CORE COMPETENCIES OF THE A&E (ACCIDENT AND EMERGENCY) NURSE IN LIFE-THREATENING SITUATIONS IN THE EMERGENCY CARE ENVIRONMENT IN SOUTH AFRICA

by

TANYA HEYNS

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Faculty of Health Sciences
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Department of Nursing Science
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Supervisor: Dr ADH Botha

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Student number: 97293602

DECLARATION

I declare that the dissertation, which I hereby submit for the degree Magister Curationis: Advanced Medical and Surgical Nursing Science (Trauma and Emergency Nursing) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at another university

.....J Heyns..... .....30/09/03.....

Signature **Date**

(Tanya Heyns)

SUMMARY

CORE COMPETENCIES OF THE A&E (ACCIDENT AND EMERGENCY) NURSE IN LIFE-THREATENING SITUATIONS IN THE EMERGENCY CARE ENVIRONMENT IN SOUTH AFRICA

The scope of practice of the accident and emergency (A&E) nurse in the emergency care environment has over the last few years become one of the most frequently debated issues. Apart from numerous oral discussions, little has, however, been written on the subject so far. The role and also the range of practice of the A&E nurse have expanded considerably and continuous advancement is taking place within the profession. Although curricula exist for the purpose of training A&E nurses, there is no concurrence regarding the core competencies required by A&E nurses to manage life-threatening situations. It has therefore become essential for us, as A&E nurses, to clarify our scope of practice.

The following question can be asked in view of the above argument: What are the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment?

The aim of this study is to investigate the core competencies required by the A&E nurse in order to manage life-threatening situations. To reach this aim, the following objectives were stated:

- Investigate the development of A&E nursing in South Africa and internationally
- Describe the "emergency care environment" within which the A&E nurse practises

- Determine the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment
- Make recommendations as to what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency care environment – in other words, what core competencies should be included in the curriculum for training these nurses

To achieve the goal of this study an explorative, a descriptive and a contextual research design were used, including both qualitative and quantitative methodology. The research was done in three phases:

- Phase 1 – Conceptual (explorative, descriptive and contextual design using qualitative methodology)
- Phase 2 – Empirical (explorative, descriptive and contextual design using quantitative methodology)
- Phase 3 – Imperative (descriptive and contextual design)

Based on the knowledge and insight gained by this research, recommendations were made as to what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency care environment.

KEY TERMS

A&E (accident and emergency) nurse, core competencies, life-threatening situations and scope of practice.

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*To **all A&E nurses** who welcome a challenge, thrive on crisis and chaos, have an appetite for the unexpected and an aversion to routine, who are versatile, flexible and adaptable, expert assessors and analysts, and who love to detect, organise and fix problems. With talents like these it is no wonder that our role in the emergency care environment is expanding at such a rate.*

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List of abbreviations

A&E nurse	Accident and emergency nurse
BAA	Basic ambulance assistant
BAAC	Basic ambulance assistant course
DENOSA	Democratic Nursing Organisation of South Africa
ENA	Emergency Nurses Association
FGI	Focus group interview
HPCSA	Health Professionals Council of South Africa
SA	South Africa
SANC	South African Nursing Council
UK	United Kingdom
USA	United States of America

CHAPTER 1

RESEARCH ORIENTATION

1.1 INTRODUCTION

The scope of practice of the accident and emergency (A&E) nurse in the emergency care environment has over the last few years become one of the most frequently debated issues in nursing practice. Apart from frequent discussions, little has so far been written on the subject. Consequently, the problem has not been addressed in a satisfactory manner, causing severe ethical and medico-legal dilemmas for the A&E nurse and other health professionals.

The controversy and uncertainty regarding their professional role and core competencies in life-threatening situations have disillusioned nurses. The professional practice of the A&E nurse demands thinking skills on a high cognitive level, as well as advanced clinical skills. Although existing curricula at various tertiary institutions make provision for the training of A&E nurses, there is no mutual agreement regarding the core competencies in life-threatening situations.

The following real life scenario reflects the uncertainties and frustrations of the A&E nurse as to what is expected of him/her in the professional practice in critical emergency situations:

> *Saturday afternoon in the emergency care unit. A priority one patient, severely injured, is admitted to the unit with gunshot wounds in the abdomen and face. During the primary survey the A&E nurse realises the patient will not be able to open, maintain and protect his own airway and that endotracheal intubation is immediately required. The doctor working alongside the registered nurse is new to the unit and has completed his studies only two months ago. He has had limited experience in this field and feels unsure of himself. The patient is getting anxious and after sedating him, the doctor twice attempts endotracheal*

intubation, both times without success. The A&E nurse offers to help with the procedure, but the doctor refuses. After a heated argument between them, the doctor hands the A&E nurse the advanced airway equipment. The airway is filled with blood and even with suctioning it is difficult to make out the vocal cords. The patient becomes restless and it is difficult to immobilise the spinal cord whilst performing the procedure. After two failed attempts the registered nurse resumes pre-oxygenation of the patient, using the bag-valve-mask technique. Both the registered nurse and the doctor realise that a cricothyrotomy is the only option, but the doctor admits that he has never done this procedure before and says he is not prepared to try it now. After another dispute the registered nurse successfully performs the emergency cricothyrotomy.

During the resuscitation phase the A&E nurse was involved in various decisions concerning the treatment of the patient: Arterial blood gases had to be obtained to facilitate manipulation of the mechanical ventilator according to the blood gas results. An underwater drain for treating a diagnosed haemothorax and a central line for monitoring the haemodynamic status of the patient had to be inserted. All these matters demanded her sound judgement and urgent attention. Furthermore, the patient had to be referred to an appropriate physician.

Hickey, Quimette and Venegoni (2000: 31) state that nursing and nurses are broadly focused on the health care needs of individuals, families, communities and populations and it is for this reason, as well as for the sake of the profession, that nurses continue to be actively involved in reshaping health care, their role in health care and their destiny. In addition Pera and Van Tonder (1996: 153) reflect that a nurse is a practitioner in his/her own right who no longer stands in the shadow of the doctor but on his/her own two competent feet. The role of the nurse in the health care system is complex, but if prepared to meet the challenges offered by the profession, he/she will fulfil this complex role successfully.

The opinions reflected by the above authors are applicable to the A&E nurse. As a member of the multidisciplinary team it is important to improve the general health care of the country's citizens and to be recognised as part of the multidisciplinary team. In addition A&E nurses are trained to ensure that

they are integrated as an important part of the multidisciplinary team. It is also a fact that the nursing practitioner is the most available practitioner, both in numbers and based on country-wide distribution (Muller 1998: 126).

From the scenario described earlier it is evident that the role of the A&E nurse has expanded considerably and continuous advancement is taking place within the professional practice, not only in South Africa (SA) but also in other parts of the world (Sowney 2000: 73). To ensure that the A&E nurse is accepted as an important role player in the emergency environment, the scope of practice of this clinical speciality will have to be exploited.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

The A&E nurse plays an essential role in the health care system of SA and forms part of the primary health care system. According to Dennill, King and Swanepoel (1999: 3) primary health care consists of eight basic components. The A&E nurse plays an important role in three of these components, namely –

- maternal and child health care
- appropriate treatment of common diseases and injuries
- provision of essential drugs

These components fit in with the mission statement published by the Ministry of Health: "To provide leadership and guidance to the National Health System in its efforts to promote and monitor the health of all people in SA, and to provide caring and effective services through a primary health care approach" (Department of Health 1997: 13). The Department of Health views emergency health personnel as providing essential accident and emergency services, forming an integral part of primary health care (Department of Health 1997: 38). The A&E nurse should thus be seen as part of this system and his/her role in this environment should be well defined.

To illustrate the comprehensive role that the A&E nurse plays in the emergency care environment, emphasis is placed on primary health care provision. Primary health care is essential care made universally accessible to individuals and families in the community and which is affordable to the country. It forms an integral part of both the country's health system and the community's overall social and economic development (Dennill et al. 1999: 2).

Apart from the so-called "comprehensive" role the professional nurse should play, there is at present no decisive answer to what the scope of practice of the A&E nurse entails. The problems experienced by the A&E nurse in the clinical field as to what the core competencies of his/her profession should entail during life-threatening situations, lead to powerlessness and questions often arise concerning ethical and medico-legal aspects. A few of these problems, as experienced by A&E nurses in the emergency care environment, will be discussed to support the rationale for this research.

The researcher worked in the emergency care unit where she repeatedly had to make important decisions concerning the appropriate management of patients. She also had to perform advanced life-support skills, as she was often confronted with inexperienced, newly qualified doctors who could not make these decisions or perform some of the advanced life-support skills. These decisions and advanced life-support skills were often life-saving. The knowledge, skills, attitudes and values acquired within the clinical speciality field as A&E nurse facilitated these important decisions regarding the management of the patients and the performance of these life-saving skills.

An area in which A&E nurses are often employed is the pre-hospital environment. The pre-hospital environment includes all emergency areas, excluding the inter-hospital environment, e.g. ambulance services, occupational health and primary health clinics. Paramedics often protest against A&E nurses working in **"their"** pre-hospital environment and they report to the Health Professionals Council of South Africa (HPCSA) that these nurses do not have adequate skills to enable them to work in the pre-hospital environment.

A major predicament for the pre-hospital environment is the shortage of paramedics and other categories of ambulance personnel in SA. One of the reasons for the shortage is that trained personnel are financially motivated to seek jobs in other countries. According to paramedics working in the Tshwane Metropolitan area, there are times when a single paramedic has to cover this vast region (Richter 2002). This problem could be solved if A&E nurses were allowed to work as registered nurses in the pre-hospital environment – providing patients with comprehensive and advanced life support, without having to register with the HPCSA over and above the South African Nursing Council (SANC).

The researcher was also a member of an ambulance helicopter service crew – a service seen as an integral part of the pre-hospital environment. Her duties involved accompanying a doctor on primary, intermediate and secondary transfers of critically ill or injured patients. As this service was considered to be part of the pre-hospital environment, one of the requirements for working as a registered nurse in this capacity was to complete the basic ambulance assistant course (BAAC) and register as a basic ambulance assistant (BAA) with the HPCSA.

A BAA is trained to provide basic life support, which includes first aid, cardiopulmonary resuscitation and other non-invasive care procedures (Sanders 2000: 3). The rationale for being registered as a BAA was that this course would serve as background knowledge for the pre-hospital environment – thus providing the A&E nurse with some insight into this specific milieu and the equipment used. This qualification would also enable the nurse to work in the pre-hospital environment while transferring critically ill or injured patients on primary and intermediate flights. Once the A&E nurse had completed the BAAC, she would be registered with the SANC as registered nurse with a post-basic qualification in A&E nursing and with the HPCSA as BAA.

In reality it was expected of the researcher to apply the knowledge, skills, values and attitudes she had acquired in accordance with the basic nursing

diploma/degree, the post-basic programme in A&E nursing, the scope of practice set out (Regulation R. 2598, 1984) and curricula accepted by the SANC. The question of what benefits or aims the BAAC provided for the A&E nurse, was raised time and again and the rationale for an A&E nurse to have dual registration remained an issue.

