

The relationship between nurses educational background and the safety and quality of patient care in surgical units in private hospitals in Gauteng

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TO WHOM IT MAY CONCERN

This is to certify that I have language edited the dissertation script of Ms Reece Swart entitled "THE RELATIONSHIP BETWEEN NURSES' EDUCATIONAL BACKGROUND AND THE SAFETY AND QUALITY OF PATIENT CARE IN SURGICAL UNITS IN PRIVATE HOSPITALS IN GAUTENG PROVINCE" and that I am satisfied that, provided the changes I have made are effected to the text, the language is of an acceptable standard.

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LIST OF ABBREVIATIONS

ADN	Associate Degree in Nursing
ANA	American Nurses Association
BSN	Bachelors of Science in Nursing
CAUTI	Catheter-associated urine tract infections
CPD	Continued professional development
DENOSA	Democratic Nursing Organisation of South Africa
DoH	Department of Health
EN	Enrolled Nurse
HASA	Hospital Association of South Africa
HEQF	Higher Education Qualifications Framework
HST	Health System Trust
ICN	International Council of Nurses
MRSA	Methicillin-resistant Staphylococcus aureus
NA	Auxiliary nurses
NWU	North-West University
RN	Registered Nurse
RN4CAST	Nurse forecasting in Europe
SANC	South African Nursing Council
SAQA	South African Qualifications Authority
STTI	Sigma Theta Tau International
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation

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Appendix 1: Ethical approval from the North-West University

Appendix 2: RN4CAST Questionnaire for RNs and ENs

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ABSTRACT

Background: International literature seems to agree that nurses are the backbone of quality patient care and safety. Moreover, the appropriate training of nurses is vital to providing high quality and safe patient care. South Africa has a dual healthcare system and different categories of nurses. The perceptions of the safety and quality of care of the different categories of nurses are not known in the South African context.

Objective: To determine the relationship between the educational background of nurses and their perceptions on the safety and quality of patient care in private surgical units in South Africa.

Methods: This study followed a comparative descriptive design. Data was collected by means of a questionnaire as part of an international collaborative study, Nurse Forecasting in Europe (RN4CAST). Hierarchical linear modelling was used to examine the relationships among the variables in the 304 completed and returned questionnaires.

Results: Overall, both registered- and enrolled nurses seemed satisfied with the safety and quality of care delivered in their units. Registered nurses (RNs) scored higher in the occurrence of incidents in surgical wards, whilst enrolled nurses (ENs) were of the opinion that current efforts to prevent errors are adequate.

Conclusions: This study provides information that RN's and EN's have different perceptions in some areas on the quality and safety of patient care. A statistically significant difference was found between RN's and EN's perceptions on the prevention of errors in the unit, namely, losing patient information between shifts and patient incidents related to medication errors, pressure ulcers and falls with injury.

OPSOMMING

Agtergrond: Internasionale literatuur is dit eens dat verpleegkundiges die ruggraat van gehalte pasiëntsorg en veiligheid is. Verder is die toepaslike opleiding van verpleegkundiges noodsaaklik vir die verskaffing van 'n hoë gehalte en veilige pasiëntsorg. Suid-Afrika het 'n tweeledige gesondheidsorgstelsel met verskillende kategorieë van verpleegkundiges. Die persepsies van die veiligheid en gehalte van die sorg van die verskillende kategorieë van verpleegkundiges is nie bekend in die Suid-Afrikaanse konteks nie.

Doelstelling: Om die verhouding tussen die opvoedkundige agtergrond van verpleegkundiges en hul persepsies oor die veiligheid en gehalte van pasiëntsorg in private chirurgiese eenhede in Suid-Afrika te bepaal.

Metodes: Hierdie studie volg 'n vergelykende beskrywende ontwerp. Data is ingesamel deur middel van 'n vraelys as deel van 'n internasionale kollaboratiewe studie, genaamd Nurse Forcasting in Europe (RN4CAST). Hiërargiese lineêre modelle is gebruik om die verwantskappe tussen die veranderlikes te ondersoek in die 304 voltooide vraelyste wat terug ontvang is.

Resultate: Beide geregistreerde en ingeskrewe verpleegkundiges was tevrede met die veiligheid en gehalte van sorg gelewer in hul eenhede. Geregistreerde verpleegkundiges behaal hoër waardes in die rapportering van voorvalle in chirurgiese eenhede, terwyl ingeskrewe verpleegkundiges van mening was dat huidige pogings om foute te voorkom, voldoende is in hulle onderskeie eenhede.

Gevolgtrekkings: Hierdie studie verskaf inligting oor Geregistreerde Verpleegkundiges (GVs) en Ingeskrewe Verpleegkundiges (IVs) se verskillende persepsies in sommige gebiede van gehalte en veiligheid in pasiëntsorg. 'n Statisties beduidende verskil is gevind tussen GV's en IV's se persepsies ten opsigte van die voorkoming van foute in die eenheid, bewaring van inligting tydens skofruiling en pasiënt insidente wat verband hou met medikasiefoute, druksere en val met besering.

RESEARCH OUTLINE

This research study is presented in an article format and includes the following sections:

1. Chapter 1: An overview of the research
2. Chapter 2: A review of the literature
3. Chapter 3: One article as follows:

Article title:	Submitted to:
Educational background of nurses and the safety and quality of patient care	<i>Curationis</i>

4. Chapter 4: Conclusion, recommendations and limitations

AUTHORS' CONTRIBUTION

This research study was planned and executed by the following individuals:

INDIVIDUAL	RESPONSIBLE FOR:
Mrs. R.P Swart	Conceptualisation of the research question, review of literature, analysis of the data, and interpretation and reporting of the data.
Dr. R Pretorius	Conceptualisation of the research question, analysis and interpretation of the data, and reporting of the data. Supervision of the student.
Prof H.C. Klopper	Conceptualisation of the research problem, co-supervisor, and reviewer of the study.

The following is a declaration by the co-authors to confirm their roles in the study and to agree that the article format is appropriate and acceptable for submission as a dissertation.

Declaration:

I hereby declare that I have approved the inclusion of the article mentioned above in this dissertation and that my contribution to this study is indeed as stated above. I hereby grant permission that this article may be published as part of the M.Cur dissertation of Mrs. Reecë Pearl Swart.

Dr. R. Pretorius

Date

Prof. H.C. Klopper

Date

CHAPTER 1: OVERVIEW OF THE RESEARCH STUDY

Chapter 1 will provide an overview of the research study. The first part will include a discussion of the background and problem statement, research question, researcher's assumptions and aim and objectives. The next part will focus on the design and method as well as ethical considerations and the strategies to ensure rigour of the findings. A chapter outline is included to end chapter1. Chapter 2 will consist of a comprehensive review of the literature related to the variables under investigation. Chapter 3 will present the article submitted to *Curationis* and the study will conclude with Chapter 4 that will focus on the recommendations and limitations of the study.

Key words: Educational background, nurses, safety, quality, care.

1.1 INTRODUCTION

Research recognises the clear link between the educational background of nurses and the quality and safety of patient care (Aiken, Clarke, Cheung, Sloane, & Silber 2003:1617). The main aim of this research study was to investigate the relationship between nurses' educational background and their perceptions of the quality and safety of patient care in surgical units in private hospitals of the Gauteng Province. When referring to nurses in the context of this study, the researcher explored the perceptions of both registered (RNs) and enrolled nurses (ENs) in terms of quality and safety of care delivered in surgical wards in the private hospital sector. The reason for the focus on surgical wards in the private healthcare sector in Gauteng Province is that although Gauteng is the smallest of the nine provinces in South Africa, it is home to 11 19 700 people (refer to Table 1.1) and the wealthiest and most populous per square metre (Statistics South Africa, 2010). Also, the most private healthcare beds and beneficiaries are located in this province (Matsebula & Willie, 2007:163).

This study formed part of an international collaborative research programme, Nurse Forecasting in Europe (RN4CAST), (Sermeus, Aiken, De Geest, Diomidous, Durna, Erman, Klopper, Lui, Matthews, Morena-Casbas, Rafferty, Scott, Schoonhoven, Schubert, Shaibu, Tishelman, Antypas, Brzostek, Brommels, Busse, Clarke, Delaure, Frigas, Griffiths, Gustavsson, Kinnune, Liaskos, Lesaffre, Mantas, Van Achterberg, Van Den Heede, Wörz & Zikos, 2008). The overall purpose of the RN4CAST programme was to expand typical forecasting models, taking into account how features of work environments and qualifications of the nurse workforce impacts on nurse retention, productivity, and patient outcomes. Data for this study was extracted from the RN4CAST databank in order to investigate the relationship, if any, between nurses' educational background and their perceptions on the quality and safety of patient care in surgical units in private hospitals of the Gauteng Province.

TABLE 1.1: Geographical distribution of the population of South Africa versus nursing manpower (SANC, 2011).

Province	Population 2010	Nursing manpower as at 2010/12/31			In training as at 2010/12/31		
		Registered	Enrolled	Auxiliaries	Students	Pupils	Pupils N/A
Limpopo	5 439 600	9 025	4 170	8 331	1 778	672	281
North West	3 200 900	7 775	2 549	4 732	1 577	28	94
Mpumalanga	3 617 600	5 714	2 276	3 732	704	401	247
Gauteng	11 191 700	30 036	13 006	16 667	4 839	6 548	3 190
Free state	2 824 500	7 550	1 846	2 951	1 079	332	224
Kwazulu Natal	10 645 400	24 360	18 895	11 489	3 318	6 354	1 336
Northern Cape	1 103 900	2 146	461	1311	168	-	113
Western Cape	5 223 900	14 626	5 601	8 135	2 554	1 165	536
Eastern Cape	6 743 800	13 985	3 566	6 124	3 761	1 336	590

1.2 BACKGROUND AND RATIONALE FOR THE STUDY

Hospitals are facing serious challenges to provide nursing care of constant high quality and safety due to a rapidly changing environment. According to the American Association of Colleges of Nursing (2002), the changes can be contributed to advances in biomedicine, new clinical technologies, and a difference in the care of patients. As a result of the changing environment, new possibilities need to be explored for enhancing the safety and quality of patient care. Furthermore, the effect of the changing environment leads one to question the educational background of nurses, linked to the quality and safety of patient care. In a study conducted in the United States of America, Aiken *et al.*, (2003) concluded that if nurses were educated at a baccalaureate level or higher, it resulted in lower mortality rates and a drop in the failure to rescue of surgical patients. The educational background of nurses could therefore possibly be linked to the quality and safety of patient care.

In terms of nurses' educational background in South Africa, three different categories can be identified: registered nurse, enrolled nurse, and auxiliary nurse. Registered nurses (also known as professional nurses) in South Africa are currently trained at accredited universities and or nursing colleges as prescribed by the South African Nursing Council (SANC) (Nursing Act 33 of 2005). Students either enrol for a four-year degree at an accredited university or a four year diploma at an approved nursing college, and exit with a qualification at Higher Education Qualification Framework (HEQF) level 7. The undergraduate programme enables graduates to register with the SANC as general, psychiatric and community nurses and midwives (Van Wyk, 2006). The scope of practice listed in Regulation 2598 of 30 November 1984 regulates the nursing practice of all RNs.

Enrolled Nurses are trained at approved nursing colleges. The students typically follow a two year in-service training program. An auxiliary nurse exits with a national certificate at a HEQF level 5, as prescribed by SANC at an accredited Further Education and Training Institution (DENOSA, 2011). Both enrolled nurses and auxiliary nurses practice under the direct or indirect supervision of a registered nurse (Nursing Act 33 of 2005 -No. R.3735 of 14 November 1969). In accordance with the most recent statistics provided by SANC (2011), there is approximately one registered nurse for every 434 patients as opposed to one enrolled nurse for every

995 patients in South Africa. In Gauteng Province, one registered nurse cares for 372 patients whilst one enrolled nurse is available for every 861 patients. In addition, Gauteng Province has the most trained RNs and second most ENs (refer to Table 1.2).

Table 1.2: Population per qualified nurse in the same province (SANC, 2011)

Province	Registered	Enrolled	Auxiliaries
Limpopo	603:1	1304:1	653:1
North West	412:1	1256:1	676:1
Mpumalanga	633:1	1589:1	969:1
Gauteng	372:1	861:1	671:1
Free State	374:1	1530:1	957:1
Kwazulu Natal	437:1	563:1	927:1
Northern Cape	514:1	2395:1	842:1
Western Cape	357:1	933:1	642:1
Eastern Cape	482:1	1891:1	1101:1
TOTAL	434:1	955:1	788:1

Appropriate training of nurses is important to ensure high quality and safety of patient care (Aiken *et al.*, 2003:1617). In addition to that, Hoban (2003:80) emphasises that it is crucial to delegate patients according to the competency level of the nurses, as this will ensure quality nursing care. Having worked in the private hospital context in South Africa, the researcher often noted ENs taking charge of shifts due to the fact that there is a shortage of RNs. On some shifts, one registered nurse can be responsible for the supervision of three wards that account to approximately 90 beds.

When looking at the nurse-to-patient ratios in wards, the Solidarity Research Institute (2009:13) reported that some public hospitals have ratios as high as one nurse for every 18 patients. In the private healthcare sector, Statistics South Africa (2007) reported that although only 7.8 million people have medical insurance, it seems that close to 15 million South Africans opt to use private healthcare services. The

Hospital Association of South Africa (HASA, 2009:53) stated that in the light of the increasing number of patients visiting the private healthcare sector, the sector will need 3 756 more nurses to keep their current nursing ratios. According to Pratt, Burr, Leelarthapin, Blizard, and Walsh (1997:27-39) inexperienced ENs exacerbate the workload of RNs. Studies conducted in other countries have revealed better patient outcomes where RNs were responsible for most of the patient care. This can be attributed to the fact that nurses who were prepared at baccalaureate level have stronger communication and problem solving skills (Johnson, 1988; Daley, 2011) and a higher proficiency in their ability to make nursing diagnoses and evaluate nursing interventions (Giger & Davidhizar, 1990; Daley, 2011). Hospitals with more technology available and higher registered nurse numbers had higher performance on all of the processes of care levels (Lucero, Lake, & Aiken, 2009: 2299-2310).

