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The profile of anaesthetic nurses in selected public hospitals in Gauteng

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Medicine in Anaesthesia, Johannesburg, 2016

Declaration

I, Amanda Vutomi Nkuna declare that this research report is my own work. It is being submitted for the degree of Master of Medicine in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

……

Signature of candidate

…….2016

Abstract

Background: Modern anaesthesia has become very safe with an estimated mortality of about one death in every 50 000 procedures. Rates of preventable morbidity associated with anaesthesia are, however, much higher than this. The presence of a trained anaesthetic assistant has been shown to improve the safety of anaesthesia. A review of the literature revealed no studies determining the demographic and educational profile of anaesthetic nurses in South Africa.

Objectives: The objectives of this study were to describe the demographic and educational profiles, the other roles fulfilled by anaesthetic nurses and availability of anaesthetic nurses in selected public hospitals of Gauteng.

Method: A descriptive, prospective, exploratory study was done in seven selected public hospitals in Gauteng. The data were collected from the operating theatre nursing managers of the selected hospitals. The data collected included the anaesthetic nurse demographics and educational profiles, the other roles they fulfil and general information.

Results: Information relating to one hundred and thirty five (n=135) anaesthetic nurses was obtained. The majority (96%) of nurses were females. The mean age (SD) of anaesthetic nurses was 38.1 (8.2) years, ranging from 24 to 59 years. The median years of theatre experience of the anaesthetic nurses was 6 years, ranging from 1 month to 26 years. The majority (80%) of anaesthetic nurses has less than 10 years' experience. Of the 135 anaesthetic nurses, 115 (85%) were enrolled nurses and 20 (15%) were registered nurses. Only two registered nurses had done an anaesthetic course. The other roles fulfilled by anaesthetic nurses in theatre of selected hospitals were recovery room nursing, floor nursing and as scrub nurses. None of the hospitals used agency nurses. Only one hospital had an anaesthetic nurse available for every theatre case.

Conclusion: Suitably trained and competent anaesthetic nurses to assist the anaesthetist as stipulated by South African Society of Anaesthesiologists are not readily available in the public hospitals included in the study.

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Abbreviations

AAGBI: Association of Anaesthetists of Great Britain and Ireland

ANZCA: Australian and New Zealand College of Anaesthetists

CHBAH: Chris Hani Baragwanath Academic Hospital

CMJAH: Charlotte Maxeke Johannesburg Academic Hospital

RMMCH: Rahima Moosa Mother and Child Hospital

SANC: South African Nursing Council

SASA: South African Society of Anaesthesiologists

SATS: South African Theatre Nurses Organisation

WHO Europe: World Health Organization Europe

CHAPTER 1: Overview of the study

1.1 Introduction

In this chapter, a brief overview of the study is presented and it will include the background of the study, problem statement, aim and objectives, research definitions, demarcation of the study field, ethical considerations, research methodology, the significance of the study, validity and reliability, and the outline of the study report.

1.2 Background

Modern anaesthesia has become very safe with an estimated mortality of about one death in every 50 000 procedures. Rates of preventable morbidity associated with anaesthesia are, however, much higher than this (1). Anaesthesia is essential for the performance of surgery and other invasive procedures but is nonetheless an intrinsically dangerous activity (2). The presence of a trained anaesthetic assistant has been shown to improve the safety of anaesthesia (3).

The role of anaesthetic assistants (non-medical operating department assistants) developed in the United Kingdom in the 1970's to address the perioperative nursing shortage (4). This was deemed to require only semi-skilled nurses and was therefore seen as an inexpensive and immediate solution to the nursing shortage. These anaesthetic assistants, however, soon became a consolidated group of specialists demanding higher salaries. This demand caused many anaesthetic nurses to leave anaesthetics as they felt their skills were being undervalued. Australian tertiary institutions have supported anaesthetic nursing and have instituted a postgraduate course to recognize the level of knowledge required within this area of care (5). Trained anaesthetic nurses can provide expert care which is of benefit to both the patient and the anaesthetist (6).

The literature describes three broad categories of anaesthetic assistants. The first of which is the nurse anaesthetist, who may work independently, but usually has some level of supervision from a physician anaesthetist (7). Nurse anaesthetists

allow physician anaesthetists to take on many patients at one time (8). The second is the anaesthetic nurses who are trained to assist the anaesthetist in the administration of anaesthesia, but do not make any decisions about, or undertake any part of the anaesthetic themselves (5, 7). The last is the anaesthetic technicians who are specially trained anaesthetic assistants and do not have a medical or nursing background. The role of the anaesthetic technician is to manage and maintain the equipment used by the anaesthetist (7).

Nonetheless, different countries have their own guidelines and requirements for anaesthetic assistant's categories. The American Society of Anaesthesiologists Guidelines (9) do not include anaesthetic nurses, but only mention nurse anaesthetists. However, the Association of Anaesthetists of Great Britain and Ireland (AAGBI) regard the anaesthetic assistant as a registered professional nurse with additional training or a trained technician (10). On the other hand, World Health Organization Europe (WHO Europe) (11) states that anaesthetic nurses have to complete postgraduate specialist education in anaesthesia to safely assist the anaesthetist. Australian and New Zealand College of Anaesthetists (ANZCA) recommends the anaesthetic assistant to be a registered nurse, enrolled nurse or technician who has completed an anaesthesia training programme (12). Similarly the South African Society of Anaesthesiologists (SASA) and South African Theatre Nurses Organisation (SATS) recommend that the anaesthetist be assisted by a well trained registered nurse, enrolled nurse or technician for efficient conduction of anaesthesia (13, 14).

All the reviewed practice guidelines (10-14) recommend training of anaesthetic nurses. Internationally, the training varies, mostly from 1 to 2 years. SASA (13) and SATS (14) both recommend that the anaesthetic nurses should receive a suitable training and be competent. However South African Nursing Council (SANC) does not offer a postgraduate anaesthetic nursing training course, although anaesthetic nursing is a module in the diploma in Medical and Nursing Science: Operating Theatre Nursing (15). Private hospitals in South Africa do offer six months anaesthetic courses, however these courses are neither standardised nor accredited (16).

Historically female nurses have dominated the nursing workforce (17). Internationally and nationally, the general nursing population including perioperative nurses has been shown to be predominantly female. (18-20)

The literature revealed that the nursing workforce is ageing (21). In South Africa and internationally, the majority of general nurses including perioperative nurses are between ages of 40 to 45 years. (14, 17, 20, 22)

Morrison et al (23) specifies that nursing care without expertise may be considered detrimental to the patient's safety. Internationally, in Australia (24) for instance, the average operating theatre experience of nurses was 19 years; in South Africa Scribante and Perrie (20) showed that recovery room nurses lack experience, with nurses younger than 50 years having an average of 3.8 years of experience.

The role of the anaesthetic nurse is not described as well as that of other nurses in the operating theatre (25). In Great Britain (10) and Europe (11) the anaesthetic nurse, in addition to assisting the anaesthetist, also assists the surgeon and helps with theatre preparation and recovery of patients until discharge. In South Africa, the role of the anaesthetic nurse is to assist the anaesthetist with preparation for and induction and emergence, with no other responsibilities during these period, according to SASA (13). Gillespie et al (6) and Oakley (25) have described additional non-technical roles of operating theatre nurses (which include the anaesthetic nurse) as: a specialist, advocate, work flow manager, member of interdisciplinary operating theatre team, and communicator. According to Gillespie et al (26) communication is the most important of these skills.

Mandatory nurse staffing and defined standards must be adopted by regulators, commissioners and providers of health services in order to protect patients (27). SATS (14), in keeping with international recommendations, suggests a nurse: patient ratio of one professional nurse, one circulating nurse and one anaesthetic nurse during invasive surgery. SASA (13) state that there should be an assistant for the anaesthetist and one trained anaesthetic professional nurse per theatre complex. No data on the availability of anaesthetic nurses in South Africa could be identified. Scribante and Perrie (20) reported a shortage of recovery room nurses

in selected Johannesburg hospitals and this may reflect the anaesthetic nursing availability in South Africa.

The impact of anaesthetic nurses in perioperative care is well documented. Kluger et al (28) stated: “skilled assistance for the anaesthetist is the prerequisite for safe and reliable conduct of anaesthesia”. This is echoed by Miller and Kivubiro (5) who say “the anaesthetic nurse has an enormous role in perioperative care”.