Despite the fact that A&E nurses are now registered with two independent professional councils, it is still not clear to which one she is responsible and accountable. According to Geyer (1999: 11) dual registration brings with it the following problems and confusing issues:

- When should a nurse practise as an A&E nurse and when as a member of the ambulance personnel?
- What would happen if the different scopes of practice set for the registered nurse by the SANC should be conflicting with the rigid and limited treatment protocols practised by ambulance personnel at various levels?
- The SANC does not limit the registered nurse to practising in the hospital only and will therefore always hold the nurse professionally liable.

A dispute arose between the SANC and the HPCSA regarding the scope of practice of the A&E nurse specialist. The scope of practice, as set out (Regulation R. 2598, 1984), is wide-ranging and non-specific and does not state the specific core competencies of the A&E nurse. Members of the SANC and A&E nurses could not agree on the core competencies required by the A&E nurse to function as part of the multidisciplinary team in the emergency care environment. The real problem is that, as members of a new, developing clinical speciality, A&E nurses have not yet defined or agreed on the core competencies. When curricula at various institutions were studied it became evident that A&E nurses did not agree on what the core competencies of A&E nurses in life-threatening situations should be in SA. The absence of educational standardisation and variations in standards regarding these core competencies, are doing little to enhance the professional status of the A&E nurse.

The HPCSA, on the other hand, remained firm that if a registered nurse works in the pre-hospital environment, he/she will have to register with the HPCSA as well as with the SANC. Each A&E nurse applying for an ambulance course will be evaluated individually by the HPCSA, and according to the nurse's qualifications and clinical experience the HPCSA will decide whether the nurse will have to attend the ambulance course and then write the examination, or whether he/she can be exempted from the examination. On the contrary, the SANC expects the A&E nurse to work within the nursing scope of practice as set out (Regulation R. 2598, 1984), when working in the pre-hospital environment.

These problems were not merely experienced by the researcher. Nelouise Geyer, Deputy Director: Professional Matters, Democratic Nursing Organisation of South Africa (DENOSA), confirmed that registered nurses had previously confronted her with the same type of questions (Geyer 2001). This confirms how little is known and acknowledged by other health team members regarding the scope of practice of A&E nurses and the role they play within the emergency care environment.

Personal communication with A&E nurses practising for years within the emergency care environment, or lecturers involved in this field, also confirmed these issues. The following comments illustrate their frustration and feelings of powerlessness:

- "People do not understand what we do. They think we are like critical care nurses, but our situation is totally different. They look down on you and do not think A&E nursing is a proper qualification."
- "The SANC took too long to recognise the A&E nurse. Now they see we do have a place in the emergency care unit, but do not acknowledge our place in the pre-hospital environment."
- "There is still no acknowledgement of the clinical skills and know-how of the emergency care nurse. Management and members of other medical professions do not have insight into our level of training. We need to advertise our knowledge and skills."

- Nurses working in the emergency environment really need to be skilled because "doctors working in the emergency care environment are usually the older ones, worrying about their retirement and not motivated to do the job, or newly qualified doctors with little experience".
- "In rural areas there are no doctors after 16:00 at the hospital. The A&E nurse is often the first person to assess and manage the patient in the emergency care unit. He/she then must call the doctor at home to come and treat the patient. The A&E nurse must be equipped to deal with these situations."

Once A&E nurses have reached agreement as to their knowledge, skills, attitudes and values within the emergency care environment, they will be able to be seen as professionals within this environment. According to Hickey et al. (2000: 3) the notions of expertise, autonomy, commitment and responsibility are subsumed under the definition of a profession. It is therefore essential for A&E nurses to clarify their expertise to enable them to work within the framework of the emergency care environment. It will then also be possible to be autonomous and be held responsible for one's acts and omissions.

1.3 RESEARCH QUESTION

The question then arises:
What are the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency environment?

1.4 PROBLEM STATEMENT

In order to be able to manage the critically ill or injured patient in the emergency care environment, the A&E nurse should have core competencies. These core competencies have not been identified and described with reference to the changed emergency milieu and the continuously expanding role of the nurse.

The scope of practice of the A&E nurse directs his/her professional practice and therefore justifies his/her acts and omissions in life-threatening situations. At the moment no specific scope of practice exists for A&E nurses and he/she has to function within the "broad borders" of the scope of practice formulated for all registered nurses in SA (Regulation R. 2598, 1984). The question arises whether such a broad scope of practice does not set any boundaries for core competencies. This might be one of the reasons why there are so many discrepancies between the A&E nurses, SANC and HPCSA regarding the core competencies (scope of practice) needed by the A&E nurse to manage life-threatening situations. If A&E nurses could state these core competencies, they would have a starting point, not only for the education of these nurses, but also to ensure their professional status within the emergency care environment.

From the background given above, the problem can be stated as follows: There is uncertainty regarding the core competencies needed by the A&E nurse in order to manage life-threatening situations in the emergency care environment, and about what the scope of practice of the A&E nurse entails.

1.5 RESEARCH AIM AND STUDY OBJECTIVES

The overall aim of this study is to investigate the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment.

To reach this aim, the objectives are to –

- investigate the development of A&E nursing in South Africa and internationally
- describe the "emergency care environment" within which the A&E nurse practises
- determine the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment

- make recommendations as to what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency environment – in other words, what core competencies should be included in a curriculum for training these nurses

1.6 CLARIFICATION OF CONCEPTS

For the purpose of this research, the following definitions will apply:

1.6.1 Accident and emergency nurse

According to *The Concise Oxford Dictionary* (1995: 8) an accident is an event that is without apparent cause, or is an unexpected, unfortunate and unintentional event causing physical harm or damage. An emergency on the other hand is a sudden state of danger requiring immediate action or a medical condition requiring immediate action (*The Concise Oxford Dictionary* 1995: 441).

For the purpose of this research the accident and emergency (A&E) nurse is *"a nurse, registered with the South African Nursing Council, caring for patients involved in accidents and emergencies within the emergency care environment and who is lecturing, studying or has completed one or more of the following additional qualifications registered at the South African Nursing Council":*

- Medical and surgical nursing science: Critical care nursing (general surgery and trauma)
- Medical and surgical nursing science: Critical care nursing (trauma)
- Medical and surgical nursing science: Trauma and emergency nursing
- Medical and surgical nursing science: Trauma nursing
- Certificate: Traumatology (own definition)

1.6.2 Core competencies

The Concise Oxford Dictionary refers to "core" as the central or most important part of anything (1995: 297, 271), to "competent" as adequately

qualified or capable, effective and legally qualified, and to "competency" as the ability or an area in which a person is competent

.

Competency demonstrates cognitive, affective and/or psychomotor ability required for the performance of specific activities (Searle & Pera 1997: 459). Hickey et al. (2000: 5) cited that according to Benner (1984) competencies are interpretively defined areas of skilled performance, identified and described by intent, function and meaning.

In this research core competency refers to *"the minimum knowledge, skills, attitudes and values necessary to effectively nurse the patient in a life-threatening situation in the emergency care environment. It also includes critical actions that need to be implemented immediately for a positive outcome for the critically injured or sick patient"* (own definition).

1.6.3 Life-threatening situations

According to *The Concise Oxford Dictionary* (1995: 787) a life-threatening situation is when a person's life is endangered.

In this research a life-threatening situation refers to *"when an accident or emergency occurs that potentially endangers the patient's life within the emergency care environment"* (own definition).

1.6.4 Definitive care facilities

In this research the different definitive care facilities are defined as modified in a document by the Trauma Society of South Africa, based on recommendations of the American College of Surgeons (Trauma Society Verification Committee SA: 2).

- A Level I facility (Major Trauma Referral Centre) refers to *"a regional resource trauma centre, that is a tertiary care facility central to the trauma care system. The facility has a 24 hour availability of all major specialities and includes the capability of providing leadership and total care for every aspect of injury, from prevention through to rehabilitation".*

- A Level II facility (Urban Trauma Centre) refers to *"a hospital that provides the initial trauma care regardless of the severity of the injury. Medical staff are in the hospital on a 24 hour basis and the basic care in the common specialities is available on a 24 hour basis".*
- A Level III facility (Community Hospital) refers to *"a hospital that serves the communities that do not have immediate access to Level I or Level II facilities. These hospitals can provide prompt assessment, resuscitation, basic emergency operations and stabilisation and then arrange for possible transfer to a facility that provides definitive trauma care. Prompt availability of general surgeons or general practitioners with surgical expertise is required in these facilities".*

1.7 RESEARCH DESIGN AND METHOD

The research design and method constitute the overall plan for collecting and analysing data (Polit & Hungler 1997: 467; De Vos 1998: 123). Only a brief overview, by means of a table, will be given in this chapter. A detailed, more in-depth description will be provided in Chapter 2.

In this study a specific plan was developed with reference to the research aim and objectives, the research methodology and the trustworthiness, validity and reliability of the research. The course of this research is illustrated in a figure (see Figure 2.1 - A schematic representation of the research methodology).

Explorative, descriptive and contextual designs were used in this research, using both qualitative and quantitative methodology. The research was done in three consecutive phases:

- Phase 1 – Conceptual
- Phase 2 – Empirical
- Phase 3 – Interpretative

See Table 1.1 on the next page for a brief overview of the research design and methodology.

Table 1.1 – Research design and method

Phase 1 – Conceptual (explorative, descriptive and contextual design using qualitative methodology)				
Step 1 – Personal and telephonic interviews				
Research aim	**Data collection**	**Population and sample**	**Trustworthiness**	**Data analysis**
-To investigate development of A&E nursing in South Africa	-Personal and telephonic interviews	*Population:* -A&E nurses currently or previously involved in education and/or development of programmes for A&E nurses in SA *Sampling:* -Snowball sampling -Inclusive criteria stipulated	*Based on Guba's model of trustworthiness using four strategies:* -credibility -transferability -dependability -confirmability	*Personal interviews:* -Perceptions and facts audiotaped and transcribed *Telephonic interviews:* -Perceptions and facts noted *For personal and telephonic interviews:* -Data analysed and categorised to point of data saturation -Data compared with data obtained from literature review

Table 1.1 – (continued)

Step 2 – Literature review (although mentioned separately, this step was integrated throughout the research – see Chapter 2 for elaboration)				
Step 3 – Focus group interview (FGI)				
Research aim	**Data collection**	**Population and sample**	**Trustworthiness**	**Data analysis**
To compile questionnaire experts were asked: -Describe the "emergency care environment" within which the by the A&E nurse practises -Determine core competencies required by A&E nurse in order to manage life-threatening situations in emergency care environment	-A semi-structured FGI was held -Literature review (see Phase 2, Step 2)	*Population:* -Lecturers in A&E nursing science -A&E nurses working in provincial emergency care units -A&E nurses working in private emergency care units -A&E nurses working in peripheral emergency care units -A&E nurses working as unit managers of emergency care units -A&E nurses working as clinical preceptors -A&E nurses working in the pre-hospital environment -Knowledgeable person regarding legislation and policy within this context *Sampling:* -Snowball, purposive and convenience sampling -Inclusive criteria stipulated	*Based on Guba's model of trustworthiness using four strategies:* -credibility -transferability -dependability -confirmability	-Data audiotaped and transcribed -Field notes taken -Content analysis used -Context examined, categorised, tabulated and reorganised -Questionnaire compiled