Globally, literature seems to agree that nurses are the backbone of quality patient care and safety (Havens, Vasey, Gittell & Lin, 2010:927; Bisognano, 2010:84). Poor quality of care and safety can also be linked to the severe shortages of nursing human resources. The Health Systems Trust (HST, 2010) estimates a current shortage of 46.3% of nurses in the public sector, and 24% in the private sector in hospitals in Gauteng (HASA, 2008:49). Although there has been an increase in the number of nurses trained in private hospitals in South Africa since 1998, regulatory constraints have had a negative impact and not nearly enough nurses are trained (HASA, 2009:79). Other problems concerning the quality of patient care in hospitals in South Africa include the misuse of services, errors that might have been avoided, a lack of, or ineffective resources, and records not being well kept. According to the National Health Sector (2007) this can be related to the shortage and the educational background of RNs. It is further believed that the quality of care in hospitals and patient safety is deteriorating due to financial pressure, inadequate staffing, and poor working conditions (Needleman, Buerhaus, Mattke, Stewart & Zelevinsky, 2002:1715-1722).

Adverse events such as falls, high mortality rates, injuries, nosocomial infections, and pressure ulcers are also rising. According to the World Health Organisation WHO, (2012) one in every ten hospital patients admitted in developing countries

experience an adverse event during their stay in hospital. Other factors related to poor quality of care in countries like Canada, Germany, England, Scotland and the United States, include burnout of nurses, higher patient load (implying more acute patients per staff member), burdening nurses with non-nursing tasks, and poor management of hospitals (Aiken, Clarke, Sloane, Sochalski, Busse, Clarke, Giovannetti, Hunt, Rafferty, & Shamian 2001:43). The WHO (2010a:8) places great emphasis on patient safety in health systems. Health systems imply all activities whose primary purpose is to promote, restore or maintain health and patient safety refers to ensuring the safety of patients by keeping them free from danger and harm while receiving patient care (Johnstone & Kanitsaki, 2006:386; WHO, 2010a:11). The quality and safety of patient care relies to a great extent on the services provided by the nurse.

1.3 PROBLEM STATEMENT

Evidence suggests that there is a relationship between the quality of care and safety, and the educational background of nurses (Aiken *et.al.*, 2003: 1619; Johnson, 1988; Giger & Davidhizar, 1990). To that, the severe shortage of nurses in South Africa, and around the world further contribute to the endangerment of the quality and safety of care delivered to patients (Blignaut, Coetzee & Klopper, 2012:16). From the literature presented, it was evident that staff qualifications directly impact on the quality and safety of care delivered to patients. Nurses' perceptions of the quality and safety of care delivered to patients can provide valuable information for patient outcomes and improving the overall standards of care. In order to increase the quality and safety of patient care in an ever-changing environment in South Africa, and to contribute to the growing body of literature on nurse forecasting in South Africa, an exploration of the relationship between the mentioned variables seems vital.

The questions then arising are:

1. What are RNs working in surgical units in private hospitals of the Gauteng Provinces' perceptions of patient safety and quality of care?

2. What are ENs working in surgical units in private hospitals of the Gauteng Provinces' perceptions of patient safety and quality of care?
3. Is there a relationship between the educational background of nurses (registered and enrolled) and their perceptions on the safety and quality of patient care in surgical units of private hospitals in Gauteng Province?

1.4 AIM AND OBJECTIVES

The aim of the study was to investigate the relationship between RNs' and ENs' educational background and their perceptions on patient safety and quality of care delivered in surgical units in private hospitals in the Gauteng Province in South Africa. The following objectives were identified to reach the aim:

1. To determine the RNs' perceptions of patient safety and quality of patient care in surgical units in private hospitals of the Gauteng Province.
2. To determine the ENs' perceptions of patient safety and quality of patient care in surgical units in private hospitals of the Gauteng Province,
3. To determine whether there is a relationship between the educational background of RNs and ENs and their perceptions of the safety and quality of patient care in surgical units in private hospitals of the Gauteng Province.

1.5 RESEARCHER'S ASSUMPTIONS

Assumptions according to Alligood (2010:143) are past experiences that provide a frame of reference for expected outcomes. Assumptions are beliefs that something is true without scientific proof. These assumptions influence the researcher's study. Assumptions are also referred to as a paradigm and are described by Burns and Grove (2009:712) as a particular way to view a phenomenon of this world. This paradigmatic perspective includes meta-theoretical, theoretical, and methodological assumptions. These assumptions, which apply to this study, are explained subsequently.

1.5.1 Meta-theoretical assumption

The meta-theoretical assumptions are the beliefs and assumptions of the researcher that will influence this research. As a researcher, I follow the Bible as the only truth.

As a Christian, I believe that God is the Creator of all mankind and all that is on earth. God has power over all. We were born as God's instruments to serve on earth and within that paradigm; I view nurses, the environment, health and nursing as follows:

1.5.1.1 View of a human being (nurse)

In this study, a human being refers to the registered and enrolled nurse. I view a human being as a person that can function symbolically and socially (Orem, 2001). A human being is an instrument of God and should serve in all work that is to be done (Genesis, 1:28).

1.5.1.2 Environment

In terms of this study, the environment refers to the registered and enrolled nurses' place of work, in this study, surgical units in the private hospital setting in Gauteng Province. Nurses with different educational background are responsible for patient care. The work environment of nurses is wearisome and exhausting due to a lack of competent staff (Pratt, Burr, Leelarthepin, Blizzard & Walsh, 1997:27).

1.5.1.3 Health

The WHO (2010b) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. The WHO (2010b) has an inclusive definition of health that hasn't changed since 1946. In this study, health is the ability of the registered nurse and enrolled nurse to provide safe and quality care based on her/his educational background and scope of practice.

1.5.1.4 Nursing

“ Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations” (American Nursing Association, 2004) . We are commanded by the Bible to do no harm (Exodus 22). In this study nursing is to promote patient safety and quality of patient care in surgical units in private hospitals of the Gauteng Province.

1.5.2 Theoretical assumptions

A researcher's theoretical assumptions are interrelated statements aimed at explaining aspects of life according to laws, facts, and principles (Babbie, 2007:43). Nurses use models to guide their critical thinking and perspectives related to aspects of nursing or life (Alligood, 2010:53). A model communicates in graphic format an abstract entity, structure, or process that cannot be observed directly.

The role effectiveness model of Irvine, Sidani and Hall (1998:110-116) directs the researcher's central concepts. This model identifies nurse-sensitive patient outcomes that include: freedom from complications, clinical outcomes, functional health outcomes, knowledge outcomes, perceived health benefit, (or satisfaction), and costs outcomes. This model can be used to evaluate the effectiveness of current as well as evolving nurses' roles, processes, and structural changes (Irvine, Sidani & Hall, 1998:110-116). Central to the quality and safety of patient care, Campbell, Roland and Buetow (2000:1611) suggest that there are two principal dimensions of quality care, namely, access and effectiveness. Quality of care can be classified under three categories: i) structure (this includes attributes of material resources, human resources and organisational structure); ii) process (what is actually done in giving and receiving care); and iii) outcome (the effect of health status of patients and populations) (Donebedian, 1997). The following concepts are considered important in this study and a conceptual definition of each follows:

1.5.2.1 Registered nurse

A registered nurse receives education at an approved facility that is either a nursing school or a university. All care given by a registered nurse is regulated by their scope of practice, giving parameters for such practices (SANC: Regulations(R) 425 of 22 February 1985, as amended R 1312 of 19 June 1987 as amended R 2078 of 25 September 1987, as amended R 753 of 22 April 1988 or in regulations published in terms of the Nursing Act, 1984 (Act No. 13 of 1984). A registered nurse is responsible for providing safe and quality nursing care (Searle, 2006:154). A registered nurse does this in conjunction with lower categories of nurses and supervises the latter's nursing activities (Searle, 2006:71).

1.5.2.2 Enrolled nurse

An enrolled nurse provides nursing care under direct or indirect supervision of a registered nurse (Searle, 2006:71). An enrolled nurse has received education according to the Nursing Act that includes two years training at an approved nursing college. All duties of an enrolled nurse must be carried out in accordance with her scope of practise (SANC: Regulation(R) 879 of 2 May 1975, as amended, R. 881 of 2 May 1975, as amended, or R. 882 of 2 May 1975, as amended or in regulations published in terms of the Nursing Act, 1984 (Act No. 13 of 1984) under Government Notice No. 36 of 1987, as amended).

1.5.2.3 Patient

For the purpose of this study, a patient means a person/user admitted to a private hospital for the purpose of treatment. Such a patient will be admitted to a surgical unit and receive treatment that includes the maintenance, observation, nursing, medical care and supervision (HASA, 2008:68)

1.5.2.4 Surgical unit

A surgical unit comprises of surgical beds where care is rendered to patients following general surgery (HASA, 2009).

1.5.2.5 Private hospital

A private hospital provides health care to patients that belong to a medical aid or pay privately for the services received. In the private sector, hospitals may be part of a group such as a Medi-Clinic, Netcare, and Life Health or may be individual hospitals managed by independent management teams. The services are also bound by the applicable health legislation (Booyens 2006:38-39).

1.5.2.6 Perceptions

Blignaut *et al.* (2012:22) describes perceptions as the basis of how a person sees and understands a concept and what is included in the mental image when cognitively referring to the same concept. In this study, the RNs and ENs perceptions of the quality and safety of care in surgical units in private hospitals in Gauteng Province were measured.

1.5.2.7 Educational background

According to the South African Qualifications Authority (SAQA, 2011:3), the qualification of the nurse, or educational background is the formal recognition of the achievement of the required number and range of credits for a specific qualification. To that, the South African Nursing Council (SANC, 2010) defines a qualification as a planned combination of learning outcomes with a defined purpose to provide learners with applied competence and a basis for further learning (Blignaut *et al.*, 2012:20). Two specific qualifications apply to the context of this study, namely, the four year degree or diploma in nursing that leads to registration as a professional nurse, and the two year diploma leading to the registration as an enrolled nurse.

1.5.2.8 Quality of care

Donabedian is often referred to as the father of quality of care (Cohen, 1984:129). Pronovast, Nolan, Zeger, Miller, and Rubin (2011:348) define quality measurement as the “lenses through which we quantitatively determine quality”. According to Foulkes (2011:40) nursing metrics are ways of measuring the quality of nursing care by monitoring patient outcomes and the experience of the patient. In this study, quality of care were measured in: nurses’ reports of the quality of care in their units and the changes in the quality of care over time; patients’ readiness for discharge; hospital managements’ ability to resolve problems related to the quality of care; and the estimated frequency on occurrence of a variety of adverse events (Sermeus *et al.*, 2011:5; Blignaut *et al.*, 2012:22).

1.5.2.9 Patient safety

The WHO (2011) defines patient safety as the prevention of errors and adverse events related to health care. Furthermore, Scott (2003:13) state that the aim of patient safety implies flawless care or no mistakes. In this study, patient safety was operationalised by seven questions derived from the Agency for Healthcare Research and Quality (AHRQ) (Sermeus *et al.*, 2011:4).

1.5.3 Methodological assumptions

Methodological assumptions refer to good science (Botes, 1995). In science, knowledge about a specific phenomenon is formed through the use of a systematic

research process. In using this process, answers are considered to be true and credible. The Model of Nursing Research developed by Botes (1995) is used as the Body of Knowledge (Mouton, 2009:137-142). This model consists of three orders:

- The first order is the nursing practice. The nursing practice is seen as the hypothetical reality. It involves promotion, maintenance, and restoration of health. In the first order, problems are identified to find solutions. In this study, the problem identified is the deterioration in the quality and safety of patient care. Literature is reviewed and quality and safety can be defined. A solution to improve the quality and safety of patient care is needed and the educational background of nurses needs to be explored.
- The second order is the influence of practise on nursing. In this order, nursing research is done and theories developed. In the nursing practice, there is deterioration in the quality and safety of patient care that may be linked to the educational background of nurses. The deterioration in quality and safety of nursing care has an influence on the mortality rate, adverse events, and patient's outcomes. The perceptions of registered and enrolled nurses on the quality and safety of patient care are explored and will be described.
- The third order includes the paradigmatic perspectives of the researcher and this includes theoretical assumptions, meta-theoretical assumptions and methodological assumptions. Theoretical assumptions are testable and consist of an existing theory in a discipline. Meta-theoretical assumptions can't be tested and originates in the philosophy of the researcher. Methodological assumptions imply the researcher's view of science and research in the researcher's specific field of work (Botes, 1992).

1.6 RESEARCH DESIGN

This study was quantitative in nature and followed a comparative descriptive design (Burns & Grove 2009:239) for the following reasons:

- Variables were described, namely the educational background of nurses and their perceptions of the safety and quality of patient care;
- Differences in variables in two groups that occur naturally in a setting was examined (refer to Figure 1.1 for a visual presentation of the research design).

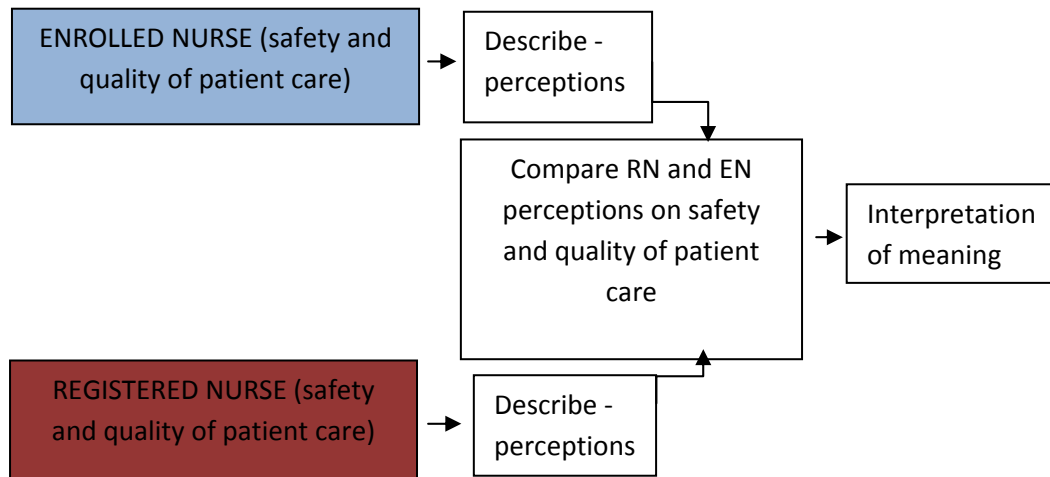


Figure 1.1: Comparative descriptive design (adapted from Burns & Grove, 2009:240)

The results from the analyses of a comparative, descriptive design are typically not generalised to the population (Burns & Grove, 2009:240). This study is descriptive in that it identified a phenomenon of interest and the variables within the phenomenon, and developed and described these variables in the study situation. In this study, the phenomenon of interest is the relationship between nurses' educational background and their perceptions about the quality and safety of patient care in surgical units in private hospitals in Gauteng Province. This study was conducted in surgical units in private hospitals in Gauteng Province. South Africa is divided into nine geographical provinces and as stated earlier, Gauteng is the smallest of the nine but the most populous. The private healthcare sector encompasses 259 hospitals and is predominantly owned by three major independent groups, namely Medi-Clinic, Netcare and Life Healthcare (Pretorius, 2009). According to Matsebula and Willie (2007:163), Gauteng has the highest number of private hospital beds. Private healthcare delivery in South Africa is based on a doctor-centric approach, costing model and negotiations for price (Pretorius, 2009).