1.3 Problem statement

The presence of a trained anaesthetic assistant appears to improve the safety of an anaesthetic (3, 8). SASA (13) and SATS (14) state that it is important that a suitably trained assistant be available to assist the anaesthetist for safe conduct of anaesthesia, and this person be either a registered or enrolled nurse or an anaesthetic technician. In South Africa the majority of anaesthetic assistants are nurses, however the demographic and educational profiles of these nurses, and other roles they fulfil in the operating theatre was unknown.

1.4 Aim of the study

The aim of this study was to describe the demographic and educational profile of anaesthetic nurses in selected public hospitals in Gauteng and to describe their availability and other clinical roles they fulfil in the operating theatre.

1.5 Objectives of the study

The objectives of the study were to:

- describe the demographic profile of the anaesthetic nurses
- describe the educational profile of the anaesthetic nurses
- describe the other roles that the anaesthetic nurses fulfil in the operating theatre
- describe the availability of anaesthetic nurses at the respective hospitals.

1.6 Research definitions

The following definitions were used in the research.

Anaesthetic assistant: is an appropriately trained and competent registered or enrolled nurse or anaesthetic technician (13).

Anaesthetic nurse: is any nurse who assists the anaesthetist with an anaesthetic regardless of their educational profile or other duties in the operating theatre.

Registered nurse: “is a professional nurse 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.” (29)

Enrolled nurse: “is a person educated to practice basic nursing in the manner and to the level prescribed.” (29)

Anaesthetic technician: is a person trained in assisting the anaesthetist and does not have a medical or a nursing background, they manage and maintain the anaesthetic equipment but are not involved in administration of an anaesthetic (7).

Central hospitals: are hospitals that offer tertiary hospital services, central referral services and may provide national referral services. They offer training for health care providers, conduct research, accept patient referrals from other provinces, are attached to a medical school and have more than 1200 beds (30).

Tertiary hospitals: are hospitals that provide specialist level services provided by regional hospitals, including the subspecialties. They provide intensive care services under supervision, may offer training of health care service providers, receives referrals from regional hospitals not limited to provincial boundaries, and has between 400 and 800 beds (30).

Regional hospitals: are defined as those hospitals that provide health services in internal medicine, paediatrics, obstetrics and gynaecology, general surgery and at least one other speciality on a 24 hour basis. They service a defined region, limited to provincial boundaries and receive referrals from several district

hospitals, and where practical, provide training for health care service providers. They receive outreach and support from tertiary hospitals and usually have between 200 and 800 beds (30).

District hospitals: are categorised into small, medium and large according to their bed numbers, which are between 50 and 600. They serve a defined population and support primary health care on a 24 hour basis; they provide in-patient, ambulatory health services and emergency health services. Where realistic, they provide training for health care service providers. They receive outreach and support from general specialists based at regional hospitals (30).

1.7 Demarcation of the study field

The study was conducted in selected public central, tertiary, regional and district hospitals in Gauteng. Gauteng has 28 public hospitals and five speciality hospitals (30). The hospitals selected for this study included:

- Chris Hani Baragwanath Academic Hospital (CHBAH)
- Charlotte Maxeke Johannesburg Academic Hospital (CMJAH)
- Rahima Moosa Mother and Child Hospital (RMMCH)
- Natalspruit Hospital
- Heidelberg Hospital
- Kopanong Hospital
- Pretoria West Hospital.

1.8 Ethical considerations

Approval to conduct this study was obtained from the relevant authorities. Anonymity and confidentiality was ensured. The study was conducted adhering to the principles of the Declaration of Helsinki (31) and the South African Good Clinical Practice Guidelines (32).

1.9 Research methodology

1.9.1 Research design

A descriptive, prospective, exploratory design was used for this study.

1.9.2 Study population

The study population consisted of selected public hospitals in Gauteng, and the demographic and educational profiles of anaesthetic nurses working in the operating theatres of these hospitals.

1.9.3 Study sample

Sample size

One central, one tertiary, two regional and three districts public hospitals in Gauteng were included, and the demographic and educational profiles of all the anaesthetic nurses working in these hospitals were obtained.

Sampling methods

Convenience, purposive sampling was used to select the seven hospitals.

1.9.4 Data collection

After the study was approved by relevant authorities, the researcher contacted and secured the appointments for data collection with the operating theatre nursing managers or sisters in charge of theatre from the selected hospitals. Data was collected on data collection sheets (Appendix 1).

1.9.5 Data analysis

Data was captured on a Microsoft Excel® spread sheet. Descriptive statistics were used to describe the demographic and educational profile of anaesthetic nurses and the other roles that they fulfil in the operating theatres.

1.10 Significance of the study

SASA states that “it is essential for the safe and efficient conduct of anaesthesia that a suitably trained and competent registered or enrolled nurse or anaesthetic technician be available to assist the anaesthesiologist”. SANC has no official training course for anaesthetic nurses and the profile of anaesthetic nurses working in South Africa was unknown. This study is significant as it addresses a concern for patient safety and for the anaesthetic community in general. The results of this study may contribute to establishing a more appropriately trained and competent anaesthetic nurse workforce.

1.11 Validity and reliability

Measures were taken to ensure the validity and reliability of the study.

1.12 Outline of report

The study consists of five chapters, and the outline is as follows:

- Chapter 1: Overview of the study
- Chapter 2: Literature review
- Chapter 3: Research methodology
- Chapter 4: Results and discussion
- Chapter 5: Summary, limitations, recommendations and conclusion.

1.13 Summary

This chapter contains an overview of the study. In the following chapter the literature review is presented.

CHAPTER 2: Literature review

2.1 Introduction

In this chapter the literature pertaining to anaesthetic assistants, specifically anaesthetic nurses, is reviewed. A brief history of anaesthetic assistants is described followed by the different categories of anaesthetic assistants, the position statement of professional societies with regard to anaesthetic assistants, the anaesthetic nurses' demographic profiles, the anaesthetic nurses training, their roles, availability, and impact in the operating theatre.

2.2 History

By the end of the 19th century, operating department nursing had become a prestigious speciality (33). Operating department nurses assisted the surgeon and ensured the smooth running of the surgery by understanding the idiosyncrasies of individual surgeons. Duties such as assisting the anaesthetist and working in the recovery room were initially carried out by nurses from the wards. These nurses took care of the patient during surgery and then returned to the ward with the patient postoperatively where they continued to care for them until discharge. (34)

The role of the anaesthetic nurse developed in the UK in the 1970s to address the perioperative nursing shortage. This was deemed to require only semi-skilled nurses and was seen as an inexpensive and immediate solution to the nursing shortage (4). These nurses, however, soon became a cohesive group of specialists. Since then tertiary institutions have recognised the expert knowledge required within this speciality and have instituted postgraduate courses (5). Trained operating theatre nurses can provide expert care which is of benefit to both the patient and the anaesthetist (6).

The South African anaesthetic nursing history is riddled with controversy. In August 1967 Professor Grant-Whyte presented a memorandum to the South African Medical and Dental Council depicting an apparent shortage of anaesthetists in some hospitals. The memorandum recommended that the

problem could be addressed by training non-medically qualified people to administer anaesthetics under the supervision of a doctor. This has been the practice for many years in the United States of America, Sweden and Denmark. This memorandum was not based on any audit of the proposed shortage of anaesthetists; as a result the South African medical fraternity was strongly opposed to the memorandum. Professional societies, including SASA were invited to give input into this matter. (35)

At the SASA annual general meeting in September 1970, Professor Foster suggested that a trained nurse should undergo a postgraduate course to qualify as an anaesthetic nurse and would help the anaesthetist in the same way as the scrub nurse would assist the surgeon. Professor Foster also proposed that: “the role and duties of nursing staff assisting anaesthetists in operating theatres be defined by the South African Society of Anaesthesiologists, and the necessary rules are laid down by the South African Nursing Council”. The South African Medical Association and South African Medical and Dental Council unfortunately confused the terms anaesthetic nurse and nurse anaesthetist and concluded that SASA approved of nurse anaesthetists. (35)

The introduction of the anaesthetic assistant, as a separate category with rules regarding their training and supervision was promulgated in September 1974 in the Government Gazette (4383 numbers 1636 and 1637). This regulation made it possible for a person with a school leaving certificate to be trained for two years and then administer anaesthesia in approved hospitals under supervision of a doctor who is not part of the surgical team. (35)

The regulation provided for the South African Medical Association and South African Medical and Dental Council to appoint anyone they approved to train the new category of anaesthetic assistants. In reaction Professors Foster, van Hasselt and Downing in 1975 formulated a detailed syllabus and under the auspices of the Natal Provincial Administration and the Department of Anaesthetics started the first course in April 1976. Legal opinion was sought and this expressed the view that anaesthetic assistants were employees of the employing provincial authority and not the supervising doctor. The Medical Defence Union, however, indicated that they would withdraw from any action where an anaesthetic assistant was

involved. In 1981 the South African Medical and Dental Council, in reconsidering the matter, resolved to refer to an ad hoc sub-committee, for reinvestigation and reconsideration of the concept of anaesthetic assistant. (35)

2.3 Categories of anaesthetic assistants

The literature describes three broad categories of anaesthetic assistants: nurse anaesthetists, anaesthetic nurses and anaesthetic technicians. The nurse anaesthetist, practices mainly in the United States of America, and may provide anaesthesia services independently or have some level of supervision from a physician anaesthetist (7). If the nurse anaesthetists works under the supervision of an anaesthetist, it allows the anaesthetists to attend to more than one patient at one time (8).