Table 1.1 – (continued)

Questionnaire compiled				
Phase 2 – Empirical (explorative, descriptive and contextual design using quantitative methodology)				
Research aim	**Data collection**	**Population and sample**	**Validity and reliability**	**Data analysis**
A national survey done to: -Describe "emergency care environment" within which the A&E nurse practises -Determine core competencies required by the A&E nurse in order to manage life-threatening situations in emergency care environment	-Questionnaire consisting of both open-ended and closed-ended questions -Literature review (see Phase 2, Step 2)	*Population:* -A&E nurses with post-basic qualification in A&E nursing and registered with SANC -Students at present studying A&E nursing and/or -Lecturers presenting A&E nursing programmes *Sampling:* -Snowball, purposive and convenience sampling used -Inclusive criteria stipulated	-Pilot study performed -Content validity ensured by FGI and literature review -Use of expert supervisor and statistician ensured face validity -Covering letter to avoid misunderstanding and/or misinterpretation	-Descriptive and comparative statistics -Help of professional statistician obtained
Phase 3 – Interpretative (descriptive and contextual design, including Chapters 4 and 5)				
The researcher used data obtained during the above phases to reach the following objective: *To make recommendations regarding what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency care environment – in other words, what core competencies should be included in a curriculum for training these nurses.*				

1.8 ETHICAL CONSIDERATIONS

To ensure high standards of research, ethical standards and measures are set to direct research. The research proposal was sent to the Research Ethics Committee of the Faculty of Health Sciences (University of Pretoria) and approved prior to starting the research (see Annexure A – Permission for conducting this research).

Burns and Grove (2001: 206) state that according to Brent 1990; Nusbaum & Chenitz 1990 and Rosse and Krebs 1999 it is essential to obtain informed consent from human participants for the conduct of ethical research. Informed consent consists of four elements, including disclosure of essential information, comprehension, competency and voluntarism (Burns & Grove 2001: 206). All four elements were included in this research (see Annexure B – A letter of invitation to participate in the focus group and Annexure D – Questionnaire).

- Including an informative covering letter for each participant regarding the title, purpose and objectives of the research and the letter of approval from the Ethics Committee encouraged disclosure of essential information.
- Comprehension was assured by providing all participants with knowledge regarding the rationale and purpose of the study and briefing them on the issue of informed consent. During the FGI and in the questionnaire clear and consistent terminology was used. To make the questionnaire more user-friendly, a readable font, clear headings, the alternative use of upper and lower case and proper spacing were introduced and the respondent was directly addressed as "you".
- The researcher determined competency by including specific criteria for the research project. The researcher also strived at presenting the request for information at a level that participants would understand.
- Voluntary consent was obtained by ensuring all participants that participation was voluntary and that they could either refuse to participate or stop at any given time without stating a reason.

Anonymity was ensured by prominently stating in the letter that the data obtained from participants may be reported in scientific journals, but will not disclose any information that could identify them as participants in the research. The right to privacy and confidentiality was strictly applied in this research.

The application of other ethical measures in this research will be discussed in Chapter 2.

1.9 SIGNIFICANCE AND CONTRIBUTION OF THIS RESEARCH

It is evident from the literature studied so far by the researcher, and from the researcher's own practical experience and active involvement as A&E nurse in the emergency care environment, that there is an undeniable need for clarification of the core competencies required by the A&E nurse in order to manage life-threatening situations within the emergency care setting. A similar study had not previously been performed within the South African context and this research will therefore identify and describe the core competencies of the A&E nurse for the first time.

The contribution of this research is that it will add to the existing basis of knowledge both nationally and internationally. It will describe the core competencies required by the A&E nurse in the emergency care environment, and will also contribute to the improvement of the practice of the A&E nurse and emergency care service, and enhance the clarification of the role of the A&E nurse in the emergency services.

Regulating bodies such as SANC and DENOSA will come to understand the role of the A&E nurse in the emergency care environment as well as in professional practice, and what core competencies are required by the A&E nurse to manage life-threatening situations. The curricula and education programmes used for the training of A&E nurses could then be controlled, as one will know what is expected of these clinical specialists. If the researcher

clarifies the core competencies, it would lead to a better understanding of what could be expected of the A&E nurse by the SANC and other health professionals. One could also look at the possibility of an extended scope of practice for the A&E nurse.

Nursing is accountable to society for providing cost-effective quality care and for seeking ways to improve care, and is also accountable to patients for promoting a maximum level of health (Burns & Grove 2001: 4). This research is regarded as significant for it will ensure the society that the A&E nurse will provide adequate quality care in life-threatening situations and therefore improve the health care for patients.

Being sure about the knowledge, skills, attitudes and values A&E nurses need in life-threatening situations, it would be possible to evaluate nursing care to patients in these situations and the A&E nurse could then be held accountable for her nursing interventions. It will also aid tertiary training of the A&E nurse, as it will be possible to teach A&E nurses these core competencies on a national basis.

1.10 SCOPE AND LIMITATIONS OF THIS RESEARCH

Although this research is primarily aimed at the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment, role clarification could also lead to the enhancement or extended scope of practice for all nursing specialities within the clinical field. The results of this research may contribute to a better understanding and clarification of the scope of practice (Regulation R.2598, 1984) regarding nurses and other health care practitioners (such as doctors and paramedics).

The limitations of this research are that the view of other professionals regarding A&E nurses were not included and this research is context-bound.

1.11 LAYOUT OF THIS RESEARCH

The research project consists of the following chapters and annexures:

- Chapter 1 presents an outline and introduction to the research.
- Chapter 2 describes the research design and methodology in detail – including validity, reliability, ethical considerations, and limitations to the study.
- Chapter 3 covers the literature review, validating findings of the FGI and providing a framework for the questionnaire.
- Chapter 4 contains the data analysis, research findings and interpretation of the findings.
- Chapter 5 reflects the conclusions of the research and makes recommendations regarding education, clinical practice and future research.
- The following annexures are included:

- Annexure A – Permission for conducting this research
- Annexure B – A letter of invitation to participate in the FGI
- Annexure C – A sample of the transcribed focus group interview
- Annexure D – Quesionnaire
- Annexure E – Spearman correlation between the variables in Section C and Section D

1.12 CONCLUSION

The role of A&E nurses continues to expand and evolve and has increasingly become part of the main-stream health care delivery system in the emergency care environment as they are assuming more and more responsibility within the health care setting. To ensure that their presence is established and their role recognised, it is essential to clarify the scope of practice of A&E nurses. This will further enhance the professional status of A&E nurses and nursing, provide career opportunities in all areas of the emergency care environment and may improve recruitment and retention.

In this chapter a general orientation to the study was presented, including an introduction to the topic, background and rationale for the research project, a research question, a problem statement, a research aim and objectives, clarification of the concepts, a broad outline regarding the research design and methodology, and ethical considerations. It concludes with discussions regarding the significance and contribution, scope and limitations, and layout of this research project.

The following chapter contains a detailed discussion of the design and methodology used for this research.

CHAPTER 2

RESEARCH DESIGN AND METHODOLOGY

2.1 INTRODUCTION

This chapter offers a more in-depth discussion of the research design and methodology. First, the objectives of the research will be stipulated, followed by the research design and strategies. The research method consists of three phases – each of which will be discussed individually, together with the principles of trustworthiness, validity and reliability. The chapter concludes with the ethical considerations relevant to this research.

2.2 RESEARCH QUESTION

The research question that forms the basis of this study is:
What are the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment?

2.3 RESEARCH AIM AND OBJECTIVES

The overall aim of this research was to investigate the core competencies needed by the A&E nurse in order to manage life-threatening situations in the emergency care environment.

To reach this aim, the objectives were to –

- investigate the development of A&E nursing in South Africa and internationally
- describe the "emergency care environment" in which the A&E nurse practises
- determine the core competencies required by the A&E nurse in life-threatening situations in the emergency care environment
- make recommendations as to what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency

environment – in other words, what competencies should be included in a curriculum for the training of these nurses

2.4 RESEARCH DESIGN AND METHODOLOGY

The research design is the overall plan for collecting and analysing data (Polit & Hungler 1997: 467; De Vos 1998: 123). Research design refers to the researcher's overall plan for obtaining answers to the research problem. It is associated with the structural framework of the study and concerns the planning of the implementation of the study in order to reach the goals set out (Burns & Grove 2001: 223; De Vos 1998: 77). The research design also provides the guidelines and instructions to be followed when addressing the research problem (Mouton 1996: 107; Polit & Hungler 1993: 445). Thus, by thoroughly planning the research design or "blueprint" of the research, it anticipates what the appropriate research decisions should be in order to increase the validity, and to minimise or, where possible, exclude errors within the research (Mouton 1996: 107-108). Research methodology on the other hand refers to the steps, procedures and strategies used for gathering data and analysing the data in the course of the research investigation (Polit & Hungler 1997: 461).

An explorative, a descriptive and a contextual research design were used, including both qualitative and quantitative methodology to investigate the core competencies of the A&E nurse in life-threatening situations in the emergency care environment. To reach the above-mentioned aim and objectives, this research was done in the following three phases:

- Phase 1 – Conceptual (explorative, descriptive and contextual design using qualitative methodology)
- Phase 2 – Empirical (explorative, descriptive and contextual design using quantitative methodology)
- Phase 3 – Interpretative (descriptive and contextual design)

2.4.1 Use of the research designs and methodologies

Each of the above-mentioned designs and methodologies, as well as its uses within the research project, will be discussed.

2.4.1.1 Designs

Three different designs were used in this research, namely an explorative, a descriptive and a contextual design. The rationale for the use of these designs will now be discussed.

a) Explorative design

The explorative research design was used in both Phase 1 and Phase 2. A large portion of research was conducted to explore a topic or provide a basic familiarity with the specific topic (Babbie & Mouton 2001: 79). It was also aimed at exploring the full nature of the phenomenon, how it manifested and other relevant factors (Polit & Hungler 1997: 20).