1.7 RESEARCH METHOD

As mentioned in the introduction, data considered relevant to answering the research question was extrapolated from the RN4CAST databank. The researcher also

conducted a preliminary review of the literature in order to determine the relevance of the study and to obtain the conceptual meaning of quality, safety, and educational background of nurses.

1.7.1 Data collection

The RN4CAST questionnaire consists of four sections with 118 questions across seven pages and typically takes 15-20 minutes to complete (refer to Appendix 2). The questionnaire was constructed by the international RN4CAST team. Section A included questions about the nurses' current practice environment as measured by the Practice Environment Scale of the Nurse Work Index (PES-NWI) (Lake, 2002) and the occurrence of burnout as measured by the Maslach Burnout Inventory (Maslach & Jackson, 1996). Section B focussed on issues related to the quality and safety of patient care in their work environment, whilst section C gathered information about work schedules and staff ratios. Section D is mainly concerned with the demographic information of the nurses that completed the questionnaires. In order to distinguish between the questionnaires completed by RNs and ENs the RN4CAST team colour-coded the questionnaires. For the purpose of this study, questions from sections B and D were included in the analysis. A total of 304 nurses (of which 149 were RNs and 155 ENs) completed the questionnaire.

The nurses' perceptions of the quality of care were measured using five questions that included:

- "In general how would you describe the quality of care delivered to patients in your unit?" (measured on a scale from 1 [poor] to 4 [excellent]);
- "How confident are you that your patients are able to manage their care when discharged?" (measured on a scale from 1 [not confident at all] to 4 [very confident]);
- "How confident are you that hospital management will act to resolve problems in patient care that you report?" (measured on a scale from 1 [not confident at all] to 4 [very confident]);
- "Please give your unit an overall grade on patient safety" (measured on a scale from 1 [failing] to 5 [excellent]); and

- “In the past year, would you say that the quality of patient care in your hospital has ...” (measured on a scale with 1 [deteriorated], 2 [remained the same], or 3 [improved]).

Also, nurses reported on the incidence of adverse events on a seven point Likert scale ranging between zero (never) to six (every day). Adverse events reported on included: wrong medication, time, or dose; pressure ulcers after admission; patient falls with injury; health-care associated infections; complaints from patients or their families; verbal abuse towards nurses; physical abuse towards nurses and work-related physical injuries to nurses.

When looking at perceptions on the safety of patient care, seven items, in the form of a Likert scale ranging from one (strongly disagree) to five (strongly agree) were measured and included the following statements:

- “Staff feel as if their mistakes are held against them”;
- “Important patient care information is often lost during shift changes”;
- “Things fall between the cracks when transferring patients from one unit to another”;
- “Staff feel free to question the decisions or actions of those in authority”;
- “In this unit, we discuss ways to prevent errors from happening again”;
- “We are given feedback about changes put into place based on event reports”; and
- “The actions of hospital management show patient safety are top priority”.

The data collection for Gauteng Province took place on site over a three month period in 2009 (Klopper, Coetzee, Pretorius & Bester, 2012:687). A researcher from the RN4CAST team coordinated the process. The researcher scheduled appointments with the nursing manager of each of the private hospitals that participated in the study. During the meeting, the researcher explained the scope of the project as well as the questionnaire. A fieldworker was appointed and trained at each of the study sites to assist with the distribution and collection of the questionnaires.

1.7.2 Population

The target population for this research study included:

- RNs (both baccalaureate degree and diploma prepared) working in surgical units in private hospitals in Gauteng Province (N=292), and
- ENs working in surgical units in private hospitals in Gauteng Province (N=306).

1.7.3 Sampling

Sampling is the selection of groups of people, events, behaviours or other elements to perform a study and to do research (Burns & Grove, 2009:721). A sample needs to be representative of the population. In order to ensure a certain degree of homogeneity in the sample the RN4CAST researchers incorporated the following inclusive criteria:

- Only private hospitals with a bed capacity exceeding 100 were included in the study; and
- The sample was also limited to adult surgical units in Gauteng Province.

In view of the fact, that nurses' response rates to questionnaires are at best moderate, the RN4CAST team decided on an all-inclusive sample of RNs and ENs working in surgical units. A total of 596 questionnaires were distributed to 292 RNs and 304 ENs. 149 questionnaires were included in the analysis for RNs and 155 for ENs, resulting in a 51% response rate. A copy of the sections in the questionnaire relevant to this study is provided in Appendix 2.

1.8 DATA ANALYSIS

The data was captured by two independent research assistants on Epidata 3.1 (Lauritsen, 2008). Both sets of data were verified to be similar prior to the analysis of the data. Data was analysed using SPSS 16.0 (SPSS, 2007). Descriptive statistics using frequencies, means and standard deviations were used to report on the demographic profile of the participants and the nurses' perceptions of the quality and safety of care. Medians were used to report on the perceptions of adverse events. Associations among the study variables were estimated using hierarchical linear

modelling (HLM) in SAS. According to McCoach (2010) much of the data in the social sciences are hierarchical in nature and when people are clustered within naturally occurring units, their responses are likely to exhibit some degree of relatedness. Because the data in this study was hierarchical in nature, with nurses working in surgical units within private hospitals, HLM was performed.

To perform the HLM a confirmatory factor analysis was conducted that yielded seven subscales. The seven sub-scales included: ways to prevent errors from happening again, important information of patients lost during shift changes, staff mistakes held against them, verbal and physical abuse towards nurses and work-related injuries to nurses, and hospital acquired infection and patient incidents. It is beyond the scope of this study to report on the factor analysis. A short discussion of these subscales is provided in Chapter 3.

Cronbach alpha tests were conducted to determine the internal consistency of the items in the scale. According to Field (2011:784), the Cronbach alpha is a measure of the reliability of a scale indicating to what measure a construct is tested consistently. A discussion of the results is provided in Chapter 3 of this dissertation.

1.9 RIGOUR

Rigour is to strive for excellence in research through the use of discipline and scrupulous adherence to detail and accuracy (Burns & Grove 2009:720). Research can only be called research if it confirms results and is not merely the researcher's perception. Two components of rigour are validity and reliability.

1.9.1 Validity

Two types of validity exists namely internal and external validity. Internal validity is the extent to which the results of the study are a true reflection of reality rather than the result of extraneous variables. External validity is concerned with the extent to which the study findings can be generalised beyond the sample used in the study (Burns & Grove, 2009: 223-225). Burns and Grove (2009:380-388) identify three primary types of validity as per literature in instruments namely: content validity, predictive validity and construct validity. For an instrument to be valid, it should

measure all the major elements relevant to the study. Validity can be ensured by the use of literature, content experts, and the representativeness of the population. As all measures were carefully taken to ensure the use of current literature, scrutiny of the questionnaire by content experts and representativeness of the population in the RN4CAST study, one can conclude that the validity of this study was protected.

1.9.2 Reliability

Burns and Grove (2009) state that reliability represents the consistency of the measures obtained. The more consistent the result, given by repeated measurement, the higher the reliability (Edwards, Carmines & Zeller, 1986:12). Reliability for this study was confirmed through the utilisation of an already reliable and valid instrument (Klopper, Coetzee, Pretorius & Bester, 2012; Coetzee, Klopper, Ellis & Aiken, 2012). The Cronbach alphas for this segment of the study are reported in Chapter 3.

1.10 ETHICAL CONSIDERATIONS

Consent for the conduction of the RN4CAST study was obtained from the following institutions:

- the ethics committee of the North-West University (refer to Appendix 1);
- the ethics committees of the private hospital groups involved in the study (refer to Appendix 3); and
- Individual verbal consent from each RN and EN that completed a questionnaire (consent was given after they had completed and handed in the questionnaire).

In addition, Roussel, Swansburg and Swansburg (2006:46) describe three ethical principles that were also adhered to:

- respect for person, meaning that the participants has the ability to make moral choices and take rational action. All the participants had freedom of choice to participate in the research and to withdraw at any stage of the research. The questionnaire was explained to all participants, along with the possible research it would be used for. All information was kept confidential and participants are to remained anonymous;

- Beneficence implies to do no harm and to promote good. Participants were not harmed during the research; and
- Justice involves fairness, rights, and obligations. All participants had an equal chance of being included in the research. The researcher kept all data anonymous and all participants were treated equal.

1.11 CLASSIFICATION OF CHAPTERS

Chapter 1: Overview of research.

Chapter 2: Review of the literature.

Chapter 3: Manuscript submitted to *Curationis*.

Chapter 4: Conclusions, recommendations and limitations.

1.12 SUMMARY

In the first chapter, the reader was presented with an overview of the study. The introduction provided a short description of the study and was followed by the background and problem statement, aim and objectives. The design, data collection methods and analysing of data were also discussed. Measures to ensure rigour and ethical research concluded the chapter.

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CHAPTER 2: LITERATURE REVIEW

Chapter 2 will consist of a comprehensive review of the literature related to the variables under investigation, and will conclude with a list of references applicable to the section.

2.1 INTRODUCTION

A literature review in quantitative research is primarily performed at the beginning of the research process (Burns & Grove, 2007:137). The primary purpose of the literature review is to direct the planning and execution of the study. To that end, the researcher searched and reviewed literature related to the phenomenon under investigation to identify what is already known about the topic and what is considered important (Mouton, 2009:86-87). From the review, it was evident that the phenomenon – consisting of the educational background of nurses and the quality and safety of patient care - could not be studied as separate entities because education and patient outcomes are closely linked.

2.2 SEARCH STRATEGY

In order to achieve the aim of the study the researcher conducted a search of peer reviewed studies and publications related to the educational background of nurses and the quality and safety of patient care. Databases such as Medline, CIHANL and Science Direct were searched using a combination of the following keywords:

- Quality
- Safety
- Educational background
- Educational level
- Registered nurs*
- Enrolled nurs*
- Surgical wards
- Patient outcomes

Articles were accessed using the North-West University (NWU) library's electronic database or hard copies were obtained with the help of the librarian. National and international articles were identified of which 41 were considered relevant. In addition, the researcher also consulted a number of textbooks considered to be relevant. Only articles available in English or Afrikaans were included for consideration.

2.3 PRESENTING THE LITERATURE

The following section presents an overview of literature considered relevant in understanding the phenomenon under investigation, i.e. educational background (qualifications), quality of care, patient safety and the relationship between educational background and nurses' perceptions on the quality and safety of care.

Quality and safety is a priority in patient care considering the changing needs in the health care sector (WHO, 2007). In 2003, Aiken and others published a seminal study on the educational background of hospital nurses and surgical patients. In this study, the authors questioned whether nurses' educational background in addition to nurse-patient ratio; characteristics of hospital nurses and nurses' experience could be regarded as important in achieving excellent patient outcomes (Aiken, Clarke, Cheung, Sloane & Silber, 2003). The authors determined that educational level could be a predictor of patient mortality. Aiken *et al.*, (2003) reported that an increase of 10% in nurses with higher degrees in hospitals would decrease the risk of mortality and failure to rescue by 5%. They further indicated that the conventional wisdom of nurses' experience being more important than their educational levels was incorrect. They suggested that nursing education needs to be shaped, to meet the needs of the population, and that employees' focus should be on the recruitment and retaining of baccalaureate prepared nurses at the bedside to improve the quality of care.

Educational background, quality of care and patient safety as well as the relationship between these variables will be discussed as the elements of the study in the paragraphs to follow.

2.3.1 Educational background of nurses

The training of nurses in South Africa dates back to 1883 when Sister Henrietta Stockdale opened the first training school for nurses (Searle, 2006:11). In subsequent years, training was taken over by religious institutions until the early 20th century when the Universities of Cape Town and the Witwatersrand introduced the first courses for nurses (Horwitz, 2011 & Mellish, 1983:105). Nurse education was previously controlled by the Medical and Dental Council until 1944, when the South African Nursing Council (SANC) was established as a controlling body (Horwitz,

2011). Along with the SANC came the compulsory registration of an auxiliary, enrolled, or registered nurse (Searle, 2006:32). On the 1st of January 1986, a comprehensive programme was established for registered nurses due to the fact that previous courses were incomplete and nurses had to keep on studying in becoming fully qualified. This programme entailed a registered nurse to qualify in general nursing, psychiatric nursing, community nursing and maternity (Searle, 2006:56).

Since 1994, the focus of education in South Africa has changed. The SANC is accredited as an Education and Training Quality Assurance body (The South African Qualifications Authority Act, 1995). This implies that the SANC regulates all nursing courses as a means of assuring the quality of nursing programmes in South Africa (SANC, 2005b). According to the SANC (2011), a qualification is a planned combination of learning outcomes that has a definite purpose and intention to provide learners with applied competence and a basis for further learning. As mentioned in Chapter 1, there are three major categories of nurse trained in South Africa, namely auxiliary nurses, enrolled nurses, and registered nurses.