Anaesthetic nurses assist the anaesthetist in the administration of anaesthesia, but do not make any decisions about, or undertake any part of the anaesthetic themselves (7).

Anaesthetic technicians are specially trained anaesthetic assistants who do not have a medical or a nursing background. The role of the anaesthetic technician is to manage and maintain the equipment used by the anaesthetist. They are not involved in administering an anaesthetic (7).

2.4 Professional societies position statements with regard to anaesthetic assistants

Different countries have their own guidelines and requirements for anaesthetic assistant, as reflected in the different professional societies practice guidelines. International variations are influenced by the health needs and legislative frameworks of different countries (36).

The World Federation of Societies of Anaesthesiologists does not have a specific position statement with regard to the anaesthetic assistant. However they have adopted the standards developed by the International Task Force on anaesthesia safety which states that the anaesthetist must have a trained assistant. (37)

The American Society of Anaesthesiologists (9) only focuses on the anaesthesia care team that includes the nurse anaesthetist and not the anaesthetic nurse.

AAGBI (10) states in the guidelines that an anaesthetist cannot safely administer an anaesthetic without a trained, competent assistant. They further mention that a third person should be readily available to assist with any unforeseen problems. An anaesthetic assistant is regarded as a registered professional nurse with additional training or an operating department practitioner (technician).

The WHO Europe (11) states that the anaesthetist needs to be assisted by an anaesthetic nurse with a well-developed knowledge base and specialist skills during induction, maintenance and reversal “but that is a rather restrictive role”; and therefore stipulates that the anaesthetic nurse, in addition to assisting the anaesthetist, can also help the theatre nurses in preparation for the surgery and for recovery of the patient until discharge. The anaesthetic nurse needs a specialist postgraduate anaesthetic nursing qualification.

ANZCA (12) mentioned that “the presence of a trained assistant for the anaesthetist during the conduct of anaesthesia is a major contributory factor to safe patient management”. The anaesthetic assistant is considered to be a registered nurse, enrolled nurse or a technician. Nurses need to complete one to two years of full time employment, depending on their qualifications, including working and educational experience as trainee anaesthesia assistant in order to qualify as an anaesthetic nurse. Three years of full time employment including study and work as a trainee anaesthetic assistant is required from those without previous hospital experience.

SASA (13) states that “it is essential for the safe and efficient conduct of anaesthesia that a suitably trained and competent registered or enrolled nurse or anaesthetic technician be available to assist the anaesthesiologist” . The SASA guidelines echo SATS (14) position statement, that an anaesthetic nurse, either registered or enrolled, be present during invasive surgical procedures. SATS also states that they continue to discourage the use of unlicensed practitioners replacing professionals.

2.5 Demographic profile of anaesthetic nurses

The demographic profile of anaesthetic nurses will be discussed and this will include: gender, age and years of theatre experience of anaesthetic nurses.

2.5.1 Gender of anaesthetic nurses

Historically, female nurses have dominated the nursing workforce, which can be due to males perception that nursing is for women, lack of male role models and mentors, and lower salaries when compared with other professions (38). The number of general male nurses has increased slightly in the workplace recently. Despite the increase in male nurses, there is still on average only one male nurse for every ten females (39).

In the United Kingdom there are fewer (10%) general male nurses than females, and United State of America has similarly showed a deficient (6.9%) in male nurse workforce (18). The Nursing Council of New Zealand also reported the general nursing workforce as being predominantly female, with only 7.2% of nurses being males (19). In South Africa, as demonstrated by SANC (40) demographic data, it has been shown that there are more females (91%) in the general nursing population.

Internationally, for example, in Australia, the majority (> 90%) of perioperative nurses are females (17). A study by Scribante and Perrie (20) revealed similar results to those in Australia with respect to female nurses dominating (96%) the population of recovery room nurses in Johannesburg hospitals.

2.5.2 Age of anaesthetic nurses

The nursing workforce is ageing whilst the healthcare burden is increasing in most developed countries (21). A decrease in the tendency for young people to choose nursing as a career has resulted in a progressively ageing workforce (24). Hatcher et al (41) describe the ageing nurse as being over the age of 45. The authors also mention that the benefit of an ageing nursing workforce is their dedication and experience, calmness during emergency situations, and good decision making

skills. However, there are challenges with an ageing population, as older and more experienced nurses have higher expectation of working conditions, require greater respect and autonomy, and are unable to work consecutive 12 hour shifts (42).

SANC (22) statistics for general nurses reported in 2014 described the majority of nurses being between the ages of 40 and 45 years. The general nursing workforce in other countries is also shown to be ageing, for example in 2002, the average age of Canadian nurses was 44.2 years, and 45.7 years for New Zealand nurses in 2010 (43).

Sherman (44) showed that perioperative nurses are older and more experienced when compared with the general nursing population. The perioperative nursing workforce is also ageing in Australia, the increase in average age of 38.1 years in 1995 to 41.4 years in 2003 has been demonstrated, with the highest percentage (18%) of nurses being between age of 40 to 44 years (17). The majority of perioperative nurses in South Africa are between the ages of 40 and 45 years as reported by SATS (14). Ageing of perioperative nurses in South Africa was also shown by Scribante and Perrie (20) for recovery room nurses in Johannesburg hospitals, with an average age of 44 years.

2.5.3 Theatre experience of anaesthetic nurses

According to Gillespie et al (24), perception of competency by operating theatre nurses indicated that the most important predictor of overall competency is years of theatre experience. The authors showed the average operating theatre experience of nurses in Australia to be 19 years. Morrison et al (23) specifies that nursing care without expertise may be considered detrimental to the patient's safety. Letvak (42) has shown that older operating theatre nurses with more experience are considerably more satisfied with their work than younger nurses. However a shortage of speciality, experienced nurses in Australia exists. Hatcher et al (41) stipulate that substitution of experienced nurses in United State of America is expensive to the individual organisation and health care industry as a whole.

Scribante and Perrie (20) found that recovery room nurses in South Africa are older and lack experience, with nurses younger than 50 years having an average of 3.8 years of experience. Similarly, Scribante and Bhagwanjee (45) demonstrated a shortage of trained and experienced intensive care unit nurses, with only 5.7% having more than 20 years of experience and the majority (42.8%) having less than five years experience. SATS (14) makes no mention of years of experience of perioperative nurses.

2.6 Training of anaesthetic nurses

Improvement in surgical skills, technology and anaesthesia, such as monitoring equipment and ventilators to support ventilation, have made it easier to operate on patients with previously known poor prognosis and high chances of dying from their illness or injuries (11). A trained assistant for the anaesthetist is the major contributing factor to safe patient management during the conduct of anaesthesia, and the assistant is expected to have relevant education to be able to offer valuable assistance to the anaesthetist (12). The European, United Kingdom, Australian, New Zealand and South African training programs will be discussed.

2.6.1 International training of anaesthetic nurses

The WHO Europe (11) stipulates that to meet the complex requirements of patients having an operation and anaesthesia, good understanding and expertise in anaesthetic nursing, (including the technology and caring dimensions) is required. In addition to general nursing qualifications, the nurse needs to obtain an anaesthetic nursing post-qualification education. Two years of clinical experience post qualifying as a nurse is required as entry level. The curriculum is modular and is preferably completed on a full time basis. The six theory and practice modules usually take 40 weeks to complete, resulting in about 1200 hours of studies. The course is subject to an external audit to ensure that quality and standards of the course are maintained.

AAGBI (10) requires registered professional nurses to have additional training, which complies with national standards, before practicing as anaesthetic nurses.

