ethics Committee

Dr Sheelika Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag #24001, Durban 4000

Telephone: +27 (0) 31 260 3587/055604557 Facsimile: +27 (0) 31 260 4009 Email: [smban@ukzn.ac.za](mailto:smban@ukzn.ac.za) / [scv@ukzn.ac.za](mailto:scv@ukzn.ac.za) / [ethics@ukzn.ac.za](mailto:ethics@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Faculty: eCampus   ■ Edgewood   ■ Howard College   ■ Medical School   ■ Pietermaritzburg   ■ Westville

## APPENDIX J: EDITOR REPORT



4<sup>th</sup> of May 2017

To whom it may concern

**EDITING OF DISSERTATION FOR MRS MARLENE NAIDOO**

I have a master's degree in Social Science, Research Psychology and TEFL qualification from UKZN. I also have 15 years of teaching experience. I have been editing academic theses for students from UKZN, UNISA and DUT for the past five years. I have further done editing, transcribing and other research work for private individuals and businesses.

I hereby confirm that I have edited Marlene Naidoo's dissertation titled "**AN OUTCOMES EVALUATION OF A QUALITY IMPROVEMENT TRAINING INITIATIVE FOR UNDERGRADUATE STUDENT NURSES AT A PUBLIC HOSPITAL IN THE KWAZULU-NATAL MIDLANDS, SOUTH AFRICA**". Corrections were made in respect of grammar, tenses, spelling and language usage using track changes in MS Word 2016. Once corrections have been attended to the dissertation should be correct.

Yours sincerely



Terry Shuttleworth (TEFL, UKZN, MSSC, UKZN).