To start training as an auxiliary nurse or an enrolled nurse, a person needs to be in possession of a senior certificate or equivalent (SANC, 2011). The auxiliary nurse course is provided by a nursing college and stretches over one year (Department of Health (DoH), 2006 & SANC, 2011). An enrolled nurse course spans over two years and is provided by a nursing college or a private nursing school affiliated with a university or college (DoH, 2006 & SANC, 2011). The SANC (1993) prescribes the following subjects for studies to register as an enrolled nurse (Government Notice No. R.2175, 1993):

- Nursing history and ethics, basic nursing care, elementary nutrition, first aid, elementary anatomy and physiology and an introduction to comprehensive health care during the first year of study.
- Basic sciences fundamental to nursing, and any one of the following subjects (to be determined by the study direction in the second year of study):
 - General nursing care.
 - Nursing care of the aged.
 - Nursing care of mentally retarded persons.

- Community nursing care
- Psychiatric nursing care.

A registered nurse is educated at a nursing college or university to obtain either a diploma or a degree after four years of study have been completed (DoH, 2006 & SANC, 2011). According to Government Notice No. R.425 (1985:4) the curriculum for studies to become a professional nurse (either degree or diploma) should include the following subjects:

- Fundamental nursing science, ethos, and professional practice over at least one academic year.
- General nursing science, over at least three academic years.
- Psychiatric nursing science, over at least two academic years.
- Midwifery, over at least two academic years.
- Community nursing science, over at least two academic years.
- Biological and natural sciences over at least two and a half academic years.
- Pharmacology, at least half of an academic years, and
- Social science, over at least two academic years.

Nurse education and regulations are globally diverse with various categories of nurses trained in different countries to different standards. The two courses in the USA that seem to relate to the South African context include: (i) enrolled nurse programme and Associate Degree in nursing (ADN) and (ii) registered nurse programme and the Bachelors of Science (BSN) in nursing over a four year programme. Both these programmes refer to nurses as registered nurses but the BSN programme is considered more advanced (BSN programs, 2011). Several organisations such as the WHO, International Council of Nurses (ICN) and Sigma Theta Tau International (STTI) advocate for an increase in the portion of baccalaureate trained nurses. Schin, Ha and Skin, (2006) found a significant increase in critical thinking skills, maturity and open-mindedness with each additional year of education in nursing. These skills are important in performing complex nursing tasks and to ensure high quality and safe patient care. Also, Johnson (1988) concluded that nurses trained at baccalaureate level perform more tasks that are professional and possess diagnostic and monitoring skills essential in providing

patient care of excellent quality. BSN trained nurses are further found to perform more complex functions as opposed to ADN nurses (Young, Lehrer & White, 1991: 105-108). Aiken, Smith and Lake (1994:771-778) found that baccalaureate trained nurses passed medication tests more easily than non-baccalaureate nurses. Also, Blegen, Vaughn and Goode (2001) confirmed these findings in their study, reporting that medication errors decreased with a higher portion of BSN trained nurses), or a staff mix where 85-87% of the nurses are baccalaureate prepared nurses.

In the United Kingdom (UK), emphasis is placed on the need for education in order to improve patient care by having nurses that are knowledgeable (Wood, 1998:126). Nurses in the UK can qualify by obtaining either a diploma or a degree in nursing. Sturgeon (2011:46), a senior lecturer in Canterbury noted that obtaining a nursing degree is not merely an academic qualification but prepares students for highly skilled and responsible work. Critical thinking is considered a skill developed in higher education (Daly, 1997:323) and UK nurses with critical thinking skills have the ability to solve problems, have logical reasoning in analysing of information and making conclusions (Facione, 2006). This skill will contribute to the rendering of safe and quality patient care. Nurse education should safeguard patients by producing nurses with sufficient knowledge. Similar to the findings of studies conducted in the USA, the UK also believes that high quality education is essential in delivering patient care of excellent standard (Sturgeon, 2011:44).

Australia places emphasis on the reviewing of curriculums every five years at universities to provide students with sufficient knowledge in providing quality and safe patient care (Van der Mortel & Bird, 2010:592-593). Currently, an enrolled nurse completes eighteen months to two years of training and receives a diploma to work under the supervision of a registered nurse (Nurse in Australia, 2011). According to Hylton (2005), enrolled nurses have difficulty in grasping conceptual knowledge due to the fact that they were confronted with more concrete and practical knowledge. A registered nurse (RN) in Australia receives three years of training at a university. A RN is responsible for general nursing and needs further training to practice in fields such as midwifery (Nurse in Australia, 2011). Registered nurses trained at baccalaureate level were found to be more cautious in their supervision and administration of medication as opposed to those not trained at

baccalaureate level (Reid-Searl, Moxham, Walker & Happell, 2009:781). An assumption can be made that education plays a role in the supervision role that nurses have and thus the safety of patient care (Simpson & Courtney, 2002).

Currently, there is a drive to improve the education of nurses to a bachelor's degree as a way of improving quality and safety of patient care. The above studies in the USA, UK, and Australia provide information that suggests the importance of educational background in the provision of high quality and safe patient care. Recently, Blignaut, Coetzee and Klopper (2012:7) examined the relationship between the qualifications of professional nurses and their perceptions of the safety and quality of patient care in South Africa. The authors concluded that although qualifications revealed no correlation with perceptions of patient safety and quality of care, supportive leadership and the development of an environment where nurse can freely report adverse events might benefit patients in terms of safety and quality of care.

2.3.2 Quality of care

Quality of nursing goes as far back as Florence Nightingale where she improved hygiene and sanitary measures in hospitals as a means to elevate the recovery of wounded soldiers (Cohen, 1984: 129-133). Donedebian is often referred to as the father of quality of care, and distinguishes between three factors namely i) structure, ii) process and iii) outcome. According to Donabedian (1997), structure refers to resources, or in this case, manpower. Structure will therefore be influenced by the availability of nursing staff to perform patient care. Process on the other hand is associated with the actual care that is delivered whilst outcomes refers to the result of care rendered or what actually happened (Donebedian, 1997). Feedback on the quality of patient care can only be given if there are specific measurements of importance defining the quality of patient care in the health sector. Nurses need to have knowledge about specific measurements defining whether their care is of good quality.

Quality of health care is a major concern as a lack of quality leads to impaired health (Chassin, 1998:565). There is a need to improve the quality of patient care as a means of improving the health of patients. The Institute of Medicine in Washington

(1990) defines quality as the extent in which health care increases the likelihood of desired outcomes in conjunction with current professional knowledge. Quality of care can, in addition, be defined as the care living up to the standard being set. This would mean that the care given will be evaluated according to the evaluator's norms and values (Hughes, 2008). The WHO (2000) views quality as giving attention to the improvement of health through the attainment of health systems goals as expected by the population. Donebedian (1980) states that quality of care is the kind of care expected to maximize an inclusive measure of patient welfare, after one has taken account of the balance of expected gains and losses that attend to the process of care in all its parts.

“Measures are the lenses through which we quantitatively determine quality” (Pronovost, Nolan, Zeger, Miller & Rubin, 2011:348). Quality can only improve if nurses know what they should improve and because quality measures are often defined too broadly (Pronovost *et al.*, 2011:351) it leaves the nurse unsure of what is to be expected. Nursing metrics are ways of measuring quality of nursing care (Foulkes, 2011:40). Metrics includes the use of quality indicators to measure nurse-delivered outcomes and the experiences of patients (Griffiths, Jones, Maben & Murrells, 2008:6). Griffiths *et al.*, (2008:1) explain that quality indicators will only be useful if it is measurable according to available data at affordable cost. Nursing quality indicators indicate areas that most affect the outcomes of nursing care (American Nurses Association, 2010). Nursing outcomes can only be determined by whether they adhere to the practice of importance for similar patients (Pronovost *et al.*, 2011:350). Quality indicators are useful in determining if the level of care is of a high standard (National Health Sector Scotland, 2011:8). Quality indicators according to the National Quality Forum in the USA include: patient falls; patient falls with injury, peptic ulcers, level of education, restraints prevalence, practice environment scale, skills mix, nursing hours per patient, and nurse turnover (American Nurses Association, 2010). These indicators are measured as the occurrence of the adverse event. The lower the occurrence of an adverse event the higher the quality of care would be (Blegen, *et al.*, 2001:33).

Quality is often referred to as how satisfied patients are with the care they received. Patients in a study done by Minnick, Roberts, Young, Kleinpell and Marcantonio

(1997) reported higher satisfaction levels with baccalaureate prepared nurses when they received treatment from these nurses. To that, nurses satisfied with their jobs are more likely to stay, giving them more experience and resulting in better patient outcomes (Dimattio, *et. al.*, 2010:282). Dimattio *et al.*, (2010:282) also found that nurses who are not prepared at baccalaureate level, were more likely to leave hospital nursing thus indicating that education is important in keeping nurses in hospitals.

Nurses' professional behaviour is influenced by their level of education. Johnson (1988:191) found a difference in the professional behaviour of baccalaureate educated nurses and nurses that entered the diploma programme, with baccalaureate nurses being superior. This professional behaviour included better communication, knowledge, and problem solving skills. Communication is of vital importance in nursing as miscommunication could hold a threat to the safety of a patient (Baird, Funderbunk, Whitt & Wilbanks, 2012:48). Handing over of shifts and reporting on the changing status of patients are reported to be very stressful and challenging (Brady, 2011:3). This is only one of many things to be communicated by nurses daily. Effective nursing communication can be linked to better patient outcomes, staff being more satisfied in their jobs and a decrease in the cost of health care (Farahani, Sahragard, Carroll & Mohammadi, 2011:323). Education is also linked to better communication skills as BSN nurses were found to have better communication skills than technical nurses (Goode, Pinkerton, Mc Causland, Southard, Graham & Krsek, 2001).

Pain management forms part of nursing care and contributes to the quality of care. Wang and Tsai (2010:3194) found the pain management knowledge of ICU nurses with a baccalaureate degree or higher to be better than other nurses. This study recommends the continuous education of nurses in pain management, highlighting the importance of education.

Globally, the biggest barrier to providing quality care in nursing is a **lack of human resources** (Klopper, Coetzee, Pretorius & Bester, 2012:686; Darawad, 2009). Not merely enough nurses are available to provide quality nursing care as the patients admitted to hospital are more severely ill than previously (Buerhaus, Needleman,

Mattke & Steward, 2002:123-132). A shortage of nurses contributes to nurses job dissatisfaction and burnout that, in turn, influences quality of care negatively (Liu *et.al.*, 2012: 1482-1483; Coetzee, Klopper, Ellis & Aiken, 2012). Urinary and respiratory infections are results of a lack of nursing care delivered by registered nurses. Blegen, Goode & Reed, (1998:10) and Hughes, Ginnett and Curphy (2002) furthermore state that nurses fail to maintain quality of care due to unclear expectations, skills deficit, a shortage of resources and equipment and a lack of motivation.

The organisational climate or rather the **work environment** can potentially influence the quality of patient care and poor patient outcomes are often considered as the result of a lack of organisational support for nursing care (Aiken *et al.*, 2002:9). Moreover, the current hospital environment is perceived as negative by nurses and is a barrier to quality care as nurses are overworked and expected to complete non-nursing tasks and they are feeling unappreciated (Buerhaus *et al.*, 2002:123-132). A study by Aiken, Clarke, Sloane, Lake and Cheney (2008) found a 60% higher surgical mortality rate in hospitals with the poorest staffing and poor hospital environment.

The **cost** of health care is escalating leaving hospitals with no choice but to find ways of reducing expenditure. To cut costs more acute patients with a shorter length of stay are admitted to hospital (Schubbert, Glass, Clarke, Aiken, Schaffert-Witvliet, Sloane & De Geest, 2008:227). There is also a trend to decrease the number of nursing personnel or to employ personnel that is less educated as a means of cutting costs (Blegen, *et al.*, 1998). When the quality of care rendered to patients does not correlate with what the norm is in health caring this could affect patient outcomes. A study done by Aiken *et al.* (2002:6) found that 18% consumers in the USA and UK and a further 27% of Canadian consumers, rate the quality of care in hospitals as poor or fair. High quality care can however not be viewed separately from safe patient care, which is an indispensable principal in healthcare. Patient safety is one of the nation's biggest challenges in a complex, ever changing and pressurised environment (WHO, 2004). It is every patient's right to be treated without harm. In all areas of nursing, there is a potential for unsafe practices and caution needs to be added to nursing care (WHO, 2011).

2.3.3 Patient safety

The WHO (2011), states that patient safety includes the prevention of errors and adverse events related to health care. The Public Health Portal of the European Union (2011) defines patient safety as a patient being free from preventable harm when provided with healthcare. The aim of patient safety would mean flawless care or else no mistakes being made (Scott, 2003:13). Studies done in the USA show that 2.9% - 3.7% of adverse events occur in hospitals (Institute of Medicine, 2000). An alarming 43% of incidents are believed to have been preventable (De Vries, Ramrattan, Smorenburg, Gouma & Boermeester, 2008:216-223). Safety is measured using safety indicators that include: the rate of medication errors, patient falls, the incidence of pressure sores, complaints about nursing care from patients and their families, the incidence of hospital acquired infections, and any deaths attributable to professional negligence or malpractice (Scott, 2003: 13). Nurses are responsible for 50% of care rendered to patients. The most commonly factors to influence the safety of patients in hospitals are described in the paragraphs that follow:

A shortage of staff was found to have a negative influence on safety in nursing care. Extended working hours due to a shortage of staff currently increase the possibility of unsafe practices. Stone, Mooney-Kane, Larson, Horan, Glance, Zwanziger and Dick (2007) found that the nurse-to-patient ratio has an effect on patient falls, as patients are seven times more likely to fall if one nurse is to be assigned to seven or more patients. The nurse-to-patient ratio also directly affects the early detection of adverse events, complications or error. Too small a number of nurses will hinder early detection of problems and most likely influence patient outcomes negatively (Aiken, Clarke, Sloane, 2002:6). In addition, an increase in overtime is associated with a risk of catheter-associated urine tract infections (CAUTI) and pressure ulcers.