Since 2002, postgraduate modular theatre courses have been offered by universities. Most universities offer three core modules and three optional modules, one of which is anaesthesia. The courses differ in length and content and there are no standardised competencies, although AAGBI suggest nationally developed competencies for anaesthetic nurses. However, the universities maintain a high standard and there is some national guidance.

ANZCA (12) requires a registered nurse or enrolled nurse that is in current or recent clinical employment as a minimum requirement to enrol for the anaesthetic assistant training course. Appropriate institutes of learning should develop and administer the course. Anaesthetist input is recommended in curriculum development, for teaching programmes, supervision and evaluation. The courses can be completed full-time, part-time, or as a combination of the two, and may include a distance learning programme where appropriate. A minimum of 150 hours of lectures, a log book to document any supervised practical experiences, successful completion of assignments and internal assessments are required, as well as demonstrated competencies and examinations. The duration of the course for registered nurses is one year and two years for enrolled nurses.

2.6.2 South African training of anaesthetic nurses

SASA practice guidelines (13) state that the anaesthetic nurse must be a suitably trained and competent registered or enrolled nurse. There is no clarification in the guidelines of what “suitably trained and competent” means.

SATS (14) makes no specific mention of anaesthetic nurse training. They do, however, say that updating and upgrading of the knowledge and skills of professional perioperative nurse practitioners must be continuous and such knowledge and skills must be provided by a nursing school or organisation recognised by SANC.

SANC is the statuary body that controls training of nurses in South Africa. Currently there is no anaesthetic nurse training course accredited by SANC. Anaesthetic nurse training forms part of a postgraduate master degree or diploma in Operating Theatre Nursing Science (16).

The university postgraduate diploma in Operating Theatre Nursing Science requires a registered nurse to complete a two year course falling under Medical and Surgical Nursing Science. The first year is in combination with nurses from other specialities, for example intensive care unit, and has a general focus. The second year focuses on Operating Theatre Nursing Science, of which anaesthetic nursing is only a component. (16)

Nursing colleges that are affiliated to universities offer a one year course in Operating Theatre Nursing Science for registered nurses, of which anaesthetic nursing is again, just a component. (16)

Some private hospital groups offer “in house” anaesthetic nursing courses. Usually these courses are six months long and separate courses are offered for registered and enrolled nurses. These non-accredited courses vary in quality, content and are not officially recognised. It is also recognised that anaesthetists do “on the job” training of anaesthetic nurses. (16)

The absence of a national accredited nursing training programme is presently a major concern for SASA. They are investigating the possibility of developing a national training programme and are currently engaging with SANC in this regard. (46)

2.7 Role of the anaesthetic nurse

The role of the anaesthetic nurse is not described as well as that of other operating theatre nurses. One of the difficulties in anaesthetic nursing is the use of the word “assistant”. This description degrades anaesthetic nurses who are not always respected as professionals with specialist knowledge and skills. (25)

Nurses’ roles are classified as either clinical or non-clinical. The clinical roles include mainly care and treatment of patients as well as supervision and management of clinical nurses. The non-clinical roles include supervising new nurses, doing research and public health activities. (38)

The role of anaesthetic nurses is to help the anaesthetist and patient before and during the surgical procedure. They may, however, also take circulating nurses

duties if needed (47). This is also a current development in Britain, where operating theatre nursing professionals perform a variety of tasks including assisting anaesthetist, working in recovery room, assisting the surgeon and doing administrative duties. However, the nurses must have the necessary skills to perform these tasks. If a nurse is allocated to help the anaesthetist, there should be no other duties that would prevent them from providing devoted assistance to the anaesthetist during anaesthesia (10). The WHO Europe (11) stipulates that the anaesthetic nurse, in addition to assisting the anaesthetist, can also help the theatre nurses in preparation for the surgery and for recovery of the patient until discharge. In South Africa, the role of the anaesthetic nurse is to assist the anaesthetist with preparation for and induction and emergence, with no other responsibilities during these periods, according to SASA (13).

Other important roles of anaesthetic nurses include: specialist, advocate, work flow manager, member of the interdisciplinary operating theatre team, and communication (6, 25).

2.7.1 Specialist role of anaesthetic nurses

Being a specialist, with expert understanding and skills, ensures that the anaesthetic nurse does not focus only on the technical aspects of the work but rather “I think for the good of the patient” (25).

Gillespie et al (6) see the specialist anaesthetic nurse as having a combination of theoretical, practical, situational and aesthetic knowledge. Theoretical and practical knowledge will equip the anaesthetic nurse to make appropriate and often rapid clinical judgements (6, 11). Situational knowledge is not often documented in the literature, but it has a very important role. Situational knowledge will afford the anaesthetic nurse the ability to anticipate the needs of the situation which will inform the nursing action and co-ordination of theatre activities. Experience, which appears to be linked to situational knowledge, is considered valuable to be able to cope with unexpected circumstances. (6, 48)

Aesthetic knowledge will provide the anaesthetic nurse with the skills of being able to be empathetic and to support vulnerable sick patients. Operating theatre

nursing poses very specific challenges, as the nurse must obtain valuable clinical and psychosocial information and support the patient within a very limited time period. This “distinguishes nurses from technicians”. (6)

2.7.2 Advocate

Advocating for the patient is closely related to empathy. Advocacy is one of the major roles of anaesthetic nurses, and speaking up for unconscious patients or intimidated conscious patients will demonstrate to patients the courage and assertiveness of the nurse in whom they trust to receive safe care. (25)

Work flow management and member of interdisciplinary operating theatre team In a study by Oakley (25), nurses were unhappy with the term “assisting the anaesthetist”. They were of the opinion that their main role was that of being an advocate for the patients: “...the patient is my first concern...if by assisting the anaesthetist I am helping the patient then fine I don’t mind” was the expression of the nurses.

2.7.3 Work flow management and member of interdisciplinary operating theatre team

Skills in management and coordination are very important to anaesthetic nurses as a function of competence, and obtaining a “bigger picture” of the theatre situation helps anticipate and plan according to the clinical needs (6).

Emergencies and unexpected situations need an anaesthetic nurse to be able to coordinate, negotiate, and prioritise accordingly, and be equipped with knowledge of solving conflicts, supporting others and exchanging information (6, 48).

Workload management skills will assist the anaesthetic nurse with the reduction of patient delays and patient cancellations due to lack of planning and availability of resources (6).

2.7.4 Communication

Communication is regarded as the most important role of the anaesthetic nurse. Effective communication and collaboration skills depend on a person’s knowledge

and experience, and deficit in one area will affect the other area (26). Failure to share details can cause misunderstandings (49) and other team members may perceive failure to communicate by the anaesthetic nurse as incompetence (6).

Lack of teamwork and communication skills are one of the initiators of accident sequences in operating theatres (50). Lingard et al (51) mentioned that in addition to information exchange, team based communication can have a positive safety impact in the operating theatres.

Healey et al (52) also adds that clear and comprehensive communication between team members in the operating theatre is important to work effectively.

2.8 Role of anaesthetic nurses in Charlotte Maxeke Johannesburg Academic Hospital

The roles of anaesthetic nurses in Gauteng are outlined in their job description. The job description of various hospitals is very similar and only one of the selected hospitals was approached to obtain this information.

The job description of anaesthetic nurses at CMJAH (Appendix 2) includes: preparation of theatres, assisting anaesthetist with the administration of anaesthesia, record keeping, post-operative theatre preparation, ordering of stock and supplies and education and training. When compared with the international literature the CMJAH job description for an anaesthetic nurse has a technical focus, and does not include important non-technical roles such as communicator and patient advocate.

2.9 Availability of anaesthetic nurses

To ensure safe patient care the Royal College of Nursing (27) is of the opinion that “now is the time to set more clearly defined standards and that mandatory nurse staffing levels must be adopted by providers, regulators and commissioners of health services”.

Australia has developed a mandatory minimum nurse: patient ratio to ensure safe and quality patient care. There should be one scrub nurse, one floating nurse, and

one anaesthetic nurse per theatre, but this may vary depending on pre-determined factors. (53)

SATS recommends that the nurse: patient ratios are developed with safety of patients, level of care required, availability of resources, patient acuity and with inclusion and compliance to the Labour Relation Act and the Basic Condition of Service Act being taken into consideration. Nurse: patient ratios of one professional nurse, one circulating nurse and one anaesthetic nurse per theatre during invasive surgical procedures are suggested (14).

For the anaesthetist to conduct efficient and safe anaesthesia SASA (13) recommend that a trained registered nurse, enrolled nurse or technician must be available with no other commitments during preparation for and induction and emergence. At least one trained anaesthetic sister must also be available per theatre complex.