This research study had to be exploratory in nature as the researcher wished to explore a phenomenon of which very little was known, namely the core competencies of the A&E nurse in life-threatening situations in the emergency care environment. The researcher aimed to explore the dimensions of the research problem through a literature review, an FGI with experts in the A&E environment and a questionnaire sent to A&E nurses (qualified and students) and A&E nursing lecturers in the emergency care environment. The researcher also aimed to acquire new insight into the full nature of the research problem (Polit & Hungler 1997: 20). This method implied that the researcher would be willing to study new ideas and possibilities and would not allow predetermined ideas and hypotheses to direct the research (Mouton & Marais 1990: 45).

b) Descriptive design

A descriptive design was used for all three phases. Babbie and Mouton (2001: 80) state that the major purpose of many social scientific studies is to describe situations and events. The researcher aimed to use description in both the qualitative and quantitative phase. The A&E nurse and his/her professional practice would be described as a phenomenon. The research

study would also be descriptive as it intended to describe the phenomenon accurately within the context, and would be based on the collected data. The concepts would be examined, as well as the relationship or differences between the concepts and some of the other factors, such as the demographical data of the A&E nurse regarding his/her opinion in relation to the research topic.

c) Contextual design

A contextual design was used in all three phases. According to Babbie and Mouton (2001: 272) the researcher aims to describe and understand events within the concrete, natural context in which they occur. The unique context used for the purpose of this research was the emergency care environment within which the A&E nurse functions as a professional person in SA. If one understands the events against the background of the whole context, then one can truly claim to understand them (Babbie & Mouton 2001: 272). It was therefore important to investigate the context within which the A&E nurse practised and to clarify his/her position. In other words, was only the emergency care unit part of the professional practice of the A&E nurse, or were other areas such as the pre-hospital environment and primary health also included? This research was context-bound – it described the core competencies of the A&E nurse in life-threatening situations in the emergency care environment. The research had to take place within the South African context as the survey would be distributed to all the A&E nurses (qualified and students) and A&E nursing lecturers nationally.

2.4.1.2 Methodology

Qualitative as well as quantitative research methodology was used in this research (see Figure 2.1 - A schematic representation of the research methodology). One of the rationales for using a combination of research methodologies was that according to Krueger (1994: 29) a combination of qualitative and quantitative research methodology strengthens the research design. Other rationales for the use of this combination of methodologies will now be discussed.

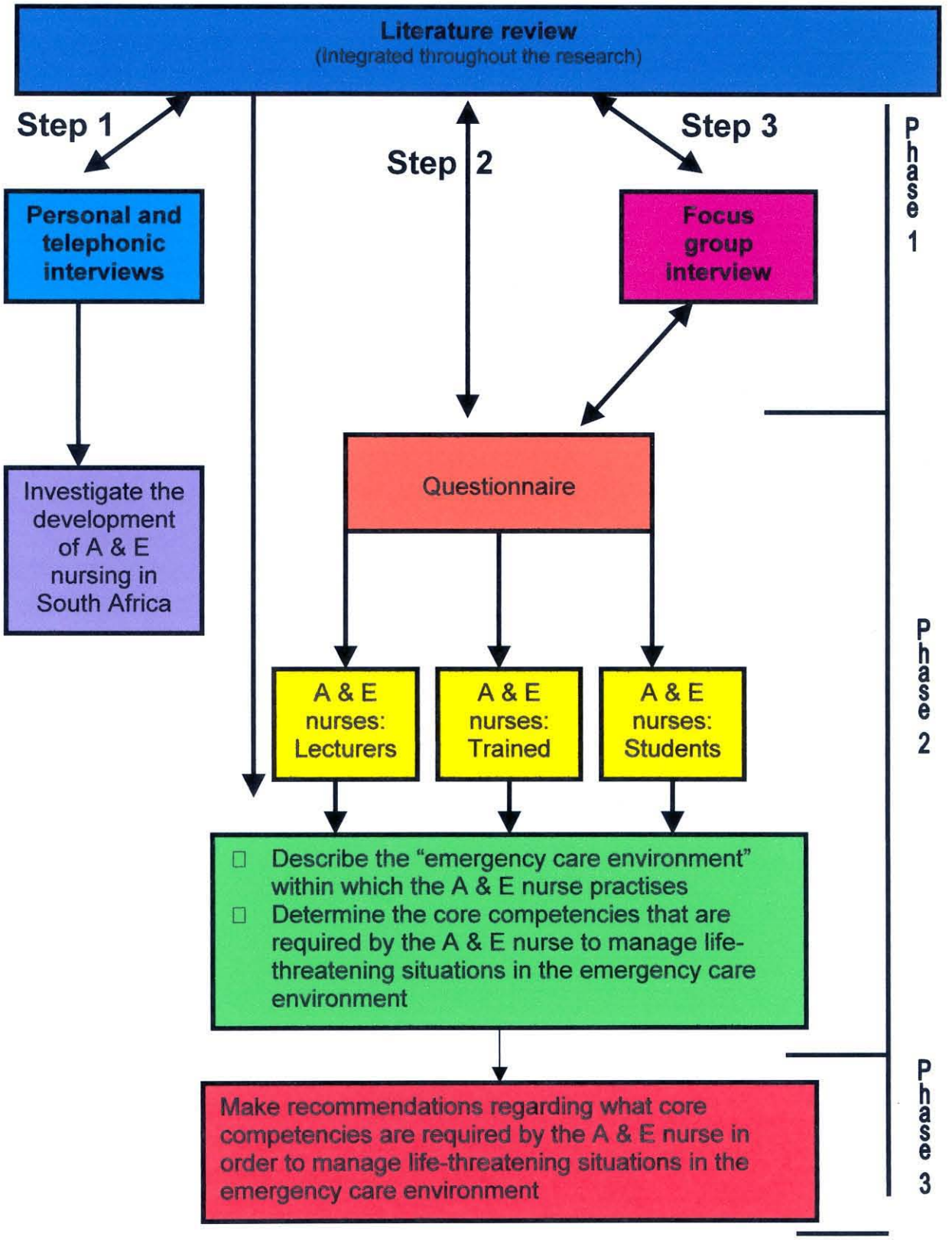

Figure 2.1 - A schematic representation of the research methodology

a) Qualitative methodology

During Phase 1 qualitative research methodology was used. Qualitative research is seen as a systematic, subjective approach used to describe life experiences and give them meaning, as well as a way to gain insights through discovering meaning (Burns & Grove 2001: 61). According to Babbie and Mouton (2001: 646) the qualitative researcher studies human action from the insider's perspective and the goal of the research is defined as describing and understanding.

In this study qualitative research was conducted among experts within the emergency care environment to gain a clear understanding of their experiences, perceptions and facts regarding the core competencies of the A&E nurse in life-threatening situations in the emergency care environment. The process of qualitative research was inductive and the researcher had to build concepts from the details obtained from the FGI. By using the FGI prior to quantitative research, the researcher made sure that she discovered the A&E nurses' perceptions of reality within their professional practice. This would ensure that the critical issues were addressed in the questionnaire by asking the appropriate questions – thereby warranting the efficiency and validity of the questionnaire (Krueger 1994: 29). The researcher had decided to include the experts' opinions due to the fact that there was no literature available in SA pertaining to the research problem and because the researcher valued the input of the respondents and their experiences (Parahoo 1997: 60).

b) Quantitative methodology

Quantitative research methodology was used for Phase 2 of this research. A quantitative research methodology was used to provide quantifiable data and objective measurement of the data from A&E nurses nationally to explore and describe the core competencies of the A&E nurse used in life-threatening situations within the emergency care environment (Stewart & Shamdasani 1990: 15; Parahoo 1997: 51, 54).

The reason for using quantitative research was that by generating applied research knowledge the clinical practice of the A&E nurse could be improved, ensuring the development of this clinical speciality into a true profession that would be recognised by the different health care givers (Burns & Grove 2001: 38). It would also enable the researcher to make inferences about a larger population (Krueger 1994: 29).

Combining qualitative methodology during the first phase and quantitative methodology during the second phase would ensure triangulation. The researcher would add an additional dimension to the data obtained from the FGI, by discovering the opinions of A&E nurses regarding the topic nationally (Rae 2001: 161).

2.4.2 Phases of the research

As explained above, the research consisted of three phases. The research design and methodology used for each of the three phases will be discussed individually.

2.4.2.1 Phase 1 – Conceptual

The conceptual phase included personal and telephonic interviews with A&E nurses involved in the clinical practice and A&E nurses who were involved in the education of A&E nurses, a comprehensive literature review and an FGI with experts within the emergency care environment. With the help of experts within the clinical environment the aims of this phase were to –

- investigate the development of A&E nursing in South Africa and internationally
- describe the "emergency care environment" within which the A&E nurse practises
- determine the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment

To enable the researcher to reach the set objectives for Phase 1, the phase was conducted in the following three steps:

- Step 1 – Personal and telephonic interviews

- Step 2 – Literature review
- Step 3 – Focus group interview

This data would be used to provide information regarding the development of A&E nurses in SA in the literature study as well as to compile a questionnaire regarding the set objectives in Phase two.

a) Step 1 – Personal and telephonic interviews

i) Introduction

The aim of this step was binomial. Firstly, the researcher would investigate the development of A&E nursing in SA. This would provide insight to the researcher and A&E nurses as to what the reasons were for starting a clinical speciality such as A&E nursing and where the programmes originated. This would also serve as a starting point for collecting contact persons to use during Phase 2 when the questionnaires would be distributed.

Secondly, the problems experienced by A&E nurses within the emergency care environment were investigated to confirm whether they too experienced problems similar to those of the researcher. By gathering more data regarding problems experienced by A&E nurses in the emergency care environment, the researcher would come closer to the phenomenon she was studying and it would increase her insight and familiarise her with the national propensity (Babbie & Mouton 2001: 289). This would increase the reliability of the background to the research project.

ii) Population

The population included A&E nurses who were then or previously involved in the education and/or development of programmes for A&E nurses in SA. A total of nineteen A&E nurses were contacted throughout SA.

iii) Sampling

Snowball sampling, a form of non-probability sampling, was used for this step. Snowball sampling involved approaching a single participant who was involved in A&E nursing and then requesting this participant to identify further

participants that would fit the criteria set out for participants (De Vos 1998: 200; Polit & Hungler 1997: 469). The researcher started by approaching a single A&E nurse involved in the education of A&E nurses from an early stage of development of this discipline. She requested that person to identify other A&E nurses who met the criteria of inclusion, namely A&E nurses that were either at that stage involved in or who had previously been involved in the education and/or development of programmes for A&E nursing in SA (De Vos 2002: 208). The researcher then contacted those A&E nurses and, depending on their physical addresses, either personal or telephonic interviews were scheduled.

iv) Data collection

Data was collected by means of either personal or guided telephonic interviews. A guide containing questions was prepared to make sure the relevant topics were covered. The questions were as follows:

- What was the rationale for the courses started for A&E nurses in South Africa?
- Where was the first course offered for A&E nurses and who presented this course?
- What other courses were offered that you know of and who presented these courses?
- What problems do A&E nurses experience within the emergency care environment?
- Can you identify other A&E nurses whom the researcher can contact to collect more data?

The same questions were asked to all participants. Prompting and probing were used during the interviews to reduce the anxiety for both the researcher and informant and to search for elaboration, meaning and reasons (Holloway & Wheeler 2002: 84). Personal interviews were taped and notes were taken during and immediately after the interview. Permission was asked before taping (Holloway & Wheeler 2002: 86). Notes were taken during the telephonic interviews and then reread to verify the facts. Notes were also taken after these interviews. The researcher terminated the personal and

telephonic interviews as soon as she realised that the data was saturated, in other words, as soon as no new information was received from the participants. The process included nineteen participants.

v) Data analysis

The perceptions and facts of the different participants were analysed and then the results were compared. The problems identified by the persons interviewed were included in Chapter 1 and were much the same as those experienced by the researcher. This research would be based on those problems. The researcher included the data regarding the development of A&E nursing in SA in the literature review (Chapter 3).

vi) Trustworthiness

Trustworthiness refers to the methodological accuracy and adequacy in qualitative research (Holloway & Wheeler 2002: 224). Guba and Lincoln (1985 in Krefting 1991: 215) regard trustworthiness as the method to ensure rigour in qualitative research without sacrificing relevance. Guba's model of trustworthiness (Krefting 1991: 215-217) was used to ensure validity and reliability of the research project. After the definitions of credibility, transferability, dependability and conformability provided below, the application of each of these principles of trustworthiness are addressed in Table 2.1 – Strategies to ensure trustworthiness (Step 1).