Nurse education is currently under investigation and is believed to have an influence on safety in patient care. A study conducted by Manojlovich, Sidani, Covell & Antonakos (2011:212-220) found a significant relationship between nurse education, experience of nurses, skills mix, full-time employees, nurse-to-patient ratio, RN hours per patient-day and the occurrence of patient falls and Methicillin-

resistant *Staphylococcus aureus* (MRSA) infections. A study done by Blegen, *et al.*, (2001:31) found lower medication errors and patient falls as a result of having more experienced nursing staff. In contribution to these studies Jackson, Chiarello, Gaynes and Gerberding (2002:319) found that nursing staff being unfamiliar with the unit or staff being inexperienced, are associated with an increase in infection levels of patients.

To ensure patient safety, nurses should be skilled for the tasks they are set out to do. Adverse events causing harm to patients are often the result of incompetence (Kendall-Gallagher, Blegen, 2009:108) It is the responsibility of nurses in charge to supervise staff and challenge poor nursing practice (Andrews-Evans, 2012:31). Poor supervision of especially students is a predictor of unsafe practices as noted in a study by Reid-Searl, *et al.*, (2008:2750) and resulted in medication errors and near misses.

Communication between nurses and other disciplines can only contribute to an improvement in patient safety if nurses are knowledgeable and are able to use clinical reasoning (Dickson & Flynn, 2012:13-14). In nursing, communication is of importance to minimize the occurrence of adverse events and Halverson, Casey, Andersson, Anderson, Park, Rademaker and Moorman (2011:305-310) found communication errors to have a delay in procedures done in theatre and can lead to inefficiency. Furthermore, failure to follow correct site procedure, communication problems, and an increase in the number of emergencies put patient safety at risk (Beyea, 2008:228-231).

Work environments contribute to patient outcomes. Poor work environments contribute to job dissatisfaction and burnout in nurses, having a negative effect on patient outcomes (Liu, You, Chen, Hao, Zhu, Zhang & Aiken, 2012:1481). Stressful environments can result in the emotional exhaustion of nurses and then have a negative influence on patient safety by increasing the potential of error occurring (Spence Laschinger & Leiter, 2006). A work environment with supporting leadership encourages a positive work climate and enhances better patient outcomes and safety of patients (Squires, Tourangeau, Spence Laschinger & Doran, 2010:917). Various studies have been done in different countries and shows evidence of

significant numbers of patients harmed as a result of their health care. An estimate of 4-16% patients are harmed in Africa during their stay in hospital, with a total of 50% being surgical patients and a further 50% believed to could have been prevented (Tingle, 2012:256). These unsafe practices resulted in permanent injury, increased length of stay (LOS) in health-care facilities, or even death (WHO, 2011:29). Outcomes of unsafe practices include adverse events occurring; a difference in the prescribed care and the actual care received; the inaccurate diagnosis of patients and a lack in the management of post-operative care. This result in morbidity or mortality increases in patients (WHO, 2009).

Various studies have been done internationally to improve the quality of patient care and safety. Buykx, Kinsman, Cooper, McConnell-Henry, Endacott & Scholes (2011:1) value the use of the Feedback Incorporating Review and Simulation Techniques To Act on Clinical Trends as part of nurse education as this is found to improve mismanagement and deterioration of a patient. The demands related to quality and safety of patients seem to increase and the only way that nurses can face future challenges is through quality, evidence-based education (Johnstone & Kanitsaki, 2006:190).

As mentioned previously, nurses with a higher educational level have a positive influence on the mortality rate and failure to rescue. Aiken *et al.* (2003) found that an increase of 10% of nurses prepared at baccalaureate level, decreased the mortality of patients by 5% and failure to rescue by 95%. It was further found that medication errors, patient falls, pressure sores and infections are also reduced with on-going nurse education (Vittrup & Davey, 2009:93). Miscalculations of dosages due to students that are under-prepared in mathematics increase the risk of errors (Brown, 2002) and medication errors are therefore related to the level of education of nurses. Blegen *et al.*, (2001) found medication errors decreased with a staff mix containing 85%-87% registered nurses in relation to the lowest staff mix.

The education level of nurses also contributes to the accurate assessment of a patient in order to make the correct decisions regarding nursing care. Currently, patients admitted to hospitals are more acutely ill, placing a bigger burden on the shoulders of nurses and demanding a more refined workforce (Aiken *et al*, 2002:5).

If nurses are able to accurately assess the patient this will contribute to safe nursing care and enhance team work (Zrelak, Utter, Sadeghi & Romano, 2012:104). Accurate assessments can only be made when nurses have sufficient knowledge. In the light of the current shortage of nursing staff, registered nurses are often forced to delegate nursing tasks to lower categories in nursing. Delegation according to the American Nurses Association (1996) is the transferring of responsibility for performing a task from one person to another, but still retaining the accountability for the task. Critical thinking is found to be essential in nursing practice (Canavan, 1996). The critical thinking skills of BSN and RN-to-BSN students were significantly higher than that of AD or diploma nurses (Goode *et. al.*, 2001).

Nurses are considered a vital component in delivering high quality and safe patient care. The WHO (2007) places emphasis on the importance of improvement in nurse education to meet the changing need in the health sector. Nurses are the first link to the patient and are responsible to monitor and assess the patient in providing high quality and safe patient care. Nurses are often faced with life threatening situations and they need to practice their knowledge effectively (Benner, Sutphen, Leonard & Day, 2010:54). Fitzpatrick, While and Roberts (1992:1211) confirm that high-quality care can only be provided if a nurse has the necessary knowledge and skills.

An assumption can be made that nurses trained at different levels will have a different approach to the patient, thus influencing the clinical judgement used to assess the patient and predicting the quality and safety of care. It is believed by nursing leaders that there is a difference in the preparation of nurses at baccalaureate level as opposed to non-baccalaureate level, with them feeling that baccalaureate nurses should be responsible for more complex nursing care (Blegen, *et. al.*, 2001). In the United States of America (USA), a lot of emphasis is placed on improving the educational level of nurses to baccalaureate level as a means of improving the quality of care of patients. In China, only 8.8% of nurses are trained at baccalaureate level, with the older nurses being less educated as opposed to the younger nurses (Liu, *et.al.*, 2012:1479).

2.4 SUMMARY

From the literature presented, it was evident that nurse education, quality of patient care and safety are linked. In the UK, USA and Australia excellent patient outcomes are associated with a higher level of nurses' education. Not only does nurse education contribute to a decrease in mortality rates in patients but also a decrease in medication errors and infection levels of patients. As quality and safety of patient care is a global phenomenon under investigation, this study will contribute to evidence to improve the safety and quality of patient care in South Africa.

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CHAPTER 3: ARTICLE

Chapter 3 will present the article submitted to *Curationis*. Please note that the content was drafted according to the guidelines provided by the Journal.

Article for submission to the *Curationis*

**EDUCATIONAL BACKGROUND OF NURSES AND THEIR PERCEPTIONS OF
THE SAFETY AND QUALITY OF PATIENT CARE**

Authors:

R.P Swart

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AUTHOR GUIDELINES FOR *Curationis*



Overview

Curationis is an Open Access, peer reviewed journal publishing research that explores the issues and best practices of nurses and midwives in order to help improve nursing education. The journal is edited by Mashudu Davhana-Maselesele with the assistance of an expert Editorial Board. Each article published by *Curationis* follows a specific format, as detailed in the corresponding instructions for authors. The instructions for authors include information about preparing a manuscript for submission to *Curationis*, criteria for publication and the online submission process. Other relevant information about the journal's policies and the refereeing process can be found under 'Journal Policies'.

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- The study presents the results of primary scientific research.
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- Conclusions are presented in an appropriate fashion and are supported by the data.
- The article is presented in an intelligible fashion and is written in clear and unambiguous Standard English.
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- The article adheres to appropriate reporting guidelines and community standards for data availability.

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Original research articles should inform readers of innovative research in a particular field within or related to the focus and scope of the journal, presented according to a clear and well-structured format. Research published in this section should add to the existing body of knowledge published in this field (between 3500–7000 words with a maximum of 60 references).

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-  **Harvard style guide**

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- **Article title:** Provide a short title of 50 characters or less.
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- **Full author details:** Title(s), Full name(s), Position(s), Affiliation(s) and contact details (postal address, email, telephone and cellular number) of each author.
- **Corresponding author:** Indicate to whom all correspondence should be addressed to.
- **Authors' contributions:** Briefly summarise the nature of the contribution made by each of the authors listed, along the lines of the following: *J.K. was the project leader, L.M.N. and A.B. were responsible for experimental and project design. L.M.N. performed most of the experiments. P.R. made conceptual contributions and S.T., U.V. and C.D. performed some of the experiments. S.M. and V.C. prepared the samples and calculations were performed by C.S., J.K. and U.V. wrote the manuscript.*

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- **Summary:** Lastly, a list containing the number of words, pages, tables, figures and/or other supplementary material should accompany the submission.

Article structure

Submission language: English (UK)

Title: The article's full title should contain a maximum of 95 characters (including spaces).

Abstract (first-level heading)

- Do not cite references in the abstract.
- Do not use abbreviations excessively in the abstract.
- The abstract should be written in English.
- The abstract should be no longer than 250 words and must be written in the past tense. The abstract should give a succinct account of the objectives, methods, results and significance of the matter. The structured abstract for an Original Research article should consist of five paragraphs labelled Background, Objectives, Method, Results and Conclusion.
 - **Background:** *Why do we care about the problem?* The context and purpose of the study (what practical, scientific or theoretical gap is your research filling?).
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- **Conclusion:** *What are the implications of your answer?* Brief summary and potential implications (what are the larger implications of your findings, especially for the problem/gap identified in your motivation?).

Introduction (first-level heading)

The introduction contains two subsections, namely the background section and the literature review.

- **Problem statement (second-level heading):** The setting section should be written from the standpoint of readers, that is, without specialist knowledge in that area and must clearly state and illustrate the introduction to the research and its aims in the context of previous work bearing directly on the subject. The setting section to the article normally contains the following five elements.
 - **Aims of the study/Key focus (third-level heading):** A thought-provoking introductory statement on the broad theme or topic of the research.
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 - **Trends (third-level heading):** Cite the most important published studies previously conducted on this topic or that has any relevance to this study (provide a high-level synopsis of the research literature on this topic).
 - **Research objectives (third-level heading):** Indicate the most important controversies, gaps and inconsistencies in the literature that will be addressed by this study. In view of the above trends, state the core research problem and specific research objectives that will be addressed in this study and provide the reader with an outline of what to expect in the rest of the article.
 - **Definition of key concepts (third-level heading)**
 - **Contribution to field (third-level heading):** Explanation of the study's academic (theoretical and methodological) or practical merit and/or importance (provide the value-add and/or rationale for the study).
- **Literature review (second-level heading):** The literature review is the second subsection under the Introduction and provides a brief and concise overview of the literature under a separate second-level heading, e.g. literature review. A synthesis and critical evaluation of the literature (not a compilation of citations and references) should at least include or address the following elements, ensure these are in the literature review. Define conceptual (theoretical) definitions of all key concepts; A critical review and summary of previous research findings (theories,

models, frameworks, etc.) on the topic; A clear indication of the gap in the literature and for the necessity to address this void; and A clearly established link exists between formulated research objectives and theoretical support from the relevant literature.

Research method and design (first-level heading)

This section should include:

- **Design (second-level heading):** Describe your experimental design clearly, including a power calculation if appropriate. Note: Additional details can be placed in the online supplementary location.
- **Materials (second-level heading):** Describe the type of organism(s) or material(s) involved in the study.
- **Data collection method/Procedure (second-level heading):** Describe the protocol for your study in sufficient detail (clear description of all interventions and comparisons) that other scientists could repeat your work to verify your findings.
- **Data analysis (second-level heading):** Describe how the data were summarised and analysed, additional details can be placed in the online supplementary information.
- **Context of the study (second-level heading):** Describe the site and setting where your field study was conducted.

Results (first-level heading)

This section provides a synthesis of the obtained literature grouped or categorised according to some organising or analysis principle. Tables may be used and/or models may be drafted to indicate key components of the results of the study.

- Organise the results based on the sequence of Tables and Figures you will include in the manuscript.
- The body of the Results section is a text presentation of the key findings which includes references to each of the Tables and Figures.
- Statistical test summaries (test name, p-value) are usually reported parenthetically in conjunction with the biological results they support, use SI unit.
- Present the results of your experiment(s)/research data in a sequence that will logically support (or provide evidence against) the hypothesis, or answer the question, stated in the Introduction.

All units should conform to the [SI convention](#) and be abbreviated accordingly. Metric units and their international symbols are used throughout, as is the decimal point (not the decimal comma).

Ethical considerations (first-level heading)

Articles based on the involvement of animals or humans must have been conducted in accordance with relevant national and international guidelines. Approval must have been obtained for all protocols from the author's institutional or other relevant ethics committee and the institution name and permit numbers provided at submission.

- **Potential benefits and hazards (second-level heading):** What risks to the subject are entailed in involvement in the research? Are there any potential physical, psychological or disclosure dangers that can be anticipated? What is the possible benefit or harm to the subject or society from their participation or from the project as a whole? What procedures have been established for the care and protection of subjects (e.g. insurance, medical cover) and the control of any information gained from them or about them?
- **Recruitment procedures (second-level heading):** Was there any sense in which subjects might be 'obliged' to participate – as in the case of students, prisoners, learners or patients – or were volunteers being recruited? If participation was compulsory, the potential consequences of non-compliance must be indicated to subjects; if voluntary, entitlement to withdraw consent must be indicated and when that entitlement lapses.
- **Informed consent (second-level heading):** Authors must include how informed consent was handled in the study.
- **Data protection (second-level heading):** Authors must include in detail the way in which data protection was handled.

Trustworthiness (first-level heading)

This refers to the findings of the study being based on the discovery of human experience as it was experienced and observed by the participants.

- **Reliability (second-level heading):** Reliability is the extent to which an experiment, test, or any measuring procedure yields the same result on repeated trials. Without the agreement of independent observers able to replicate

research procedures, or the ability to use research tools and procedures that yield consistent measurements, researchers would be unable to satisfactorily draw conclusions, formulate theories, or make claims about the generalisability of their research.