There is a lack of South African data on availability of anaesthetic nurses. However, SATS (14) states that the demand for perioperative nurses outweighs the supply. They further discourage the use of unlicensed nurses and reject the economic situation of the institution as a reason for inadequate staffing. Scribante and Perrie (20) concluded that there was a shortage of recovery room nurses at selected Johannesburg hospitals, and this may reflect the anaesthetic nursing availability in South Africa.

2.10 Impact of anaesthetic nurse

Teamwork is one of the barriers to the development of critical incidents in theatre and anaesthetic nurses have been shown to both prevent and improve the incidents (28). Rutherford et al (54) state that anaesthetic nurses with good communication skills are crucial in operating theatre to provide a useful “second pair of eyes” for the anaesthetist.

Delays in receiving patients from the ward to theatre, wrong patient identification and site of procedure are decreased when an operating theatre nurse are available (48). Experienced and confident anaesthetic nurses can guide junior or

training anaesthetists and advocate for patients and thereby provide safe and quality care (55).

Patients have, however, been shown to suffer cardiac arrest, awareness, major physiologic changes, prolonged hospital stay and intensive care unit admission as a result of failures on the behalf of the anaesthetic nurse (28). Rutherford et al (48) illustrated that the presence of anaesthetic nurse can be distracting and frustrating for the anaesthetist if they lack situational awareness or are unfamiliar with the environment and equipment.

Lack of a skilled anaesthetic nurse and conflicts have been shown to be associated with high level of burnout in anaesthetists (56).

2.11 Conclusion

This chapter contained the literature review. In the following chapter the research methodology is addressed.

CHAPTER 3: Research methodology

3.1 Introduction

This chapter addresses the research methodology of the study and include: the problem statement, aim and objectives, ethical considerations, research methodology and the validity and reliability of the study.

3.2 Problem statement

The presence of a trained anaesthetic assistant appears to improve the safety of an anaesthetic (3, 8). SASA (13) and SATS (14) state that it is important that a suitably trained assistant be available to assist the anaesthetist for safe conduct of anaesthesia, and this person be either a registered or enrolled nurse or an anaesthetic technician. In South Africa the majority of anaesthetic assistants are nurses, however the demographic and educational profiles of these nurses, and other roles they fulfil in the operating theatre is currently unknown.

3.3 Aim of the study

The aim of this study was to describe the demographic and educational profile of anaesthetic nurses in selected public hospitals in Gauteng and to describe their availability and other clinical roles they fulfil in the operating theatre.

3.4 Objectives of the study

The objectives of the study were to:

- describe the demographic profile of the anaesthetic nurses
- describe the educational profile of the anaesthetic nurses
- describe the other roles that the anaesthetic nurses fulfil in the operating theatre
- describe the availability of anaesthetic nurses at the respective hospitals.

3.5 Ethical considerations

Approval to conduct this study was obtained from the Human Research Ethics Committee (Medical) (Appendix 3) and the Postgraduate Committee of the University of the Witwatersrand (Appendix 4), as well as the Chief Executive Officers of the selected hospitals (Appendix 5). Verbal assent was obtained from the operating theatre nursing managers of the respective hospitals.

Data from the audit was reported anonymously. No hospitals or anaesthetic nurses were individually identified. Confidentiality was ensured as only the researcher and supervisors had access to the results of the study. Data will be stored for six years after completion of the study.

The study was conducted by adhering to the principles of Declaration of Helsinki (31) and the South African Good Clinical Practice Guidelines (32).

3.6 Research methodology

3.6.1 Research design

A descriptive, prospective, exploratory design was used for this study.

A descriptive study is defined as a study where more information of a phenomenon in a particular field is required but no attempt is made to analyse the effect of variables on the phenomenon (57). This study was descriptive as it has provided information about anaesthetic nurses in selected Gauteng hospitals.

A prospective study is defined as one in which the data will be measured at the time at which the research takes place (57). This study was prospective in that the profile of the anaesthetic nurses currently employed by the selected hospitals was collected.

An exploratory study is defined as one which increases knowledge in the field of study but is not intended to be generalised to large populations (58). This study was explorative as little was known about anaesthetic nurses in South Africa.

3.6.2 Study population

The study population consisted of selected public hospitals in Gauteng, and the demographic and educational profiles of anaesthetic nurses from the operating theatres of these hospitals.

3.6.3 Study sample

Sample size

In order to obtain a representative sample of public hospitals in Gauteng, three central or tertiary, three regional and three district hospitals were selected for inclusion in this study. However, one central and one regional hospital were not included in the study due to complicated approval processes that would have substantially delayed the study.

The sample size of nurses was realised by the number of anaesthetic nurses working in the respective hospitals.

Sampling methods

Convenience and purposive sampling was used for this study.

Convenience sampling is defined as a sampling of subjects or locations chosen as they are readily accessible to the researcher (57). The hospitals included in this study were in Gauteng, and were therefore easily accessible to the researcher.

Purposive sampling is defined as a sampling of subjects the researcher chooses based on who they think will be appropriate for the study (57). This method was used to ensure that central or tertiary, regional and district hospitals would be represented.

3.6.4 Data collection

After the approval of the study by the relevant authorities the researcher telephonically contacted the operating theatre nursing managers or charge sisters of the hospitals taking part in the study. An explanation of the study and the data

to be collected was given and an appointment for data collection was requested. Following the telephonic appointment the operating theatre nursing managers or charge sisters accessed the staff files to obtain the necessary information prior to data collection by the researcher. Data was collected on data collection sheets (Appendix 1). All the data was collected from the operating theatre nursing managers of the respective hospital by the researcher. The following information was requested regarding the demographic and educational data:

- age
- gender
- permanent or agency nurse
- qualifications
- years of experience as an anaesthetic nurse and other relevant years of experience.

Further information obtained from the operating theatre nursing managers was:

- number of operating theatres in the operating theatre complex
- number of permanent anaesthetic nurses
- use of agency nurses
- availability of a dedicated anaesthetic nurse for every theatre every day
- in-service training for anaesthetic nurses
- other roles that anaesthetic nurses fulfil in the operating theatre
- other nurses also used as anaesthetic nurses.

3.6.5 Data analysis

Data was captured on a Microsoft Excel® spreadsheet. Descriptive statistics were used to describe the demographic and educational profile of anaesthetic nurses and the other roles that they fulfil in the operating theatres of the selected public hospitals in Gauteng. Data that was normally distributed was analysed using means and standard deviations and not normally distributed data was analysed using medians and ranges. Percentages, frequencies and ranges were used where appropriate. Data analysis was performed using Microsoft Excel®.

3.7 Validity and reliability

According to Botma et al (59), ”Validity indicates whether the conclusions of the study are justified based on the design and interpretation”.

Reliability refers to how consistent the measurements have been. (59)

The validity and reliability of this study were maintained by:

- the researcher being the only data collector
- the data being collected from the most senior nursing staff member in the operating theatres
- using the same data collection sheet to collect data from all the sites
- checking all data entry points on spreadsheet for accuracy.

3.8 Summary

This chapter contained the research methodology. In the following chapter the results and discussion are presented.

Chapter 4: Results and discussion

4.1 Introduction

This chapter contains the results, according to the research objectives, and the discussion.

The objectives of the study were to:

- describe the demographic profile of the anaesthetic nurses
- describe the educational profile of the anaesthetic nurses
- describe the other roles that the anaesthetic nurses fulfil in the operating theatre
- describe the availability of anaesthetic nurses at the respective hospitals.

4.2 Results

Data was collected from February to July 2015. The percentages are rounded off to whole numbers.

4.2.1 Sample realisation and hospital demographic characteristics

During the data collection period, nine selected public hospitals in Gauteng were contacted for inclusion in the study. Data was successfully obtained from seven hospitals, with Steve Biko Academic Hospital and Sebokeng Hospital being excluded due to complicated approval processes that would have substantially delayed the study. The demographics of the hospitals included in the study are shown in Table 4.1.

Table 4.1 Demographics of study hospitals

Hospital	Hospital level	Number of functional theatres
CHBAH	Tertiary	33
CMJAH	Central	23
RMMCH	Regional	4
Natalspruit	Regional	6
Heidelberg	District	7
Pretoria West	District	7
Kopanong	District	2

4.2.2 Objective: describe the demographic profile of the anaesthetic nurses

One hundred and thirty five (n=135) anaesthetic nurses' information was obtained from the operating theatre nursing managers.

The mean (SD) age of the 135 anaesthetic nurses was 38.1 (8.2) years, ranging between 24 to 59 years. Nurses' ages were further broken down into age groups which are shown in Table 4.2.