–a Credibility

Credibility addresses the question of whether the research has established confidence in the truth of the results, and deals with the question of how the results of the research match the reality within the context of the study (De Vos 2002: 351).

–b Transferability

Transferability refers to the degree to which the findings can be applied to other contexts or with other respondents (Babbie & Mouton 2001: 277; De Vos 2002: 352). Although the findings of this study cannot be applied to other contexts, it will after analysing the quantitative data obtained via the

questionnaire, be applicable to A&E nurses nationally working in the emergency care environment. During this phase the strategies of Guba and Lincoln (1984) will be followed for transferability as cited by Babbie and Mouton (2001: 277).

–c Dependability

The researcher will provide evidence that if the study was to be repeated, the findings will be comparable (Babbie & Mouton 2001: 278; Klopper 1995: 27). Thus, using the techniques outlined in relation to credibility will be sufficient to demonstrate dependability.

–d Confirmability

This entails to which degree the result of the study is the product of the inquiry (Babbie & Mouton 2001: 278; Klopper 1995: 27). An expert supervisor will be involved in the auditing of the research to ensure confirmability.

Table 2.1 – Strategies to ensure trustworthiness (Step 1)

Strategy	Actions	Application criteria
Credibility	Prolonged engagement	Researcher profile: -actively involved in A&E nursing -A&E nurse for total period of ten years -various positions within the emergency care environment (pre-hospital, emergency care unit, management and lecturer)
	Persistent observation	-Consistently pursued interpretations in different ways -Followed a process of constant and tentative analysis
	Referential adequacy	-Use of audiotapes -Use of notes
Transferability		-A&E nurses nationally working in emergency care environment
Dependability	Dependability audit	-Kept personal logs and field notes
	Dense description	-Described research methodology comprehen-sively
	Peer examination	-Used expert supervisor
Confirmability		-Used expert supervisor

b) Step 2 – Literature review

The literature review was performed throughout the research study. The literature review in this research served mainly three purposes. Firstly, it was used to acquaint the researcher with existing knowledge on the subject. It ensured that the researcher discovered the most recent and authoritative theory available on the subject of the research project and enabled the researcher to state why the research project was needed and important for A&E nurses working in the emergency care environment (Mouton 2001: 87; Parahoo 1997: 81). It also warranted that the researcher was thoroughly knowledgeable regarding the topic, understood the nature and meaning of the problem to be exploited, and was able to refine and redefine the aim and objectives of the research study (De Vos 2002: 127, 128 & 267; Parahoo 1997: 82). It also identified gaps in the literature that would be compensated for by the results of this research.

Secondly, the literature review, expounded in Chapter 3, was performed to indicate why the current study was so important and where it would fit into the overall body of knowledge on the topic being researched (Parahoo 1997: 98). The literature review therefore aimed to place the research study in the context of what is already known about the topic (Parahoo 1997: 91). The aim of the literature review was therefore the same as the overall aim and objectives set out for this research (see 1.5 – Research aim and study objectives)

Thirdly, the literature review drew from a body of related research that supported, validated and substantiated the research.

c) Step 3 – Focus group interview

i) Introduction

A focused discussion by means of an FGI was predetermined and sequenced after the literature review. The FGI took place in a permissive, comfortable and non-threatening environment (Hollis, Openshaw & Goble 2002: 2; McDaniel & Bach 1994: 4; McDougall 1999: 48; Krueger 1994: 6). The aim of using the FGI was to use experts to guide the researcher as to what to include

in the questionnaire, and to enable the researcher to achieve the following objectives:

- To describe the "emergency care environment" within which the A&E nurse practises
- To determine the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment

The rationale for using an FGI was that the researcher was looking for a range of shared ideas from experts within A&E nursing as to what the content of a questionnaire should entail regarding the research topic (De Vos 2002: 307). These experts could help to delineate the problems more sharply and provide the researcher with valuable information as to what the core competencies of A&E nurses in life-threatening situations should include. These ideas were then used to compile the questionnaire.

The strength of a focus group was fully used. The group contexts also gave members the opportunity to exchange and explore ideas and made them aware that there was some degree of security in expressing oneself in a crowd (Beck 1986 as cited by Bulmer 1998: 34-36). The ultimate goal was to understand the reality within which the A&E nurse practised in life-threatening situations in the emergency care environment and not to make decisions regarding the content to be included in the questionnaire (Holloway & Wheeler 2002: 111).

Bulmer (1998: 34-36) also cites the view of Stewart and Shamdasani (1990) that an FGI provides rich data concerning human experiences and reflects real life experiences of the members of the group. By design, an FGI relies on the dynamics of the interaction within the group to stimulate thinking and the formation of new ideas, thus incorporating the verbal contributions of the participants concerning the content of the questionnaire (Asbury 1995: 415; De Vos 1998: 316).

Another reason for using an FGI was that the participants would have an opportunity to influence one another, to reflect on what were realistic

questions to ask in the questionnaire, and what A&E nurses perceived as core competencies used in life-threatening situations in the emergency care environment. The participants were also influenced by comments from other participants and made decisions as a group (Krueger 1994: 19 & 34; McDaniel & Bach 1996: 53).

All the above enabled the researcher to obtain relatively cheap qualitative data for compiling a realistic questionnaire and augmenting the validity of the questionnaire that was distributed nationally (Krueger 1994: 35 – 37; McDaniel & Bach 1994: 4).

ii) Population

According to Burns & Grove (2001: 424) the individuals taking part in a research are important resources of information, and as a group the A&E nurses could generate authentic information, superior to individual interviews or efforts to develop this questionnaire.

The explicit selection criteria for the participants included:

- Lecturers in A&E nursing science
- A&E nurses working in provincial emergency care units
- A&E nurses working in private emergency care units
- A&E nurses working in peripheral emergency care units
- A&E nurses as unit managers of emergency care units
- A&E nurses working as clinical preceptors
- A&E nurses working in the pre-hospital environment
- Knowledgeable persons regarding legislation and policy within this context to further enrich the data

The above heterogeneous group provided a diversity of insight, knowledge and perceptions regarding the core competencies required by the A&E nurse in order to manage life-threatening situations in the emergency care environment. This group ensured differences in opinions that would promote a stimulating discussion (Reiskin 1992: 199).

iii) Sampling

A sample is defined as a subset of the target population (Parahoo 1997: 221; Polit & Hungler 1997: 468). The intent when gathering a sample for the focus group interview was to ensure that the group consisted of representative members of the larger population so that conclusions about the population of interest could be reached during the interview (Stewart & Shamdasani, 1990: 53). This method would also provide rich context-bound information, using the inductive approach, when developing the questionnaire (De Vos 1998: 46; Babbie & Mouton 2001: 272).

Snowball, purposive and convenience sampling were combined in selecting participants to participate in the focus group interview. Snowball sampling was defined on page 27. This method of sampling was used to identify expert A&E nurses working within the government hospitals, peripheral hospitals and the pre-hospital environment.

Purposive sampling involved a conscious selection of participants to include in the focus group (Burns & Grove 2001: 376; Polit & Hungler 1997: 466). The researcher decided what specific characteristics the participants should possess and then purposively included those participants in the focus group. By using this type of sampling, the researcher ensured that the focus group included participants with different characteristics. This again maximised the range of information that was obtained within the context in order to compile a high-quality questionnaire.

Convenience sampling may be used during an FGI (McDaniel & Bach 1994: 4). This type of sampling refers to a selection of the most readily available participants for the focus group interview – saving both time and money and not eliminating the need to consider the characteristics of the group (Polit & Hungler 1997: 454; Stewart & Shamdasani 1990: 53). The participants were all from the Johannesburg and Pretoria regions and due to the fact that the questionnaire would be distributed nationally, the researcher felt that this was an appropriate target group.

iv) Data collection

A semi-structured focus group interview was held with 12 experts. Some of these experts were chosen for their varied clinical experience within the A&E environment, therefore fitting more than one of the set selection criteria.

All the participants were carefully selected according to their expertise and knowledge on the topic, thus obtaining rich experiential data from which the questionnaire could be developed inductively (Hollis et al. 2002: 5). The researcher ensured that the participants came from different backgrounds within the A&E environment, reflecting opinions that would promote stimulating discussions (Reiskin 1992: 199). See Table 2.2 – Participants reflected as they relate to set criteria.

Table 2.2 – Participants reflected as they relate to set criteria

Criteria	Experts
Lecturers in A&E nursing science	4
A&E nurses working in provincial emergency care units	2
A&E nurses working in private emergency care units	4
A&E nurses working in the pre-hospital environment	6
A&E nurses working in peripheral hospitals	1
A&E nurses working as clinical preceptors	3
A&E nurses as unit managers of emergency care units	4
Knowledgeable person regarding legislation and policy within this context	1

The focus group of participants were contacted personally or telephonically, followed by a formal letter of invitation (Reiskin 1992: 199). A follow-up telephone call to remind them of the purpose and importance of the FGI and the time, date and place of the meeting was scheduled two days before the meeting (Reiskin 1992: 199; Holloway & Wheeler 2002: 114).

Specific questions and the order in which they appeared were designed before the initiation of data collection by the researcher. These questions were asked during the audiotaped interview. The researcher thereby provided control over the content of the interview (Burns & Grove 2001: 421).

The questions were open-ended, single-dimensional, short and clear and a language comprehensive to the participants was used (Hollis et al. 2002: 6). The questions were asked to stimulate ideas and were thoroughly planned to form one of the most important ingredients for a successful focus group interview (Hollis et al. 2002: 6).

The questions were sequenced in order to allow maximum insight, thereby ensuring that the participants became familiar with the topic, and that each had a chance to recollect his/her personal opinion and to listen to the opinions of the other participants (Krueger 1994: 127). The following three key questions were predetermined by the researcher after considerable reflection:

- What, in your opinion, is the context within which the A&E nurse practise?
- The treatment of the seriously ill patient requires a systematic approach. Identify the components that you would include when treating a patient in a life-threatening situation.
- What specific knowledge, skills, attitudes and values does an A&E nurse require for each of the above-mentioned components?