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- **Validity (second-level heading):** Validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. While reliability is concerned with the accuracy of the actual measuring instrument or procedure, validity is concerned with the study's success at measuring what the researchers set out to measure. Researchers should be concerned with both external and internal validity. External validity refers to the extent to which the results of a study are generalisable or transferable. Internal validity refers to (1) the rigor with which the study was conducted (e.g. the study's design, the care taken to conduct measurements, and decisions concerning what was and wasn't measured) and (2) the extent to which the designers of a study have taken into account alternative explanations for any causal relationships they explore. In studies that do not explore causal relationships, only the first of these definitions should be considered when assessing internal validity.

Discussion (first-level heading)

This section normally contains the following four elements. It is suggested that sub-headings are used in this section:

- **Outline of the results (second-level heading):** Restate the main objective of the study and reaffirm the importance of the study by restating its main contributions; summarise the results in relation to each stated research objective or research hypothesis; link the findings back to the literature and to the results reported by other researchers; provide explanations for unexpected results.
- **Practical implications (second-level heading):** Reaffirm the importance of the study by restating its main contributions and provide the implications for the practical implementation your research.

Limitations of the study (first-level heading): Point out the possible limitations of the study and provide suggestions for future research.

Recommendations (first-level heading): Provide the recommendations emerging out of the current research.

Conclusion (first-level heading)

This should state clearly the main conclusions of the research and give a clear explanation of their importance and relevance, with a recommendation for future research (implications for practice). Provide a brief conclusion that restates the objectives; the research design; the results and their meaning.

Acknowledgements (first-level heading)

If, through your study, you received any significant help in conceiving, designing, or carrying out the work, or received materials from someone who did you a favour by supplying them, you must acknowledge their assistance and the service or material provided. **Authors should always acknowledge outside reviewers of their drafts and any sources of funding that supported the research.**

- **Competing interests (second-level heading):** A competing interest exists when your interpretation of data or presentation of information may be influenced by your personal or financial relationship with other people or organisations that can potentially prevent you from executing and publishing unbiased research. Authors should disclose any financial competing interests but also any non-financial competing interests that may cause them embarrassment were they to become public after the publication of the manuscript.

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- **Authors' contributions (second-level heading):** This section is necessary to give appropriate credit to each author, and to the authors' applicable institution. The individual contributions of authors should be specified with their affiliation at the time of the study and completion of the work. An ‘author’ is generally considered to be someone who has made substantive intellectual contributions to a published study. Contributions made by each of the authors listed, along the lines of the following (please note the use of author initials):

J.K. (University of Pretoria) was the project leader, L.M.N. (University of KwaZulu-Natal) and A.B. (University of Stellenbosch) were responsible for experimental and project design. L.M.N. performed most of the experiments. P.R. made conceptual contributions and S.T. (University of Cape Town), U.V. (University of Cape Town) and C.D. (University of Cape Town) performed some of the experiments. S.M. (Cape Peninsula University of Technology) and V.C. (Cape Peninsula University of Technology) prepared the samples and calculations were

performed by C.S., J.K. (Cape Peninsula University of Technology) and U.V. wrote the manuscript.

References (first-level heading)

Begin the reference list on a separate page with no more than 60 references. *Curationis* uses the **Harvard referencing style**, details of which can be downloaded from the journal website. **Note: No other style will be permitted.**

Manuscript typography

Please be sure to use British English, that is, the Oxford English Dictionary. Avoid Americanisms (e.g. use 's' and not 'z'). Consult the Oxford English Dictionary when in doubt and remember to set your version of Microsoft Word to UK English.

- **Language:** Manuscripts can be written in British English.
- **Font-type:** Palatino, **Symbols font-type:** Times New Roman, **General font-size:** 12pt, **Line-spacing:** 1.5
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Tables, figures and photographs

In Step 4 of the online submission process, upload all tables, figures, images, and supplementary files. Tables should be saved and uploaded as separate Excel (.xls) files with no more than 10 figures and tables in total per article. Ensure that all personal identifying information is removed from the supplementary files as indicated in the provided instructions. All captions should be provided together on a separate page. Tables and figures should use numerical numbers.

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Example: Figure 1: Height frequency (%) of White Pines (*Pinus strobus*) in the Thorncrag Bird Sanctuary, Lewiston, Maine, before and after the Ice Storm of 1998. Before, $n = 137$, after, $n = 133$. Four trees fell during the storm and were excluded from the post-storm survey.

Note: Questions frequently arise about how much methodology to include in the legend, and how much results reporting should be done. For lab reports, specific results should be reported in the results text with a reference to the applicable Table or Figure. Other than culture conditions, methods are similarly confined to the Methods section.

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COVER PAGE

Article title: Educational background of nurses and their perceptions of the quality and safety of patient care.

Significance of work: The educational background of nurses who work in surgical units has an impact on the safety and quality of care that patients receive. This study provides evidence on registered- and enrolled nurses' perceptions of the quality and safety of care. The findings can inform management decisions about staffing to ensure safe and high quality care to patients.

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Educational background of nurses and their perceptions of the quality and safety of patient care

ABSTRACT

Background: Healthcare across the globe seems to agree that nurses are the backbone of quality patient care and safety. Moreover, the appropriate training of nurses is vital to providing high quality and safe patient care. South Africa has a dual healthcare system and different categories of nurses. The perceptions of the safety and quality of care of the different categories of nurses are not known in the South African context. **Objective:** To determine the relationship between the educational background of nurses and their perceptions on the safety and quality of patient care in private surgical units in Gauteng Province. **Design and Methods:** This study followed a comparative descriptive design. Data was collected by means of a questionnaire from an international collaborative study, the Nurse Forecasting in Europe (RN4CAST). Hierarchical linear modelling was used to examine the relationships among the variables. **Results:** Overall, both registered- and enrolled nurses seemed satisfied with the safety and quality of care delivered in their units. Registered nurses scored higher in the occurrence of incidents in surgical wards, whilst enrolled nurses were of opinion that current efforts to prevent errors are adequate. **Conclusions:** This study provides information that RNs and ENs have different perceptions in some areas on quality and safety of patient care. A statistically significant difference was found between RNs' and ENs' perceptions on the prevention of errors in the unit, losing patient information between shifts and patient incidents related to medication errors, pressure ulcers and falls with injury.

Key words: Educational background, quality, safety, surgical wards, and patient outcomes.

INTRODUCTION

Quality patient care and safety is non-negotiable in health care (Chassin, 1998; WHO, 2011:29), and international studies recognise the link between the educational background of nurses and the quality and safety of patient care (Aiken, Clarke, Cheung, Sloane & Silber, 2003). The main aim of this study was to investigate the relationship between nurses' educational background and their perceptions of quality and safety in patient care in surgical units in private hospitals in Gauteng Province. When referring to nurses in the context of this study, the researchers explored perceptions of both registered- (RNs) and enrolled nurses (ENs) in terms of the quality and safety of care delivered. The reason for the focus on surgical wards in the private health care sector in Gauteng Province, was that although Gauteng is the smallest of the nine provinces in South Africa, it is home to 11 19 700 people and the wealthiest and most populous per square metre (Statistics South Africa, 2010). Also, the most private healthcare beds and beneficiaries are located in this province (Matsebula & Willie, 2007:163).

Background and literature review

The South African healthcare system consists of a large public sector that caters for the needs of approximately 40 million South Africans (80% of the total population) and a private sector that looks after the remaining 20% (International Market Council of South Africa, 2008). Nursing numbers in the smaller private sector exceed those in the public sector and can probably be attributed to the healthier work environments in the private sector (Bateman, 2010). Appropriate training of nurses is important to ensure high quality and safety of patient care (Aiken *et al.*, 2003). In addition to that, Hoban (2003) emphasises that it is crucial to delegate patients according to the

competency level of the nurses as this will ensure quality nursing care. Countries around the world are determined to improve the education of nurses as a means of improving the quality and safety of patient care (Van der Mortel & Bird, 2010). Globally, nurses are motivated to improve their educational level to a baccalaureate level.

According to Pratt, Burr, Leelarthaepin, Blizard, and Walsh (1993) inexperienced ENs exacerbates the workload of RNs. Studies conducted in other countries have revealed better patient outcomes where Baccalaureate prepared RNs were responsible for most of the patient care. This can possibly be attributed to the fact that nurses who had prepared at a baccalaureate level have stronger communication and problem solving skills (Johnson, 1988; Daley, 2011) and a higher proficiency in their ability to make nursing diagnoses and evaluate nursing interventions (Giger & Davidhizar, 1990; Daley, 2011). Hospitals with more technology available and higher RN numbers had higher performance on all of the processes of care levels (Lucero, Lake, & Aiken, 2009).

Nurses are the backbone of the health care system and critical to ensure quality patient care and safety. Poor quality of care and safety is linked to the severe shortages of nursing human resources. The Health Systems Trust (HST, 2010) estimates a current shortage of 46.3% of nurses in the public health sector, and 24% in the private health sector in hospitals in Gauteng (HASA, 2008). Although there has been an increase in the number of nurses (both RNs and ENs) trained in private hospitals in South Africa since 1998, regulatory constraints have had a negative impact and not merely enough nurses are trained (HASA, 2010). Other problems

concerning the quality of patient care in hospitals in South Africa include the misuse of services, errors that might have been avoided, a lack of or ineffective resources, and records not being well kept (HASA, 2010). Considering the nurse-to-patient ratios in wards, the Solidarity Research Institute (2009) reported that some public hospitals have ratios as high as one RN for every 18 patients. In the private healthcare sector, Statistics South Africa (2007) reported that although only 7.8 million people have medical insurance, it seems that close to 15 million South Africans opted to use private healthcare services. The Hospital Association of South Africa (HASA, 2009) stated that in the light of the increasing number of patients visiting the private healthcare sector, the sector will need 3 756 more nurses to keep their current nursing ratios.

It is further believed that the quality of care in hospitals and patient safety is deteriorating due to financial pressure, inadequate staffing, and poor working conditions (Needleman, Buerhaus, Mattke, Stewart & Zelevinsky, 2002). Adverse events such as falls, high mortality rates, injuries, hospital-acquired infections, and pressure ulcers are also rising. According to the World Health Organisation (WHO, 2012) one in every ten patients admitted to a hospital in developing countries experience an adverse event during their stay in hospital. Other factors related to poor quality of care in countries like Canada, Germany, England, Scotland and the United States include burnout of nurses, higher patient load (implying more acute patients per staff member), burdening nurses with non-nursing tasks, and poor management of hospitals (Aiken, Clarke, Sloane, Sochalski, Clarke, Phyllis Giovannetti, Hunt, Rafferty, & Shamian 2001). Similar findings were also reported in

studies conducted in South Africa (Klopper, Coetzee, Pretorius & Bester, 2012; Coetzee, Klopper, Ellis & Aiken, 2012).

Problem statement

Evidence suggests that there is a relationship between the quality of care and safety, and the educational background of nurses (Aiken *et.al.*, 2003: 1619; Johnson, 1988; Giger & Davidhizar, 1990). To that, the severe shortage of nurses in South Africa, and around the world further contribute to the endangerment of the quality and safety of care delivered to patients (Blignaut, Coetzee & Klopper, 2012:16). From the literature presented, it was evident that staff qualifications directly impact on the quality and safety of care delivered to patients. Nurses' perceptions of the quality and safety of care delivered to patients can provide valuable information for patient outcomes and improving the overall standards of care. In order to increase the quality and safety of patient care in an ever-changing environment in South Africa, and to contribute to the growing body of literature on nurse forecasting in South Africa, an exploration of the relationship between the mentioned variables seems vital. From the literature the following research question arise: Is there a relationship between the educational background of RNs and ENs and their perceptions of the safety and quality of patient care in surgical units in private hospitals of the Gauteng Province?

Definition of key concepts

Registered nurse

According to the South African Nursing Council (SANC: Nursing Act No. 33, 2005) a registered nurse is a person who is qualified and competent to independently

practice comprehensive nursing in the manner and to the level prescribed and who is capable of assuming responsibility and accountability for such practice.

Enrolled nurse

The South African Nursing Council (SANC: Nursing Act No. 33, 2005) define and enrolled nurse as a person educated to practice basic nursing in the manner and to the level prescribed.

Educational background

According to the South African Qualifications Authority (SAQA, 2011:3), the qualification of the nurse, or educational background is the formal recognition of the achievement of the required number and range of credits for a specific qualification. To that, the South African Nursing Council (SANC, 2010) defines a qualification as a planned combination of learning outcomes with a defined purpose to provide learners with applied competence and a basis for further learning.

Perceptions

Blignaut *et al.*, (2012:22) describes perceptions as the basis of how a person sees and understands a concept and what is included in the mental image when cognitively referring to the same concept.

Quality of care

Donabedian is often referred to as the father of quality of care (Cohen, 1984:129). Pronovast, Nolan, Zeger, Miller, and Rubin (2011:348) define quality measurement as the “lenses through which we quantitatively determine quality”.

Patient safety

The WHO (2011) defines patient safety as the prevention of errors and adverse events related to health care. Furthermore, Scott (2003:13) state that the aim of patient safety implies flawless care or no mistakes.

ETHICAL APPROVAL

A formal, written proposal of the project was submitted to the Ethics Committees of both the North-West University and the private hospitals that participated in the study. Ethical approval was obtained from the North-West University Ethics Committee: NWU-0015-08-S1; the Ethics Committees of the private hospital groups that participated in the study and each of the individual participants.

RESEARCH DESIGN

This study followed a comparative descriptive design. The variables, educational background, and perceptions of the nurses in terms of the quality and safety of care delivered, were described and the differences in the variables between the groups were examined as it occurred in the natural setting (Burns & Grove, 2009:239).

Context

South Africa is geographically divided into nine provinces. The setting for this study was in the private hospital sector in Gauteng Province, and although Gauteng is the smallest of the nine provinces in South Africa, it is by far the wealthiest and most populous per square metre with 11.19 million people residing in the province (Statistics South Africa, 2010). For that reason, the most private healthcare beds, nursing workforce and medical aid beneficiaries are also located in this province.