The median years of theatre experience of the anaesthetic nurses was 6 years, ranging from 1 month to 26 years. Nurses' years of experience were broken down into groups which are shown in Table 4.2.

The gender and hospitals where the nurses are from, as well as years of theatre experience of the anaesthetic nurses are shown in Table 4.2.

Table 4.2 Demographics of the anaesthetic nurses

Demographic	Number	Percentage
Gender		
Female	130	96%
Male	5	4%
Age group		
21-30 years	23	17%
31-40 years	64	47%
41-50 years	39	29%
51-60 years	9	7%
Hospitals		
CMJAH	27	20%
CHBAH	67	50%
RMMCH	4	3%
Natalspruit	8	6%
Heidelberg	10	7%
Pretoria West	9	7%
Kopanong	10	7%
Years of theatre experience		
<10 years	108	80%
10 - 15 years	19	14%
>15 years	8	6%

4.2.3 Objective: describe the educational profile of the anaesthetic nurses

Of the 135 anaesthetic nurses, 115 (85%) were enrolled nurses and 20 (15%) were registered nurses. Of the 20 registered nurses, 17 (85%) had postgraduate training. Ten registered nurses had 2 postgraduate qualifications and seven had 1

postgraduate qualification. The postgraduate qualifications of the registered nurses are shown in Figure 4.1.

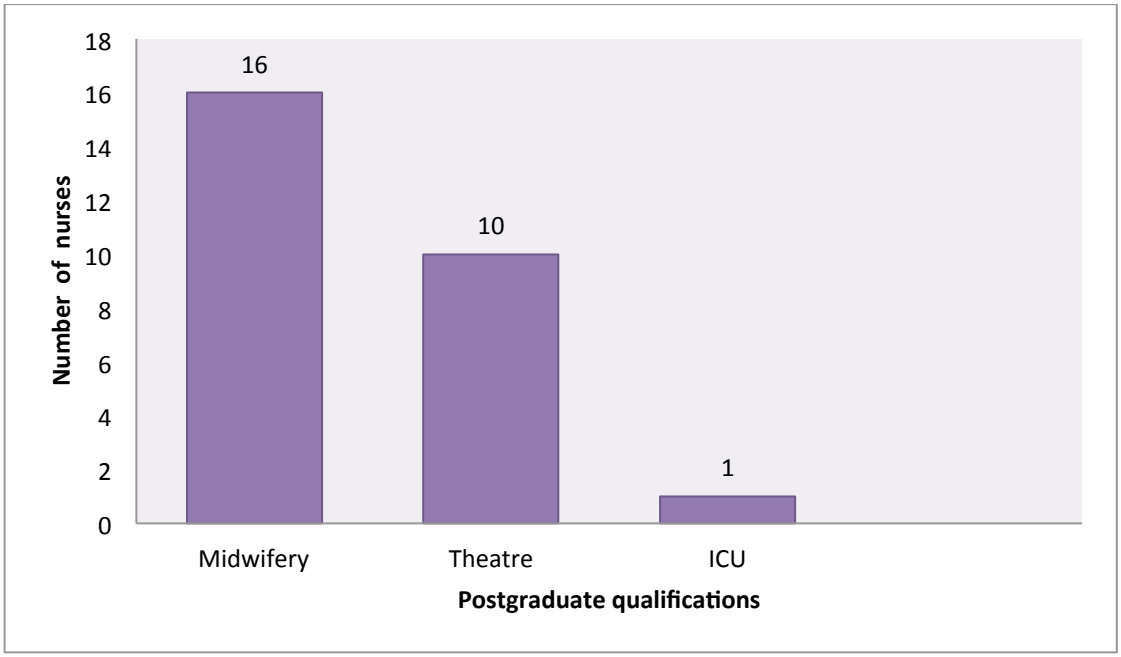

Figure 4.1 Postgraduate qualifications of the registered nurses

None of these hospitals had in-service training for anaesthetic nurses.

4.2.4 Objective: describe the other roles that the anaesthetic nurses fulfil in the operating theatre

Of the 135 anaesthetic nurses, 27 from CMJAH, 67 from CHBAH and 8 from Natalspruit also worked in the recovery room. The 4 anaesthetic nurses from RMMCH worked in the recovery room as well as being floor nurses. All the district hospitals (Heidelberg, Pretoria West and Kopanong) used their anaesthetic nurses in the recovery room, as floor nurses and as scrub nurses.

4.2.5 Objective: describe the availability of anaesthetic nurses at the respective hospitals

All anaesthetic nurses were permanent employees at their respective hospitals and no hospitals used agency nurses. Not all hospitals had an anaesthetic nurse allocated for each theatre case. Of the 7 hospitals, only CHBAH had an anaesthetic nurse allocated to each theatre case every day. CMJAH and

Natalspruit allocated an anaesthetic nurse for each theatre case subject to staff availability. RMMCH, Heidelberg, Pretoria West and Kopanong Hospitals allocated anaesthetic nurses for theatre cases on an ad hoc basis.

4.3 Discussion

The demographic and educational profile of anaesthetic nurses, as well as the other roles they fulfil in the operating theatre at selected public hospitals in Gauteng was unknown. This study aimed at providing this information.

Gender distribution of anaesthetic nurses in this study showed that the majority (96%) of nurses were female. This gender distribution is similar to the general gender distribution of nurses both nationally and internationally. Nationally, Scribante and Perrie (20) found that the majority (96%) of recovery room nurses at selected Johannesburg hospitals were females. Internationally, for example, the Australian Health Workforce Advisory Committee (17) reported that more than 90% of the perioperative nursing workforce was female.

The mean age of anaesthetic nurses in this study was 38.1 years. The majority (47%) of anaesthetic nurses were within the age group of 31 to 40 years and 7% were between 51 to 60 years. This is slightly lower than the age of 40 to 45 years of recovery room nurses found by Scribante and Perrie (20), perioperative nurses described by SATS (14) and general nurses described by SANC (22). In Australia, the Australian Health Workforce Advisory Committee (17), reported that the highest percentage (18%) of perioperative nurses were aged between 40 to 44 years.

In this study the median years of theatre experience was six years, ranging from one month to 26 years. The majority (80%) of anaesthetic nurses have less than 10 years theatre experience and only 6% of nurses had more than 15 years of experience. This emphasises the lack of experience of South African nurses described by Scribante and Perrie (20) in recovery room nurses in Johannesburg. Scribante and Bhagwanjee (45) demonstrated similar findings in the national audit of critical care resources in South Africa, which found that the majority (42.8%) of nurses had 0 to five years of intensive care unit experience. In Australia, however,

Gillespie et al (24) showed that operating theatre nurses had more theatre experience, which might be “a strong predictor” of overall competency of nursing workforce.

In this study, most of the anaesthetic nurses were enrolled nurses (85%) and only 15% were registered nurses. Postgraduate qualifications were obtained by 17 of the 20 registered nurses. Sixteen registered nurses had midwifery as part of their qualifications; however, no additional data was obtained to verify whether their midwifery was included in their four year nursing course or as a one year postgraduate qualification. Only two nurses had an anaesthetic course amongst other qualifications; however this was not included as a postgraduate qualification as it is not accredited by SANC. SANC has no accredited postgraduate anaesthetic training programme, but only an anaesthetic nursing module as a component of Operating Theatre Nursing Science. Certain private hospitals offer six month anaesthetic courses, but these courses vary in quality and are not accredited by SANC (16). SATS make no specific mention or recommendations for anaesthetic nurse training. SASA have, however, approached SANC to investigate the possibility of developing a national training programme for nurses, as this is a major concern (46). Internationally, nurses are required to have postgraduate anaesthetic training in order to practice as anaesthetic nurses. The WHO Europe (11) require a 40 week anaesthetic course, AAGBI (10) require three core anaesthetic modules and ANZCA (12) require a one year anaesthetic course for registered nurses and two years for enrolled nurses.

The other roles fulfilled by anaesthetic nurses in the theatres of selected hospitals were found to be recovery room nursing, floor nursing and as scrub nurses. These findings are similar to those described in Great Britain and Europe where the anaesthetic nurse, in addition to assisting the anaesthetist, can fulfil other roles if required. However, the nurses must have the skills to perform these tasks (10, 11).

In this study, all anaesthetic nurses were permanent employees and no agency nurses were used. CHBAH was the only hospital that had an anaesthetic nurse per theatre case every day. All other hospitals allocated the anaesthetic nurses on either an ad hoc basis or subject to availability, due to nursing staff shortages.