The main strengths and weaknesses of focus groups as a method of data collection are related to group interaction. In view of this, the choice of facilitator and group construction was a major consideration (McDougall 1999: 48). The questions were asked by a skilful, independent facilitator to stimulate ideas, and the group was allowed to build on responses of others, raise their own questions and question one another (Hollis et al. 2002: 6). The lack of an effective facilitator could result in less assertive group members not fully participating, and dominant group members taking over (McDougall 1999: 49). In contrast, a skilled, effective facilitator could ensure that less assertive members became involved and dominant members did not take over (McDougall 1999: 49). The researcher, who had no previous experience as facilitator, therefore decided to use an independent facilitator, who had vast experience in focus group interview techniques, to lead the session.

Based on Krueger (1994: 100-103) the focus group interview was conducted by an independent registered nurse. This person was a psychiatry-nursing specialist, as well as a competent interviewer with the following skills:

- Comfortable and familiar with group processes
- Previous experience of working with groups
- Training in and knowledge of group dynamics
- Excellent communication skills
- Self-discipline
- Mild and unobtrusive control over group
- Ability to maintain group enthusiasm and interest for the subject
- Curiosity about the topic and participants
- Respect for participants and acknowledgement of their expertise
- A friendly manner and sense of humour

An independent fieldworker was used during the FGI and the rules as set out by Krueger (1994: 124-125) were explained to her. She had to take full responsibility for all the arrangements regarding the venue, equipment and refreshments provided during the focus group interview. The morning before the interview she was asked to arrange the allocated venue in such a way that all the participants, including herself and the independent facilitator, would be seated around a table, then set up the equipment, which included two tape recorders. She was asked to welcome the participants as they arrived, issuing each with a nametag and showing them their designated seats. She was asked not to take part in the interview and to monitor the recording equipment. She was also asked to take thorough field notes during the interview.

Specific instructions were given regarding the field notes. These notes also had to record the seating arrangement, the order in which people spoke to aid voice recognition from the recording, non-verbal behaviour such as eye contact, posture, gestures between group members, crying or fidgeting, themes that were striking, and highlighting as much of the conversation as possible, just in case both recorders failed (Côté-Arsenault & Morrison-Beedy 1999: 280-283).

At the end of the focus group interview she had to join the facilitator and researcher for a debriefing session. On completion of the questionnaire she was asked to provide feedback on the analysis, which increased the validity of this instrument.

All the participants invited to the focus group interview turned up, a confirmation that A&E nurses in the clinical setting regarded this research study as highly important. As the participants arrived at the venue, they were greeted by the researcher and fieldworker and provided with refreshments (McDaniel & Bach 1996: 56).

The interview was conducted in a quiet room with a round table that allowed all members to be seated around it and therefore be able to see one another (Reiskin 1992: 200; McDaniel & Bach 1996: 56). The facilitator set the mood of the group by creating a non-threatening, warm, accepting, enthusiastic and objective environment, which encouraged all the participants to share their views (Reiskin 1992: 200; Hollis et al. 2002: 3; McDaniel & Bach 1994: 4).

In her opening remarks the facilitator extended a hearty welcome to all the participants, thanking each one for his/her willingness to participate in the focus group interview. An overview of the topic and outline of the purpose of the research were provided and participants were allowed to ask questions regarding the research study (Krueger 1994: 113; McDaniel & Bach 1996: 56; Reiskin 1992: 199).

The fieldworker was introduced and her purpose with taking notes was explained. Permission to audiotape the session was confirmed (Hollis et al. 2002: 3; McDaniel & Bach 1996: 56). Two audiotapes were used during the session in case one audiotape did not record the interview and both audiotapes were visible. Ground rules were set for the period of the interview and the first question was asked to start the interview (Krueger 1994: 113-114).

The facilitator was responsible for ensuring that the established questions were discussed and that all the participants took part in the discussions (McDaniel & Bach 1994: 5). After each participant had answered a question, further pre-established questions were asked, the facilitator ensuring that everybody in the group answered a follow-up question (McDaniel & Bach 1996: 56). The facilitator was aware of cues that participants provided and encouraged them to share their thoughts (McDaniel & Bach 1996: 56). Two essential techniques, namely pausing and probing, were used throughout the interview and were helpful in soliciting additional information from the group (Krueger 1994: 115). At the end of the session a summary of the discussion was provided, seeking verification from all the participants concerning the content of the discussion (McDaniel & Bach 1994: 5). The focus group interview lasted two and a half hours, with one break in between during which refreshments were served.

The focus group interview included five of the six characteristics set out by Krueger (1994: 16), namely that a focused discussion was held with people and that they all possessed the characteristics as set out in the criteria of the population. Furthermore, the focus group interview provided rich qualitative data.

Only one characteristic, namely that a series of groups should assemble, was not applicable to this research project, due to the fact that a questionnaire was developed and would be distributed nationally, which therefore made follow-up groups unnecessary.

v) Data analysis

Krueger (1994: 140) cites Yin (1984: 99) stating that data analysis consists of examining, categorising, tabulating or reorganising the evidence in order to address the initial propositions of the study.

Content analysis was used to determine the meaning of the data gathered in the FGI (McDaniel & Bach 1996: 57). It included verbal communication, non-

verbal communication and observations of behaviour as gathered from the audiotapes and observed by the fieldworker (McDaniel & Bach 1996: 57).

All the tapes and field notes were labeled. The first step was to transcribe the entire interview, and the transcript was used as the basis for analysis. The transcription included laughter and pauses. A large margin was left on the transcript for coding and categorising (Holloway & Wheeler 2002: 116). Transcribing is necessary for analysis and also establishes a permanent record of the interactions that can verify the researcher's conclusion (Reiskin 1992: 200). The researcher augmented the transcript with notes taken by the fieldworker during the interview and the debriefing summaries (McDaniel & Bach 1996: 57). The transcripts were then read to identify the sections that were relevant to the research questions (McDaniel & Bach 1996: 57).

The transcription was read and a coding system for major topics and ideas was developed (McDaniel & Bach 1996: 57; Holloway & Wheeler 2002: 116). Following the coding, the data was organised into various categories (Holloway & Wheeler 2002: 116). Documentation of each step provided evidence of the decision trial, which is an integral part of auditability, confirmability and credibility (McDaniel & Bach 1996: 57).

After agreement was reached with the researcher's supervisor on the categories, labels and definition of themes, the investigator returned to the audiotape to validate the categories based on voice reflection and context (McDaniel & Bach 1994: 5).

The principles set by Krueger (1994: 126-139) were used when analysing the data. The first principle, namely that the analysis should be systematic, was implemented by –

- sequencing the questions to allow maximum insight
- capturing the data by both audiotape and additional field notes
- coding the data
- sending the data, in the form of a questionnaire, to three participants for verification of content

- a debriefing session between the facilitator, researcher and fieldworker immediately after the focus group interview to capture first impressions
- sharing draft copies of the questionnaire with various research experts, for purposes of review, substantiation and comment

The second principle states that the analysis should be verifiable. This was ensured by audiotaping the FGI, taking field notes, providing an oral summary of the key points during the focus group interview, and having a debriefing session with the moderator after the focus group interview.

The following principles were also followed. The researcher stayed focused on the research questions and objectives throughout the analysis, and the analysis was appropriate to the situation. The analysis was straightforward, due to the fact that the patterns were clearly identifiable and minimal differences existed across the group. The researcher knew that the analysis would be time-consuming and therefore scheduled ample time for this purpose. The interview was transcribed immediately after the focus group interview to prevent erosion of the analysis. The analysis did help the researcher in compiling the questionnaire as it confirmed her suspicions regarding the core competencies of A&E nurses in life-threatening situations in the emergency care environment. It also brought new insights, thus augmenting the validity of the questionnaire.

Triangulation of data refers to the multiple methods used to collect and interpret data (Babbie & Mouton 2001: 275). Two methods were used to ensure triangulation as to the content of the questionnaire. The researcher asked feedback regarding the data analysis following the FGI from various sources, including experts within the field of compiling a questionnaire, experts from an A&E nursing environment who were not present in the focus group interview, colleagues and the supervisor. The tapes, a transcription of the interview and the questionnaire were also given to an independent coder to analyse. The independent coder was a nursing researcher familiar with qualitative data analysis. The independent researcher would analyse the

interviews independently of the researcher. After the analysis both would have to reach consensus regarding the reflected data and its accuracy.

After the data analysis a literature control was done whereby information gained from the literature had to be compared with the findings from the present research project in order to determine similarities and differences. These findings were combined and reflected the current knowledge about the phenomena (Burns & Grove 2001: 124). Literature control is a strategy used to ensure trustworthiness of data. The data analysis of the focus group interview is set out in Chapter 4 (see 4.2 – Results and analysis of the qualitative data).

vi) Trustworthiness

Guba's model of trustworthiness (Krefting 1991: 215-217) was used to ensure the validity and reliability of Step 3 in this research. As the aspects of trustworthiness have been described previously (see 2.4.2.1 – Phase 1: Conceptual), the application of these strategies as used during Step 3 are summarised in Table 2.3 – Strategies to ensure trustworthiness (Step 3).

vii) Limitations of focus group interview

The limitations of an FGI, as described by Krueger (1994: 36-37), were overcome in this research project by addressing the negative issues. The researcher took the fact into consideration that group members could influence and interact with each other regarding what they perceived as core competencies. Using a survey with both open-ended and closed-ended questions to verify the perceptions and attitudes of A&E nurses nationally, would, lessen the chance of prejudiced results.

A trained, independent and experienced moderator was used to conduct the focus group interview. The moderator had to ensure that in their discussions the group would focus on the topic, and whenever detours in the discussion occurred, or irrelevant issues were raised, she had to direct the group back to the topic under discussion. Due to the fact that the data would be difficult to

analyse if comments were lifted out of context, the researcher would confirm the data by making use of the national survey. Appointing the specific

Table 2.3 – Strategies to ensure trustworthiness (Step 3)

Strategy	Actions	Application criteria
Credibility	Prolonged engagement	Researcher profile: -actively involved in A&E nursing -A&E nurse for total period of ten years -various positions within the emergency care environment (pre-hospital, emergency care unit, management and lecturer)
	Persistent observation	-Consistently pursued interpretations in different ways -Followed a process of constant and tentative analysis
	Triangulation	-Conducting literature review -Conducting focus group interview -Using independent coder -Using experts to evaluate questionnaire
	Referential adequacy	-Use of audiotapes -Obtaining extensive field notes -Verbatim transcripts -Debriefing summaries
	Peer debriefing	-Questionnaire evaluated by three focus group respondents to confirm content
	Member checks	Participants with varied experience and expertise: -independent coder -four equal status colleagues -expert supervisor -statistician -two non-participant A&E nurses in focus group interview
Transferability	Thick transcription	-Provide rich, comprehensive description of data obtained -Provide research methodology
	Purposive sampling	-Purposively selecting participants -Obtain maximum quantity of specific information

Table 2.3 – (continued)

Strategy	Actions	Application criteria
Dependability	Dependability audit	-Personal logs and field notes will be kept -Use of independent coder
	Dense description	-Describe research methodology comprehensively
	Triangulation	-Compare independent coder's data analysis with researcher's version to ensure correctness -Use more than one source of data
	Peer examination	-Data given to experts within the field to examine -Independent coding -Expert supervisor
	Code-recode procedure	-A consensus discussion between coder and researcher
Confirmability		-Use independent coder -Use expert supervisor

moderator also ensured that appropriate skills and techniques would be used, such as probing and pausing, and knowing when to move to a new topic.