South African nurses are divided in three different categories namely registered nurses (RNs) (also known as professional nurses); enrolled nurses (ENs) (also known as staff nurses) and auxiliary nurses (NAs) (also known as nursing assistants). RNs have the option to enrol for a four year degree at an accredited University, or a four year diploma at approved nursing colleges (Van Wyk, 2006; DENOSA, 2011; Nursing Act 33 of 2005). The four year program enables graduates to register with the South African Nursing Council (SANC) as general, psychiatric and community nurse and midwife (Van Wyk, 2006). ENs are trained at approved nursing colleges and students typically follow a two year in-service training programme. Both ENs and NAs practice under the direct or indirect supervision of a RN (Nursing Act 33 of 2005 -No. R.3735 of 14 November 1969). According to the most recent statistics provided by SANC (2011) there is approximately 1 RN for every 434 patients as opposed to 1 EN for every 995 patients in South Africa. In Gauteng, a RN is available for every 372 patients, whilst 1 EN is available for every 861 patients.

Population and sample

Nurses working in surgical wards in private hospitals in Gauteng Province with a bed capacity exceeding 100 were invited to participate in the study. A total of 27 hospitals were included in the study and due to the fact that nurses' response rates to questionnaires are at best moderate, the researchers decided on an all-inclusive sample of RNs and ENs working in surgical units. From the staff list a total of 292 RNs and 306 ENs were invited to complete the questionnaire. A total of 304 fully completed questionnaires were accepted for statistical evaluation resulting in a 51% response rate. Of the 304 questionnaires received the RNs completed 149 (n=149)

and the ENs 155 (n=155). This resulted in a 51% response rate for the RNs and a 51% for the ENs.

DATA COLLECTION

Instrument

This study formed part of an international programme. The questionnaire consisted of four sections with 118 questions across seven pages and typically took 15-20 minutes to complete. The questionnaire was constructed by an international team of researchers that was part of an international collaborative project, namely Nurse Forecasting in Europe (RN4CAST) (Sermeus, Aiken, De Geest, Diomidous, Durna, Erman, Klopper, Lui, Matthews, Morena-Casbas, Rafferty, Scott, Schoonhoven, Schubert, Shaibu, Tishelman, Antypas, Brzostek, Brommels, Busse, Clarke, Delaure, Frigas, Griffiths, Gustavsson, Kinnune, Liaskos, Lesaffre, Mantas, Van Achterberg, Van Den Heede, Wörz & Zikos, 2008). Section A included questions about the nurses current practice environment as measured by the Practice Environment Scale of the Nurse Work Index (Lake, 2002) and the occurrence of burnout as measured by the Maslach Burnout Inventory (Maslach & Jackson, 1996). Section B was concerned with issues related to the quality and safety of patient care in the unit, whereas information pertaining to work schedules and staff ratios was addressed in Section C. In section D, demographic information of nurses was collected. For this study, only questions from sections B and D were extrapolated from the RN4CAST databank. Nineteen survey items measured nurses' perceptions of the safety and quality of care in their units. A confirmatory factor analysis was conducted on the larger sample of data that included surgical units across South Africa. It is beyond the scope of this article to discuss the confirmatory factor analysis of the data and

therefore information considered relevant to the interpretation of the relationship between the variables will be reported. The data for this study was tested against this larger sample and the factors proved reliable with Cronbach alphas ranging between 0.72 and 0.91 for the factors identified.

Nurses were asked to identify, on a summated rating scale, the safety, and quality of care patients received in their unit. Practice related to patient safety that was explored consisted of a) staff mistakes held against them, b) important information of patients lost during shift changes, c) ways to prevent errors from happening again, d) feedback based on incident reports and e) management consider patient safety a top priority. Nurses' perceptions of incidents were also explored in terms of medication errors, occurrence of pressure ulcers, patient falls, hospital-acquired infections, patient complaints, verbal and physical abuse towards nurses and work-related injuries to nurses. The nineteen items clustered into seven factors that included i) error prevention (4 items), ii) losing patient information (2 items), iii) staff mistakes (1 item), iv) verbal abuse (3 items), v) hospital-acquired infections (3 items), vi) physical abuse (3 items), and vii) patient incidents (3 items). The mean values for the factors and the reliability indices are reflected in Table 1.

Preferred placement for Table 1

Procedure

Data collection took place on site over a period of three months (May – July 2009) and the process was coordinated by one of the researchers. Appointments with the nursing service manager of each of the 27 hospitals included were scheduled. During the meeting, the researcher explained the process and the questionnaire and

a fieldworker was appointed and trained to assist with the distribution and collection of the questionnaires in each of the participating surgical units.

Data Analysis

Descriptive data were analysed using SPSS 16.0 (SPSS, 2007). Associations among the study variables were estimated using hierarchical linear modelling (HLM) in Statistical Analysis System (SAS). According to McCoach (2010), much of the data in the social sciences are hierarchical in nature and when people are clustered within naturally occurring units their responses is likely to exhibit some degree of relatedness. Because the data in this study was hierarchical in nature, with nurses working in surgical units within private hospitals, hierarchical linear modelling was performed.

Validity and reliability

The following measures were taken to ensure the validity of the study: use of current literature; scrutiny of the questionnaire by content experts and representative ness of the population in the RN4CAST study. Reliability was demonstrated in instrument homogeneity. Internal consistency is a test of homogeneity and is determined by Cronbach alpha (Chaing & Lin, 2008:921). The Cronbach alphas for the subscales in this study ranged between 0.72 – 0.91 and was considered satisfactory. The reliability of the instrument was also demonstrated in several other studies (Klopper, *et al.*, 2012; Coetzee, Klopper, Ellis & Aiken, 2012).

RESULTS

The demographic profile of the participants is illustrated in Table 2. From the results, it was evident that the majority of the participants in both the RN (96.6%) and EN (93.4%) categories were female. When asked about their age, the RNs' ages ranged from 24 to 63 years ($M=43.01$, $SD=9.53$), and the ENs' ages ranged from 22 to 54 years ($M=40.75$, $SD=13.74$). 13.4% of the RNs were trained at a baccalaureate level and 83.8% at a diploma level. Most of the nurses in both categories were also employed as fulltime workers in the unit (RNs = 83.8% and ENs=95.2%).

Preferred placement for Table 2

When asked about their general opinion on the quality of care delivered to patients on their ward, 50.8% of registered nurses rated service as good and 60.3% of the enrolled nurses rated service as excellent (refer to Table 3). Moreover, 51% of the ENs rated the overall grade on patient safety in their ward as excellent, with 51% of the RNs rating it as very good. Deterioration on the quality of care was less commonly reported by the ENs with 74.5% of ENs agreeing that the quality of care in their hospitals has improved in the past year. An equal percentage of nurses (37.5%) were of the opinion that the quality of care remained the same or improved in the past year. 43.9% of the ENs was very confident that their patients were adequately prepared to manage their care at home upon discharge, and 40.5% of the RNs were confident.

Preferred placement for Table 3, 4, 5, 6

The analysis of the relationship between the variables yielded the following results. As presented in Table 7, HLM indicated a statistically significant difference between

RNs and ENs in that enrolled nurses seemed to agree with the actions taken to prevent errors from happening in surgical units. Registered nurses neither agreed nor disagreed with the statements. Looking at the sub-scale, losing patient information, there was a statistically significant difference between RNs and ENs responses. ENs seemed to disagree more with statements that important information is lost during shift changes or when transferring patients from one unit to the next. The mean score for the registered nurses at 2.91 leans towards neither agreeing nor disagreeing with the statements. In terms of staff feeling like their mistakes are held against them, the enrolled nurses' mean score at 3.08 indicated them neither agreeing nor disagreeing with the statement. The registered nurses, however, had a mean score of 3.47 that leaned towards agreeing with the statement that their mistakes are held against them. In terms of verbal abuse, registered nurses and enrolled nurses agreed that verbal abuse occurred once a month or less with the registered nurses ($M = 2.25$) having a slightly higher mean score than the enrolled nurses ($M = 2.08$). Looking at the mean scores for physical abuse, both registered nurses ($M = 0.63$) and enrolled nurses ($M = 0.89$) seem to agree that incidents occur a few times or less per year. Lastly, when reporting on patient incidents in terms of medication errors, pressure ulcers and falls with injury, a statistical significance was found between RNs and ENs. Registered nurses ($M = 1.08$) indicated an occurrence of a few times per year or less, whilst the enrolled nurses with a mean score of 0.80 was of opinion that these incidents never occurred in their units.

Preferred placement for Table 7

DISCUSSION

This study describes the perceptions of RNs and ENs on the safety and quality of patient care in surgical units in private hospitals in Gauteng Province. Perceptions shape the foundation for all human action and nurses' perceptions lead to actions that affect patient safety and the quality of care, which are all critical to the provision of healthcare (Mwachofi, Walston & Al-Omar, 2009:274).

Findings from this study indicated that South Africa, as is the case in the rest of the world, has a substantial nursing workforce aged 40 years and older that is predominantly female (Graham & Duffield, 2010:44; ICN, 2008). The positive ratings of the patients' preparedness for discharge among the RNs and ENs correlate with the findings of a similar study conducted by Aiken, Clarke, Sloane, Sochalski, Busse, Clarke, Giovannetti, Hunt, Rafferty and Shamian (2001:49) in five countries and could possibly be attributed to longer hospital stays. Enrolled nurses in this study were for the most part positive that they could question the decisions and actions of those in authority, participate in discussions on how to prevent errors from happening again, receive feedback on changes based on event reports and that the action of management indicated that patient safety is a top priority. Registered nurses on the other hand seemed indifferent on the questions related to error prevention. According to Mwachofi *et al.*, (2009:276) organisational processes such as error-reporting are considered critical in influencing nursing perceptions. Moreover, nurses' willingness to report errors varies by severity and most nurses are willing to report all levels of errors. A study conducted in critical care units in private, public and university hospitals in Turkey, found that private hospitals had more quality management and patient safety programmes and were also less likely to have

punitive responses to errors reported which could contribute to the positive ratings from ENs on error prevention in this study (Badir & Herdmann, 2008).

From the results, it was also evident that RNs were more likely to report on incidents such as medication errors, occurrence of pressure ulcers and hospital-acquired infections. Medication errors have serious direct and indirect results, and are usually the consequence of breakdowns in a system of care (Mayo & Duncan, 2004:209). Several studies, however, demonstrate underreporting of medication errors among nurses (Wakefield, Blegen, Uden-Holman, Vaugh, Chrischilles & Wakefield, 2001:128; Gladstone, 1995:628). Wakefield *et al.*, (2001:210) cite several reasons for underreporting that include, organisations relying on self-reporting of errors such as incident reports can miss up to 95% of medication errors, nurses' inability to recognise errors, fear of punishment, disagreement over the definition of an error, and time to complete reports. The general positive rating of medication error occurring a few times a year or less in this study can probably be credited to nurses' inability to detect errors, perceptions that certain errors will not harm patients, or fear of consequences associated with reporting (Wakefield *et al.*, 2001:211).

Contrary to the findings of several international studies (O'Connell, Macdonald & Kelly, 2008; O'Connell & Penny, 2001) registered nurses and enrolled nurses seemed to agree that patient information is not lost during shift changes or when transferring patients between wards. According to Chaboyer, McMurray, Johnson, Hardy, Wallis and Chu (2009:136) accurate communication during handover is a critical element in the quality and safety of care that patients receive. Most international literature cite the quality of information during handovers to be poor,

inaccurate or incomplete (O'Connell *et al.*, 2008:8). Such findings highlight the deficit and inefficiencies that have been associated with loss of information during nurse handovers. This study did not ask nurses about the quality of the information during nurse handovers. However, it may be useful to explore nurses' perceptions of the quality of the information.

Registered Nurses indicated that verbal abuse towards nurses by patients and/or families occurred once a month or less. According to Aiken *et al.*, (2001:50) the current climate of care in hospitals is a major contributor to unsatisfied patients that result in frustration that is likely to compromise the civility of the work environment. When reporting on physical abuse towards nurses by patients and/or family and staff, both the RNs and ENs leaned towards the occurrence of such incidents a few times a year or less. In a study conducted by Day, Minichiello and Madison (2007:408) the authors found that almost three-quarters of the study population (n=262) reported that they had been subjected to some form of physical abuse from their patients. The issue of workplace violence has received attention worldwide in the last decade. The low report of physical abuse from nurses in this study, when compared to international literature can probably be attributed to nurses perceiving high levels of abuse from patients as 'part of the job'. Day *et al.* (2007:410), questioned whether unmet patient needs and high expectations are not the cause of generating high levels of hostility and disrespect towards the most visible and available health practitioner, the nurse.

LIMITATIONS OF THE STUDY

This article is based on a secondary analysis of the data. The study was conducted in the private hospital sector in Gauteng Province, limiting the findings to that context. Another limitation is that in a self-administered questionnaire the provision of additional information (such as the quality of information during handovers) limits the results to the items asked. It is regrettable that the quality of the information during shift changes or transfers to other units was not explored.

CONCLUSION

Nurses play a major role as primary patient contact and have a vital role in ensuring the quality and safety of patient care. The results of this study suggest that nurses' (both registered and enrolled) perceptions of the quality and safety of patient care in surgical units in private hospitals in Gauteng are positive. Several of the findings that can affect the quality and safety of patient care such as recording of medication errors are considered vital for addressing by management. To that end, the findings provide a glimpse of one of the critical professions' perceptions on the safety and quality of care in surgical units in private hospitals.

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Conflict of interest

This work is from a self-founded master's study. No existing or potential conflict of interest has been identified.

Author contributions

Reece Swart contributed to the conceptualisation of the study, data collection and analysis, the interpretation of the findings and the drafting of the manuscript. Ronel Pretorius and Hester Klopper contributed to the conceptualisation of the study, data interpretation, drafting of the manuscript (results and discussion sections), supervision, and the critical revision of the intellectual content.

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Tables

(Please note that the tables will be submitted as a separate Excel (.xls) file).

Table 1: Mean scores and reliability indices of the factors identified (n=304)

Factor	No. of items	Total sample mean (SD)	Cronbach alpha
<i>Error prevention (n = 300)</i>	4	3.89 (0.78)	0.74
<i>Losing patient information (n = 299)</i>	2	2.73 (1.28)	0.83
<i>Staff mistakes (n = 296)</i>	1	3.25 (1.27)	-
<i>Verbal abuse (n = 296)</i>	3	2.12 (1.57)	0.83
<i>Hospital-acquired infections (n = 292)</i>	3	0.96 (1.23)	0.91
<i>Physical abuse (n = 296)</i>	3	0.77 (1.11)	0.78
<i>Patient incidents (n = 297)</i>	3	0.98 (1.03)	0.72

Table 2: Demographic characteristics of the participants (n=304).