Scribante and Perrie (20) showed that there was a shortage of recovery room nurses in selected Johannesburg hospitals which may reflect similar information about anaesthetic nurses. The majority of hospitals (six) do not fulfil SATS recommendations of a nurse: patient ratio of one anaesthetic nurse, one scrub nurse and one floor nurse with no other obligations during invasive procedures (14). Internationally, the recommendations of nurse: patient ratio are similar to South African recommendations (53).

4.4 Summary

The results of this study have been presented and discussed in this chapter.

In the final chapter a summary, the limitations, recommendations and conclusion of the study are presented.

CHAPTER 5: Summary, limitations, recommendations and conclusion

5.1 Introduction

In this chapter, the aim and objectives are repeated and a summary of research methodology and results are presented. The limitations of the study are addressed, recommendations for clinical practice and further research made, and a conclusion presented.

5.2 Study summary

5.2.1 Aim

The aim of this study was to describe the demographic and educational profile of anaesthetic nurses in selected public hospitals in Gauteng and to describe their availability and other clinical roles they fulfil in the operating theatre.

5.2.2 Objectives

- describe the demographic profile of the anaesthetic nurses
- describe the educational profile of the anaesthetic nurses
- describe the other roles that the anaesthetic nurses fulfil in the operating theatre
- describe the availability of anaesthetic nurses at the respective hospitals.

5.2.3 Summary of methodology

This was a descriptive, prospective, exploratory study. Convenience and purposive sampling was used. A sample of easily accessible hospitals in Gauteng was selected. All the anaesthetic nurses working in the selected hospitals were included.

After approval of the study by the relevant authorities, the researcher telephonically contacted the operating theatre nursing managers of the respective hospitals, and an appointment was made for data collection.

Data was collected from the operating theatre nursing managers using the same data collection sheet. The data collected included the anaesthetic nurse demographic and educational profile, and general information obtained from the seven operating theatre nursing managers.

Descriptive statistics were used to analyse the data, using Microsoft Excel®.

5.2.4 Summary of results

One hundred and thirty five (n=135) anaesthetic nurses' information was obtained and the majority (96%) of nurses were female.

The mean (SD) age of anaesthetic nurses was 38.1 (8.2) years, ranging from 24 to 59 years, with the majority (47%) of anaesthetic nurses within the age group of 31 to 40 years.

The median years of theatre experience of the anaesthetic nurses was 6 years, ranging from 1 month to 26 years. The majority (80%) of anaesthetic nurses had less than 10 years experience.

Of the 135 anaesthetic nurses, 115 (85%) were enrolled nurses and 20 (15%) were registered nurses. Only two nurses had done an anaesthetic course.

The other roles fulfilled by anaesthetic nurses in the operating theatre of selected hospitals were recovery room nursing, floor nursing and as scrub nurses.

In this study all anaesthetic nurses were permanent employees and no agency nurses were used. CHBAH was the only hospital that had an anaesthetic nurse per theatre case every day.

5.3 Limitations of the study

This study was contextual, being conducted in seven public hospitals in Gauteng. Therefore the results may not be generalised to other public hospitals, private hospitals or other provinces in South Africa. It does, however, address a concern of the anaesthetic community.

Convenience sampling was used as the hospitals included in this study were in Gauteng, and therefore easily accessible to the researcher.

This study found that sixteen registered nurses had midwifery as part of their qualifications, however no further information was obtained to elicit whether their midwifery was included in their four year course or as a one year postgraduate qualification. Therefore, midwifery was included as a postgraduate qualification.

5.4 Recommendations

5.4.1 Recommendations for clinical practice

Trained anaesthetic nurses can provide expert care which is of benefit to both the patient and the anaesthetist. SASA recommend that anaesthetic nurses be suitably trained and competent for safe and efficient conduct of anaesthesia; SANC however has no official training course for anaesthetic nurses. As the majority of nurses have no anaesthetic course or training, implementation of 'in-service' training and formal accredited anaesthetic training is recommended in South Africa to ensure better competency.

Nurse: patient ratios of one professional nurse, one circulating nurse and one anaesthetic nurse per theatre during invasive surgical procedures are recommended internationally and nationally. In South Africa, nurses are a scarce resource, therefore these nurse: patient ratios are not easily obtainable. However, it should serve as a gold standard which the country should strive to achieve.

5.4.2 Further research

A national audit on the demographic and educational profile of anaesthetic nurses is recommended.

5.5 Conclusion

Dedicated, specialist anaesthetic nurses are not readily available in the public hospitals included in the study. Suitably trained and competent anaesthetic nurses to assist the anaesthetist, stipulated by SASA, can therefore not be guaranteed.

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Appendices

Appendix 1: Data collection sheets

No	Age	Gender	Nursing staff: Permanent or agency nurse	Nursing qualification	Nursing qualification	Nursing qualification	Nursing qualification	Years of experience in recovery room	Years of experience in OR	Years of experience in ICU
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

Number of operating theatres in the operating theatre complex		
Number of permanent anaesthetic nurses?		
Do you use agency nurses?	Yes	No
Do you have a dedicated anaesthetic nurse for every theatre every day?		
Do you have in-service training for anaesthetic nurses?	Yes	No
What other roles do anaesthetic nurses fulfil in the operating theatre, specify?	Yes	No
.....		
Are scrub nurses and recovery room nurses also used as anaesthetic nurses?	Yes	No

Appendix 2: CMJAH Anaesthetic nurses job description

GAUTENG PROVINCIAL GOVERNMENT

DEPARTMENT OF HEALTH

JOHANNESBURG HOSPITAL OPERATING THEATRES
ANAESTHETIC NURSES
JOB DISCRIPTION

CHIEF PROFESSIONAL NURSE
SENIOR PROFESSIONAL NURSE AND PROFESSIONAL NURSE

THE ANAESTHETIC NURSES ASSIST THE ANAESTHESIOLOGIST

OBJECTIVE

- ASSES, DIAGNOSE, PLAN, IMPLIMENT, CONTROL, EVALUATE AND TAKE REMEDIAL ACTION.
- EDUCATION AND TRAINING
- STOCK CONTROL [Pharmaceutical and non pharmaceutical supply]
- MAINTAINANCE OF EQUIPMENT AND SUPPLY.

1. **PREPARATION OF THEATRES BEFORE SURGERY**

   - Checking of the theatres/ environmental check e.g. lights, gas pendants suction apparatus etc
   - Checking of anaesthetic trollies and restocking of supply e.g. endotrachial tubes, syringes, needles, anaesthetic drugs etc
   - Checking of anaesthetic equipments, machines, suction apparatus and other relevant equipments
   - Preparation of anaesthetic packs for insertion of C.V.P. and Arterial lines
   - Ensure that with the limited resources all the theatres are ready for use at all times.
   - Setting up of invasive lines for monitoring of patients undergoing major surgery
   - Checking of Refrigerators, Temperature, drugs which are kept in the fridges, blood and blood products and other products.
   - Checking of emergency Equipments, Trolley e.g. Defibrillating machine, external and internal paddles, emergency trolley, latex allergy etc

2. **ASSISTING THE ANAESTHESIOLOGIST WITH ADMINISTRATION OF ANAESTHETIC**

   - Preparation and positioning of patient for administration of anaesthesia
   - Assist the anaesthesiologist with induction and maintenance of anaesthesia.
   - Assist the anaesthetist at the end of the procedure e.g. with extubation
   - Communication with the ward re: patients condition, blood, I.C.U. bed etc

- Preparation of I.C U. bed for transportation of patients post operatively e g E.C.G. Monitors, oxygen supply

3. RECORD KEEPING

- Issuing of drugs
- Checking and recording of drugs issued, drugs used and drugs returned
- Checking of drug control register
- Documentation and communication of all relevant data / information

4. POST OPERATIVE

- Cleaning of equipment and supply e.g. laryngoscope blade and handle, monitors etc
- Sterilization of equipment and supply.
- Preparation of the theatre for the next patient
- Communicate with the multidisciplinary team, scrub nurses anaesthetist and surgeon.

5. END OF THE LIST

- Cleaning and restocking.
- Cleaning of anaesthetic machines, equipment and sterilisation.
- Restocking of anaesthetic trolleys and machines
- Preparation of theatres leave them ready for use

6. ORDERING OF STOCK AND SUPPLY

- Monthly stock and supply
- Schedule 5, 6, 7 Drugs
- Drugs when the need arises
- Checking of instruments, machines maintenance profile and sending of faulty equipments for repairs.