By making use of purposive sampling, the researcher was able to use participants from Pretoria and Johannesburg to participate in the interview. This lessened the time consumed and the costs of the focus group interview. The FGI was conducted in a friendly environment and situated in an area conducive to conversation.

The fact that the limitations were taken into consideration, also increased the trustworthiness of Phase 1.

2.4.3 Development of the questionnaire

The first step was to search the literature for questionnaires or items in questionnaires that could match the criteria set out for this research project. The researcher found no such information.

The layout of the questionnaire is discussed in Chapter 4 (see 4.2 – Results and analysis of the qualitative data; Annexure D – Questionnaire). The sections included in the questionnaire were:

- A covering letter (see Annexure B – A letter of invitation to participate in the focus group interview) explaining the purpose of the study, with clear instructions regarding the completion of the questionnaire and including the researcher's contact details
- Section A – Demographical information
- Section B – Context
- Section C – Advanced life-support skills performed by A&E nurses in life-threatening situations
- Section D – Advanced skills essential for A&E nurses in life-threatening situations to be included in curricula
- Section E – Attitudes and values of the A&E nurse

A pilot study was then conducted by making use of seven A&E nurse students. According to De Vos (2002: 211) a pilot study is the pre-testing of a measuring instrument by trying it out on a small number of people with similar characteristics to those in the population of the research project. The newly constructed questionnaire was handed out to ensure that any errors could be rectified at little cost (De Vos 2002: 177).

The respondents were asked to complete the questionnaire and time was allowed for questions and discussions after completion. An open space was left on the questionnaire for comment and evaluation. The respondents stated that a question should be included to indicate whether the respondent is registered as midwife/accoucheur or not. The respondents stated that A&E nurses registered as a midwife/accoucheur might indicate that supportive management for obstetric emergencies are not necessary to include in the curriculum, whereas A&E nurses who do not have this qualification might feel it necessary. The modifications were made, the questionnaire was presented to the statistician and then distributed to the full sample (De Vos 2002: 177; Babbie & Mouton 2001: 244). The value of making use of a pilot study was to prove the success and effectiveness of the investigation.

The questioner was then used during the empirical phase as described in 2.4.4 – Phase 2 – Empirical.

2.4.4 Phase 2 – Empirical

2.4.4.1 Introduction

According to Polit and Hungler (1997: 469) a survey takes place when the researcher selects a sample of respondents and poses direct questions to them. In this research project the survey was used for descriptive and exploratory purposes (Babbie & Mouton 2001: 232). The literature review and focus interview enabled the researcher to compile a questionnaire. By making use of the previous phase, the researcher had assured a realistic questionnaire and prevented prejudice.

The aims of this phase were to –

- describe the "emergency care environment" within which the A&E nurse works
- determine the core competencies required by A&E nurses to manage life-threatening situations in the emergency care environment

During Phase 3 data would be analysed and it would then be possible to make recommendations regarding what the core competencies of the A&E nurse in life-threatening situations in the emergency care environment should be.

2.4.4.2 Population

The population is a group of people who have some common characteristics, and about whom the researcher wants to draw conclusions (Babbie en Mouton 2001: 100; Polit & Hungler 1997: 464). The population included during this phase consisted of nationally registered nurses, representing –

- A&E nurses with a post-basic qualification in A&E nursing, registered with the SANC
- students at present studying A&E nursing
- lecturers presenting the A&E nursing programme

2.4.4.3 Sampling

A letter was sent to the SANC to determine the number of nurses registered as A&E nurses as well as their contact details. According to a letter received from the SANC (2002) there were only 184 A&E nurses registered with A&E nursing as post-basic qualification. Following a discussion with a statistician and taking into account the relatively small population, the researcher decided to include the total population of registered persons as mentioned above.

Futher contact was made with the various institutions presenting the post-basic programme in A&E nursing through lecturers, and students were also asked to complete the questionnaire. The method of including the not-yet-registered A&E nurses as part of the sample, can be seen as snowball sampling (see page 27 for definition).

2.4.4.4 Data collection

The data was collected by making use of a questionnaire consisting of both open-ended and closed-ended questions (see Annexure D – Questionnaire). Burns and Grove (2001: 426) state that questionnaires are printed self-report forms that can be obtained through written responses of participants. By making use of a questionnaire, facts could be obtained from participants regarding the use of certain skills within the emergency care environment, as well as perceptions and opinions regarding the research in question.

The following advantages as proposed by Polit & Hungler (1997: 259) were taken into consideration when deciding on this method of data collection:

- Questionnaires are economical, since they demand less time and energy to administer.
- Questionnaires provide anonymity, which is important to ensure that the respondents are as honest as possible.
- The absence of an interviewer helps to eliminate bias in the responses.

Burns & Grove (2001: 427) confirm the last-mentioned advantage and conclude that questions are presented in a consistent manner to all the participants.

Three methods of distribution were used, namely mailed, hand-delivered and group-administered questionnaires (see Table 5.1 – Copies of the questionnaire distributed and returned). De Vos (2002: 172) states that according to Grinnell and Williams (1990: 216-217) a mailed questionnaire implies that the researcher sends a copy of the questionnaire to each registered A&E nurse, hoping that the respondent will complete and return it. Firstly, the researcher contacted the SANC for a list of the names and addresses of all SANC registered A&E nurses. A list of 184 A&E nurses was received from the SANC. Copies of the questionnaire, each accompanied by a letter of explanation and together with an addressed franked envelope, were mailed to all these A&E nurses (Babbie & Mouton 2001: 259; De Vos 2002: 177). A follow-up letter of encouragement was mailed to all respondents within three weeks after copies of the questionnaire were mailed (De Vos 2002: 177; Babbie & Mouton 2001: 260).

The advantages of a mailed questionnaire are that the costs are relatively low, the target group can be reached nationally, and the respondents are allowed a high degree of freedom when completing the questionnaire (De Vos 2002: 172). Taking into consideration the numerous disadvantages, of which the most important one will be poor response, the researcher may decide to deliver questionnaires by hand or make use of group-administered questionnaires.

For the research in question the response rate for the mailed questionnaires was very low. Only 11 (6%) were returned, in spite of the encouragement letter. One of the reasons for this could be that some of the A&E nurses had already completed the questionnaire that was either delivered by hand or group-administered, and therefore did not return the mailed questionnaire (see next paragraph). Another reason could be that the SANC could not state whether all these nurses were working within South Africa or abroad. With the huge number of nurses with specialised post basic qualifications migrating to other countries, it could possibly have influenced the response rate.

Secondly, the researcher personally delivered 50 questionnaires to A&E nurses working in emergency care units in Gauteng. The questionnaires were delivered by hand to the respondents by the researcher and they were asked to complete them in their own time. After a week the questionnaires were collected from the registered nurse in charge of every unit. The name list of registered A&E nurses, received from the SANC, indicated that 111 (60%) of these A&E nurses were living in Gauteng. The researcher therefore thought it sensible to deliver questionnaires by hand to emergency units in this province, thus obtaining a rich source of data and increasing the return rate. A total of 31 (62%) questionnaires were received back with this method. Response rates might have been high on account of personal contact between the researcher and A&E nurses in the emergency environment when she delivered the questionnaires (De Vos 2002: 174).

The third method used was group-administered questionnaires and a total of 178 questionnaires were distributed in this manner. Lecturers were contacted nationally. Copies of the questionnaire were posted to the individual lecturers and they, as well as their students, were asked to complete the questionnaire. The lecturers were asked to provide each student with a questionnaire that could be completed in his/her own time and then returned to the lecturer the next week. The students were also asked to take questionnaires to their individual hospitals and ask A&E nurses there to complete them. All the questionnaires were collected by the lecturer and then returned to the researcher by mail. The advantage of this method was that time and costs were saved (De Vos 2002: 174).

The researcher also delivered questionnaires to registered nurses in charge of emergency units of a private group of hospitals at their monthly meeting. The aim and objectives of the research were explained to these nurses by the researcher and they were asked to take the questionnaires to their different units, distribute them amongst the A&E nurses employed, collect them from the respondents and return them at their next monthly meeting. A total of 100 questionnaires were distributed in this manner, of which 55 (55%) were returned.

2.4.4.5 Data analysis

The quantitative data was analysed and interpreted with the assistance of a professional statistician. The quantitative variables took on numerical values (De Vos 2002: 225), the data was measured at ordinal level and descriptive statistics were used during the interpretative phase (Brink 1987: 23, 83).

Descriptive statistics allow the researcher to organise the data in such a way that it gives meaning and facilitate insight (Burns & Grove 2001: 499). Numerical descriptive measures provide precise, objectively determined values that can easily be interpreted and compared (Keller & Warrick 2000: 90).

The description of the data was done by means of determining representative characteristics such as frequencies, percentages, means and numbers (N). The data was organised and presented by means of frequency distribution tables, graphs and pie charts.

a) Terminology

The following terminology were used during the analysis of the quantitative methodology:

- *Frequency and frequency distribution*
- *Percentage*
- *Mean*
- *Numbers*
- *Spearman correlation coefficient*
- *Chi-square correlation*

Each of the above-mentioned terms and phrases is briefly described, including the rationale for the use of the Spearman correlation coefficient and Chi-square correlation.

i) Frequency and frequency distribution

The term *frequency* refers to the occurrence of an event, that is the number of times that a result or value occurs (Brink 1987: 32). *Frequency distribution*

refers to the spread of a series of measurements or values grouped into classes, and their corresponding frequencies (Brink 1987: 32).

ii) Percentage

Percentage indicates a fraction with 100 as its dominator (Brink 1987: 18). All percentages that were used to provide results in this research were rounded off to the first decimal.

iii) Mean

The *mean* is the sum of the measurements divided by the number of measurements and specifies the balance point of the distribution (De Vos 2002: 236). The mean was used when the variables were compared in the graphs. Because the mean makes use of every score of the distribution it is the most accurate measure of the central tendency, and therefore the best manner to present a set of data (De Vos 2002: 237; Keller & Warrick 2000: 90). According to Keller and Warrick (2000: 90) the mean can be defined as follows:

$$\text{Mean} = \frac{\text{Sum of the observations}}{\text{Number of observations}}$$

When reporting the mean the researcher rounded it off to the third decimal.

iv) Number

"N" denotes the total *number* of observations (Keller & Warrick 2000: 90).

v) Spearman correlation coefficient

The *Spearman correlation coefficient* indicates the magnitude of a relationship between variables measured on an ordinal scale (Polit & Hungler 1997:469). The Spearman rank correlation coefficient is calculated by first ranking the data and then the Pearson correlation coefficient of the ranks is calculated (Keller & Warrick 2000: 659).