	RN (n=149)	EN (n=155)
Age (mean±SD)	43.01 (9.53)	40.75 (13.74)
	Total sample (%)	
Female	142 (96.6%)	141 (93.4%)
Male	5 (3.4%)	10 (6.6%)
Degree	19 (13.4%)	-
Diploma	123 (86.6%)	-
Full-time employees	137 (93.8%)	140 (95.2%)
Part-time employees	9 (6.2%)	7 (4.8%)

Table 3: In general, how would you describe the quality of nursing care delivered to patients on your ward?

	REGISTERED NURSES		ENROLLED NURSES	
	(n=120)		(n=151)	
	Number	%	Number	%
Poor	1	.8	1	.7
Fair	18	15	6	4.0
Good	61	50.8	53	35.1
Excellent	40	33.3	91	60.3

Table 4: Please give your unit an overall grade on patient safety:

	REGISTERED NURSES		ENROLLED NURSES	
	(n=147)		(n=151)	
	Number	%	Number	%
Failing	6	4.1	2	1.3
Poor	37	25.2	17	11.3
Acceptable	75	51	55	36.4
Very good	29	19.7	77	51

Table 5: In the past year would you say the quality of care in your hospital has

	REGISTERED NURSES		ENROLLED NURSES	
	(n=144)		(n=145)	
	Number	%	Number	%
Deteriorated	36	25	9	6.2
Remained the same	54	37.5	28	19.3
Improved	54	37.5	108	74.5

Table 6: How confident are you that your patients are able to manage their care when discharged?

	REGISTERED NURSES		ENROLLED NURSES	
	(n=147)		(n=148)	
	Number	%	Number	%
Not at all confident	3	2	5	3.4
Somewhat confident	25	17	16	10.8
Confident	81	55.1	62	41.9
Very confident	38	25.9	65	43.9

Table 7: Results of Hierarchical Linear Models for educational background and the safety and quality of patient care

	REGISTERED NURSES		ENROLLED NURSES		t Value	P
	Mean	Standard error	Mean	Standard error		
Error prevention	3.69	0.07	4.05	0.05	-4.89	<0.001
Losing patient information	2.91	0.12	2.47	0.19	2.23	0.05
Staff mistakes	3.08	0.09	3.47	0.18	-2.03	0.07
Verbal abuse	2.25	0.12	2.08	0.31	0.51	0.62
Hospital-acquired infections	0.79	0.11	1.06	0.14	-1.43	0.19
Physical abuse	0.63	0.12	0.89	0.14	-1.33	0.22
Patient incidents	1.08	0.09	0.80	0.10	5.03	<0.001

CHAPTER 4: CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

Chapter 4 will review the conclusions drawn from the research, the recommendations made, and the limitations of the findings.

4.1 INTRODUCTION

In Chapter 4, conclusions are deducted from the data analysed, recommendations are made for practice, research, and nursing education, and the limitations encountered during the study are discussed.

4.2 EVALUATION OF THE STUDY AND CONCLUSIONS

The aim of the study was to investigate the relationship between RNs' and ENs' educational background and perceived quality and safety of patient care delivery in surgical units in private hospitals in Gauteng Province, South Africa. To achieve the aim of the study, three objectives were set. The perceptions of both the RNs and ENs were explored for objectives 1 and 2, and hierarchical linear modelling was used to determine the existence of a relationship between the variables for objective 3. A comprehensive overview and discussion of the variables was provided in Chapter 2.

Considering the global focus on the education of the nurse and the impact thereof on patient outcomes and the different nursing categories in South Africa, it was considered important to determine if there exists a difference in perceptions on the quality and safety of patient care in the South African context. When considering objective 1, it was evident that fewer RNs seemed to rate the service delivered to patients as excellent. Considering the same questions for objective 2, more ENs reported that the service delivered to patients was excellent. Contrary to that, fewer ENs reported deterioration in the quality of care when compared with RNs.

The statistical analysis of the data identified seven sub-scales namely: ways to prevent errors from happening again, important information of patients lost during shift changes, staff mistakes held against them, verbal and physical abuse towards nurses and work-related injuries to nurses, and hospital acquired infection and patient incidents. A statistically significant difference was found between RNs' and ENs' perceptions on the prevention of errors in the unit, losing patient information between shifts and patient incidents related to medication errors, pressure ulcers, and falls with injury. According to international literature (Badir & Herdmann, 2008),

hospitals in private settings have more quality management and patient safety programmes and were also less likely to have punitive responses to errors reported. The discrepancy in perceptions on reporting between RNs and ENs cannot be underrated and the difference needs to be explored for better understanding. As stated in Chapter 3, contrary to the findings of several international studies (O'Connell, Macdonald & Kelly, 2008; O'Connell & Penny, 2001) RNs and ENs in this study seemed to agree that patient information is not lost during shift changes or when transferring patients between wards. Most international literature cite the quality of information during handovers to be poor, inaccurate or incomplete (O'Connell *et al.*, 2008:8). Such findings highlight the deficit and inefficiencies that have been associated with loss of information during nurse handovers and the importance of exploring nurses' perceptions on the quality of information reported during shift changes needs further investigation. On patient incidents, it was evident that RNs were more likely to report on incidents such as medication errors, occurrence of pressure ulcers and hospital-acquired infections. A clear message of these findings for health service managers will be to investigate nurses' inability to detect errors, and perceptions that certain errors will not harm patients.

4.3 RECOMMENDATIONS

The following recommendations are made for nursing practice, -research, and -education. These recommendations emanated from a review of the literature and the results of this study.

4.3.1 Recommendations for practice:

When reviewing the National Nursing Strategy for Nurses (Nursing Strategy for South Africa, 2008) it was evident that the quality of nursing practice and the safety of nursing practice in South Africa was accorded a high priority. In terms of the findings of this study and that of international authors, the following is recommended for nursing practice:

- Safe nursing practice must be ensured in having appropriate nurse numbers available and by determining the minimum staffing norm for safe practice.

- Quality of care must be promoted and ensured through the implementation of an appropriate staff skills mix in units. Skills mix must be based on patient acuity and the level of education of the nurses available for that unit.
- Regulatory constraints laid down by the SANC should be reviewed to allow for the increase in the number of nurses trained (HASA, 2009:79).

4.3.2 Recommendations for research:

- Research exploring the quality and safety of patient care delivered by diploma and degree educated nurses and how it relate with patient outcomes may prove valuable.
- An investigation of RNs' and ENs' reporting of patient error may answer the discrepancy in the findings from this study.
- Research regarding nurses' perceptions on the quality of information during shift handover in South Africa is recommended.
- Comparative research on the safety and quality of patient care in the public healthcare service versus the private healthcare service should be performed.

4.3.3 Recommendations for nursing education:

- The researcher recommends that continued professional development (CPD) should form part of any registered nurses' environment. In Australia, CPD points have been introduced as a means of keeping knowledge current and ensuring quality and safety of patient care (Nursing Australia: staffing solutions, 2012).
- Nurses should be evaluated at a regular basis ensuring that all nurses are on the same level of education.
- Increase in the number of Master's degree and PhD -prepared nurses should be promoted as this was found to improve the critical thinking of nurses and thus improving quality and safety of patient care (Goode *et, al.* 2001).
- The implementation of international trends of a baccalaureate degree entrée to professional nursing.

4.4. LIMITATIONS

This study was based on a secondary analysis of the data. The study was conducted in the private hospital sector in Gauteng Province, limiting the findings to

that context and therefore cannot be generalised to the public healthcare sector of South Africa. Another limitation is that in a self-administered questionnaire the provision of additional information (such as the quality of information during handovers) limits the results to the items asked.

4.5 SUMMARY

In Chapter 4, the researcher reflected on the objectives and the conclusions. Recommendations for nursing practice, nursing education and nursing research as well as limitations of the study were also provided.

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APPENDIX A:
Ethics approval from the North-West University



NORTH-WEST UNIVERSITY
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NOORDWES-UNIVERSITEIT

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Ethics Committee

Tel +27 18 299 4850
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Email Ethics@nwu.ac.za

Prof H Klopper

11 July 2008

Dear Prof Klopper

ETHICS APPROVAL OF PROJECT

The North-West University Ethics Committee (NWU-EC) hereby approves your project as indicated below. This implies that the NWU-EC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title: Leadership and policy development improving the quality of nursing in South Africa through staffing and patient safety																
Ethics number:			N	W	U	-	0	0	1	5	-	0	8	-	S	1
			Institution			Project Number			Year			Status				
<small>Status: S = Submission, R = Re-Submission, P = Provisional Authorisation, A = Authorisation</small>																
Approval date: 11 July 2008									Expiry date: 10 July 2013							

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- *The project leader (principle investigator) must report in the prescribed format to the NWU-EC:*
 - *annually (or as otherwise requested) on the progress of the project,*
 - *without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.*
- *The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-EC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.*
- *The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-EC and new approval received before or on the expiry date.*
- *In the interest of ethical responsibility the NWU-EC retains the right to:*
 - *request access to any information or data at any time during the course or after completion of the project;*
 - *withdraw or postpone approval if:*
 - *any unethical principles or practices of the project are revealed or suspected,*
 - *it becomes apparent that any relevant information was withheld from the NWU-EC or that information has been false or misrepresented,*
 - *the required annual report and reporting of adverse events was not done timely and accurately,*
 - *new institutional rules, national legislation or international conventions deem it necessary.*

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

Prof MMJ Lowes
(chair NWU Ethics Committee)

APPENDIX B:
RN4CAST Questionnaire

PLEASE MARK AN "X" IN THE BOX CORRESPONDING TO YOUR ANSWER IN EACH QUESTION, OR SUPPLY THE REQUESTED INFORMATION.

B. QUALITY AND SAFETY

1. In general, how would you describe the quality of nursing care delivered to patients on your unit/ward?

- 1 Poor 2 Fair 3 Good 4 Excellent

2. How confident are you that your patients are able to manage their care when discharged?

- 1 Not at all confident 2 Somewhat confident 3 Confident 4 Very confident

3. How confident are you that hospital management will act to resolve problems in patient care that you report?

- 1 Not at all confident 2 Somewhat confident 3 Confident 4 Very confident

4. Please give your unit/ward an overall grade on patient safety.

- 1 Failing 2 Poor 3 Acceptable 4 Very good 5 Excellent

5. In the past year would you say the quality of patient care in your hospital has ...

- 1 Deteriorated 2 Remained the same 3 Improved

6. The following questions ask for your opinion about patient safety issues in your employment setting.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. Staff feel like their mistakes are held against them.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
2. Important patient care information is often lost during shift changes.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
3. Things "fall between the cracks" when transferring patients from one unit to another.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
4. Staff feel free to question the decisions or actions of those in	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

authority.

5. In this unit, we discuss ways to prevent errors from happening again. 1 2 3 4 5

6. We are given feedback about changes put into place based on event reports. 1 2 3 4 5

7. The actions of hospital management show that patient safety is a top priority. 1 2 3 4 5

7. How often would you say each of the following incidents occurs involving you or your patients?

	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day
1. Patient received wrong medication, time, or dose	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
2. Pressure ulcers after admission	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
3. Patient falls with injury	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
4. Healthcare-associated infection:							
1. Urinary tract infections	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
2. Bloodstream infections	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
3. Pneumonia	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
5. Complaints from patients or their families	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
6. Verbal abuse toward nurses							
1. By patients and/or	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

APPENDIX C:
Ethics approval from the private hospitals



**MEDI-CLINIC
LIMITED**

Private hospital group

Reg. No. 1969/009218/06

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Strand Road, Stellenbosch 7600 • www.mediclinic.co.za

5 February 2009

Mrs Ronel Pretorius
School of Nursing Science
North-West University
Private Bag X1290
POTCHEFSTROOM
2520

Dear Ronel

PERMISSION TO CONDUCT RESEARCH IN MEDI-CLINIC HOSPITALS

Your research proposal entitled "*Leadership and Policy Development: Improving the Quality of Nursing in South Africa through Nurse Staffing and Patient Safety*" refers.

It is in order for you to conduct your research in our hospitals in South Africa, and I wish you success with this project.

Yours sincerely
for Medi-Clinic Limited


ESTELLE JORDAAN
GENERAL MANAGER- NURSING

25 Years of Quality Care

Directors: WH Aucamp, AJ Joubert, NS Matlala, KHS Pretorius, B Valodia

Company Secretary: TA Lockyer

*** Revised 11 June 2008 M2552 ***





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5th March 2009

Prof HC Klopper
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E mail: Hester.Klopper@nwu.ac.za

Dear Prof Klopper

LEADERSHIP AND POLICY DEVELOPMENT: IMPROVING THE QUALITY OF NURSING IN SOUTH AFRICA THROUGH NURSE STAFFING AND PATIENT SAFETY

It is with pleasure that we inform you that your application to conduct research on; **Leadership and Policy Development: Improving the Quality of Nursing in South Africa through nurse staffing and patient safety**, at Netcare hospitals has been successful, subject to the following:

- i) All information with regards to Netcare will be treated as confidential.
- ii) Netcare's name will not be mentioned without written consent from the Academic Board of Netcare.

Executive Directors:

R H Friedland BVSc (Pret), MBCh (Wits), Dip Fin Man, MBA, MRCS (CEO); P G Nelson CA(SA) (Chief Financial Officer);
I M Davis Dip Pharm (MPS); V L J Lilhekanyane MBChB, M Med (Radiotherapy); M B, N Wellman CA(SA)

Non-Executive Directors:

M I Sacks CA(SA), AICPA(ISA) (Chairman); A P H Jammie BSc (Hons), BA (Hons (Wits)), MSC London (LSE), PhD London (LBS);
J M Kahn BA (Law), MBA, Dcom (hc), SCE; M B Kistnasamy MBChB (Natal), M Med (Community Health) (Natal);
H R Levin BCom, LLB, LLM, H Dip Tax, H Dip Co Law (Wits); J Shevel MBCh (Wits); J A Van Rooyen MBCh (Pretoria), M Med (Cin Path) (Stellenbosch)

Company Secretary: J Wolpen CA(SA) FCMA FGIS

Reg. No. 1996/008242/06