7. EDUCATIONS AND TRAINING

- Formal and Informal Teaching and Training
- On the spot teaching and training
- Workshops and other forms of teaching and training methods.
- Teaching and training of subordinates, post graduates theatre, I.C.U. and others

JOB DISCRIPTION OF ENROLLED NURSES [STAFF NURSES]

DO ALL OF THE ABOVE UNDER SUPERVISION AND DIRECTION OF THE REGISTERED PERSON

Mrs M. M. Radebe Assistant Director Nursing Theatre

Appendix 3: Approval from Ethics Committee

M130106

R14/49 Dr Amanda Nkuna

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M130106

NAME: (Principal Investigator)	Dr Amanda Nkuna
DEPARTMENT:	Department of Anaesthesiology CM Johannesburg Academic Hospital
PROJECT TITLE:	A Pilot Study to Determine the Profile of Anaesthetic Nurses in Selected Public Hospitals in Gauteng
DATE CONSIDERED:	25/01/2013
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Mrs Helen Perrie
APPROVED BY:	Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 28/07/2013

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**.

Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 4: Approval of research topic

Faculty of Health Sciences
Private Bag 3 Wits, 2050
Fax:
Tel: 027117172040

Reference: Ms Mpumi Mnqapu
E-mail: mpumi.mnqapu@wits.ac.za

14 June 2013
Person No: 699551
PAG

Dr AV Nkuna
P O Box 4091
Giyani
0826
South Africa

Dear Dr Nkuna

Master of Medicine: Approval of Title

We have pleasure in advising that your proposal entitled *The profile of anaesthetic nurses in selected public hospitals in Gauteng* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

Appendix 5: Permission letters from selected hospitals CEOs

GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA

PRETORIA WEST HOSPITAL
PRIVATE BAG X02, PRETORIA WEST, 0117

Telephone: (012) 380 1205
Fax: (012) 386 3720
Enquiries: Dr HM Mosoane/smdej

2 June 2015

Dr Amanda Nkuna

Dear Dr Nkuna

REQUEST TO CONDUCT RESEARCH AT PRETORIA WEST HOSPITAL

Approval is hereby granted for you to conduct research titled: The profile of anaesthetic nurses in selected public hospitals in Gauteng at Pretoria West Hospital as requested.

Please communicate with the Nursing Manager, Mrs HMM Strydom on telephone number: (012) 380 1206.

Regards

CEO
PRETORIA WEST HOSPITAL
03/06/2015

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

Enquiries: Mrs. Lefentse Mapaisa
Office of the Clinical Executives
Tel: (011)488-3710
Fax: (011)488-3947
29 January 2015

Dr. Amanda Nkuna
Anaesthesiology Registrar
University of the Witwatersrand

Dear Dr. Nkuna

RE: **A Pilot Study to Determine the Profile of Anaesthetic Nurses in Selected Public Hospitals in Gauteng.**

Permission is granted for you to conduct the above recruitment activities as described in your request provided:

1. Charlotte Maxeke Johannesburg Academic hospital will not in anyway incur or inherit costs as a result of the said study.
2. Your study shall not disrupt services at the study sites.
3. Strict confidentiality shall be observed at all times.
4. Informed consent shall be solicited from patients participating in your study.

Please liaise with the Head of Department and Unit Manager or Sister in Charge to agree on the dates and time that would suit all parties.

Kindly forward this office with the results of your study on completion of the research.

Supported / ~~not supported~~

Dr. M.I. Mofokeng
Director: Clinical Services
DATE: 30/1/2015

Approved / not approved

Ms. G. Bogoshi
Chief Executive Officer
DATE: 31/01/2015

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

RAHIMA MOOSA MOTHER AND CHILD HOSPITAL

RAHIMA MOOSA MOTHER AND CHILD HOSPITAL
Enquiries: Mrs. S. Jordaan
Tel: (011) 470 9030/4
Fax: (011) 477 4117
Email: sjordaan@icon.co.za

University of Witwatersrand
Department of Anaesthesiology
Faculty of Health Science
JOHANNESBURG
2001

Re:"The profile of anaesthestic nurses in selected public hospital in Gauteng"

Dear Dr. A. Nkuna

Permission is granted for you to conduct the research as indicated in your request as per the title above.

The terms under which this permission is granted is contained in the Researcher Declaration form that you signed. Failure to comply with these conditions will result in the withdrawal of such permission.

Note that it is imperative that you notify the hospital of the actual start and end dates of your study by notifying the CEO's secretary preferably by email or fax.

Should the study commence more than 12 months from receipt of this letter then the Researcher Declaration form needs to be re-signed prior to commencement of the research. Your are strongly advised to keep a signed copy of the declaration form so as to ensure that the terms of this agreement are complied with at all times.

Yours sincerely,

CHIEF EXECUTIVE OFFICER
SJ/cj. 2015-02-09

ADDRESS: cnr. FUEL & OUDSTHOORN STREET CORONATIONVILLE 2093 | PRIVATE BAG X20 NEWCLARE 2112 JNB

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr. O.B Omole
Directorate: DCST
Tel: 016 950-6193
Fax: 016 950 6834
Cell: 079 5235 318

TO : **Dr Amanda Vutomi Nkuna**

FROM : **Dr. O.B Omole – Head of Clinical Unit (DCST - Family Medicine)**

DATE : **2nd June 2014**

SUBJECT : **APPROVAL TO CONDUCT RESEARCH AT KOPANONG HOSPITAL**

This approval has reference to your application for permission to conduct your research study titled "The profile of anaesthetic nurses in selected public hospitals in Gauteng".

After reviewing the research protocol, I hereby grant you permission to conduct the above research at Kopanong hospital with provisos that:

1. You adhere strictly to the conditions of the research protocol which you submitted.
2. Any change in the research methods is communicated to the Chief Executive Officer of Kopanong hospital for consideration.
3. Interruptions with services and staff be kept to the barest minimum during the study
4. A copy of the research report detailing findings and recommendations is submitted to the Chief Executive Officer's office at the completion of the study.

We wish you success with your study.

DR. O.B OMOLE
HEAD OF CLINICAL UNIT (DCST - FAMILY MEDICINE)
FOR THE SEDIBENG DISTRICT RESEARCH COMMITTEE

DATE: 2/6/2014

Cc:
S Hlahane: District Director
T Nhlapo: Chief Executive Officer

1

M130106

R14/49 Dr Amanda Nkuna

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M130106

NAME: (Principal Investigator)	Dr Amanda Nkuna
DEPARTMENT:	Department of Anaesthesiology CM Johannesburg Academic Hospital
PROJECT TITLE:	A Pilot Study to Determine the Profile of Anaesthetic Nurses in Selected Public Hospitals in Gauteng
DATE CONSIDERED:	25/01/2013
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Mrs Helen Perrie
APPROVED BY:	Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

Approved CEO for CMJA 14.11.28

DATE OF APPROVAL: 28/07/2013

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**.

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

HEIDELBERG HOSPITAL

OFFICE OF THE CHIEF EXECUTIVE OFFICER

Enquiries: Ms Jobe
Tel: (016) 341-1207
Fax: (016) 349-5259
E-FAX: 0866547753
Email: jobe.nomondo@gauteng.gov.za

RE- PERMISSION GRANTED TO DR. A. NKUNA

This serves to confirm that permission has been granted to Dr. Amanda Nkuna for 5th May 2015, to conduct **the profile of anaesthetic nurses,** as per request by University of the Witwatersrand.

Regards

.....
DR. E.R. MASILELA
CHIEF EXECUTIVE OFFICER

DATE: 12/10/2015

GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA

NEW NATALSPRUIT HOSPITAL

Directorate: Office Of The Chief Executive Officer
Enquiries: Dr. P. Africa
Tel: +27 (011) 560 0288
Fax: +27 (086) 560 9725

I, AMANDA VUTOMI NKUNA

Hereby understand and accept that I have been given an opportunity to observe and job shadowing whilst the Health workers carry out their duties.

I undertake not to divulge in any form either verbally otherwise to anybody or anyone my observations at any time and under any circumstances.

I also understand that I cannot hold the hospital or Gauteng department of health or national department of health responsible for any accident or mishap that may happen to me during this period.

Period covered: 15 MAY 2015 to 15 MAY 2015

Signature of applicant: [signature]

Date: 22/10/2015

Acting Training coordinator: [signature]

Date: 22/10/2015

Signature of Clinical Manager: [signature]

Date: 22.10.2015

Dr. P. Africa
Acting Chief Executive Officer
Date: 22-10-2015