Correlation analysis was used to determine whether there were relationships between the variables used in Section C (*frequency of performance*) and the corresponding variables used Section D (*importance*). The sample statistic used to estimate its value is labelled "r_s" (Keller & Warrick 2000: 659).

vi) Chi-square test

The *Chi-square* (χ^2) test was done to determine whether there is a relationship between the respondents working in state hospitals and respondents working in private hospitals regarding the *frequency of performance* of the skills and *importance* of these skills.

vii) Simplify statistics and analysis

To simplify the statistics regarding the relationship between the various hospitals pertaining to the *frequency performance* and *importance* of the skills to be included in the curriculum, the researcher decided to combine the respondents working in the ***provincial hospitals and military hospitals*** and to refer to them as ***state hospitals,*** whereas respondents working in ***private hospitals/clinics*** were referred to as ***private hospitals***.

Although the statistics regarding each skill were illustrated in the graphs provided, they were not used to determine the core competencies required by A&E nurses to manage life-threatening situations and were therefore not described in detail. They could, however, provide important research material for future researchers using this study as a basis.

Section C and Section D will be analysed simultaneously. By combining the analyses of Section C and Section D the researcher will be able to determine how often advanced life-support skills are performed (*frequency of performance*) by A&E nurses in life-threatening situations and whether the A&E nurses regard these skills as essential skills (*importance*) to be included in the curriculum.

To simplify the data analysis, the scales of both Section C and Section D were reduced and changed to the following:

- Section C

- ***Never*** *and* ***at least once a year*** were combined and changed to ***seldom/never***
- ***At least once a month*** was changed to ***periodically***
- ***At least once a week*** *and* ***at least once a shift*** were combined and changed to ***frequently***

- Section D

- ***Strongly disagree*** *and* ***disagree*** were combined and changed to ***disagree***
- ***Strongly agree*** *and* ***agree*** were combined and changed to ***agree***

2.4.4.6 Validity and reliability

According to De Vos (2002: 166) a measuring instrument should measure what it is actually supposed to measure. Reliability refers to the accuracy and consistency of the measuring instrument (Burns & Grove 2001: 395). Validity of content, face and other methods were used to ensure the validity of the questionnaire. Each of these strategies will be discussed individually.

a) Content validity

Content validity refers to the representativeness of the content of the instrument (De Vos 2002: 167). To ensure the content validity, the researcher made use of the literature as secondary source of data, which is therefore a supplementary validation of the accuracy of the findings. The researcher constructed the questionnaire by making use of the data collected from experts during the focus group interview. The questionnaire was then given to five of the participants involved in the focus group interview, as well as the researcher's supervisor, colleagues with experience of compiling a questionnaire and to the statistician to review. The necessary amendments were made accordingly. Although this method is judgemental, the researcher relied on it to ensure content validity (De Vos 2002: 167).

b) Face validity

De Vos (2002: 167) states that it is important to structure an instrument so that it measures the attributes of the research project and appears to be a relevant measure of these attributes. This was ensured by making use of an expert supervisor and statistician to evaluate the questionnaire on completion.

c) Other methods

A covering letter (see Annexure D – Questionnaire) was attached, explaining the purpose of the study, stating the names of registered nurses who were able to participate in the study and clarifying the implication of obtaining informed consent from a specific participant to complete the questionnaire. The instructions for completing the questionnaire were clear, ensured (see 2.4.4.6 a) Content validity) and included contact details of the researcher to avoid misinterpretation and/or misunderstanding. Open spaces were allocated for elaborating on responses, allowing each respondent to give his/her opinion on the subject (Burns & Grove 2001: 430).

Thereafter a pilot study was conducted, making use of participants similar to the respondents, and amendments to the questionnaire were made accordingly (see 2.4.3 – Development of the questionnaire).

2.4.5 Phase 3 – Interpretative

Research results and analysis of the findings will be discussed in Chapter 4 and the discussions, conclusions and recommendations will follow in Chapter 5. These two chapters will therefore be seen as the interpretative phase of this research.

This phase flowed directly from the first two phases. The researcher would use the facts and opinions obtained during the previous two phases to define the emergency care environment and to make recommendations regarding the core competencies needed by A&E nurses in order to manage life-threatening situations in the emergency care environment.

2.5 ETHICAL CONSIDERATIONS

In the light of the confidential nature of the information obtained in this research, and the possible legal consequences of any breach of confidentiality, the researcher was bound to maintain a high professional standard regarding all issues of confidentiality. Consideration was therefore given to the ethical considerations described by Brink (1996: 40-46) and the Belmont Report quoted by Polit and Hunger (1993: 355-371). The principles of ethics are also supported by Bandman and Bandman (1988: 67), Burns and Grove (2001), Quick (1996: 71-72), Reason and Rowan (1981: xiii-xiv), and Wilkinson and McNeil (1996: 67-69). The ethical considerations, namely the actions and competence of the researcher and the publication of findings were also included in this discussion (De Vos 2002: 69-73).

2.5.1 Informed consent and autonomy

Informed consent and autonomy was discussed in detail in Chapter 1 (see 1. 8 – Ethical considerations).

2.5.2 Principle of beneficence

One of the most fundamental ethical principles of this research is that of beneficence, which is encompassed in the maxim: Above all, do no harm. This principle has many dimensions.

2.5.2.1 Freedom of harm

Since discomfort and harm may be physical, emotional, spiritual, economic, social or legal, the researcher conducted the research in a safe environment and with sensitivity. Careful consideration was given to framing questions so that they would not inflict any kind of harm.

2.5.2.2 Freedom of exploitation

Participants had to be assured that their participation and/or the information that they might give to the researcher would not be used against them in any manner.

The risk/benefit ratio was considered in terms of whether the risks for research participants were commensurate with the benefits for society and the emergency care profession. It is the researcher's honest opinion that this research will benefit society as well as the profession of the emergency care nurse working in the South African society.

2.5.3 Principle of respect for human dignity

This principle involves the following convictions:

2.5.3.1 Diminished autonomy

Those individuals with diminished autonomy (in this research, each person that completes a questionnaire) will be protected by not having their names or any form of identification disclosed in any way.

2.5.3.2 The right to self-determination

The right to self-determination was guaranteed by ensuring the right of the participant to voluntarily participate in the research or to refuse to disclose information of any kind at any stage of the research. Participants could at any stage ask for clarification about the purpose of the research or any matter concerning the research. Should any person refuse to participate, no means of coercion would be applied.

2.5.3.3 The right to full disclosure

The researcher would not withhold the right to full disclosure at any time during or after the research. The full nature of the research, the participant's responsibilities and the likely risks and benefits that could be incurred, would be fully disclosed in writing.

2.5.4 The right to fair and equitable treatment

The participant's right to fair and equitable treatment before, during and after his/her participation in this research, would be ensured by adhering to the following measures:

- Participants would be selected in a fair and non-discriminatory manner, so that any risks and benefits would be shared equitably. The selection of

participants would be based on research requirements, and not on convenience, gullibility or the compromised position of certain types of people.

- People who declined to participate or who withdrew from the research would not be treated with prejudice.
- All agreements between the researcher and the participants would be honoured.
- Participants would at all times be treated with respect and courtesy.

2.5.5 Actions and competence of the researcher

The researcher is ethically obliged to ensure that she is competent and adequately skilled to undertake the research project (De Vos 2002: 69). For this reason the researcher completed a postgraduate programme in research methodology and ensured that an expert supervisor was actively involved in the research project.

2.5.6 Publications of findings

The researcher ensured that the final report of the research findings was clear, objective and accurate. The researcher also tried to stay objective throughout the research project – giving recognition to sources and people consulted and admitting shortcomings. The respondents will be informed about the findings, without impairing the principle of confidentiality to express gratitude and recognition for their participation (De Vos 2002: 72).

2.6 CONCLUSION

This chapter outlined the research methodology implemented in this research project. It included in-depth discussion of the three phases that were used.

In the following chapter the literature review will be discussed.

CHAPTER 3

LITERATURE REVIEW

3.1 INTRODUCTION

In order to fully understand and appreciate the core competencies required by A&E nurses to manage life-threatening situations in the emergency care environment, a review of the relevant literature was undertaken. This would provide an overall picture of what is known about the topic nationally as well as worldwide, and would also reveal the existing knowledge gaps. This rationale for a literature review is supported by Burns and Grove (2001: 43).

As a background, and to support this research, it is essential to have a thorough understanding of A&E nursing worldwide.

3.2 GLOBAL PERSPECTIVE ON A&E NURSING

Illness has been part of human existence since the beginning of time. Before the art of writing had evolved, men and women were performing healing arts. The medicine man (doctor) was working side by side with a woman (nurse) who acted as midwife, caregiver and wise woman, and it was she who among other tasks, selected medicinal plants, prepared herbal concoctions and applied spider-web as a styptic to bleeding wounds (Masson 1985: 13).

Nursing involvement during wartime can be traced back to as early as 1451, when Queen Isabella of Spain is said to have been the first person to introduce camp hospitals, described as large tents where "decent women specially engaged for this purpose" were tending the injured (Masson 1985: 49-50). Since then nurses throughout the world have played important roles. (Masson 1985: 49-50). It is widely acknowledged that the origin of trauma care stem from military conflicts and battlefield experiences (McGinley 1999).

McQuillan, Von Rueden, Hartsock, Flynn and Whalen (2002: 10) state that although no clear records exist, perhaps the first organised nursing effort focusing on battlefield injuries was pioneered during the Crimean War (1854), when Florence Nightingale, Lady Superintendent-in-chief of female nursing in the English General Military Hospitals, led a group of women in caring for war casualties for a period of approximately two years. In October 1861 Nightingale was asked by the United States Secretary of War for advice on setting up military hospitals for the Union Army and her suggestions were widely adopted throughout the Civil War (1861 – 1865).

In subsequent wars nurses have cared for the wounded on and off the battlefield, seeking new ways to manage the devastating injuries resulting from the ever-increasing power of weaponry. The knowledge gained from the experiences of the front-line nurses had provided valuable information in helping to understand trauma in the civilian life. Moving from the front line to the home front awakens us to the realities of our modern lifestyle (McQuillan et al. 2002: 10). It is therefore evident that although nurses worked within the emergency care environment since as early as 1451, it was not until much later that nursing was seen as a profession and A&E nursing as a clinical field of specialisation.

Despite international advancement in accident and emergency management of the severely injured patient, there are today still key deficits within the A&E nursing community in SA. The role of the A&E nurse within the emergency care environment has not been defined within the profession, and this keeps hindering the professional development and extension of the range of practice of these nurses. If one can delineate the core competencies of the A&E nurse, it will then be possible to advocate the use of A&E nurses within the emergency care environment, thus paving the way to role expansion and professional growth in this clinical field of specialisation. This problem does not seem to be unique to the South African A&E nurse, as A&E nurses are apparently struggling with the same dilemmas worldwide.

The researcher has limited this literature review to mainly three countries, the United States of America (USA), the United Kingdom (UK) and SA. This was motivated by the fact that A&E nursing as a profession originated in the USA in 1970, followed by the UK in 1972 (McKay & Thayre 1999: 489). A&E nursing within the South African context will be thoroughly investigated to provide a background for the research.

3.3 UNITED STATES OF AMERICA

3.3.1 Historical background

According to Trunkey (2000: 36-46) the development of systems for trauma care in the USA has, until recently, been linked to wars. During the Revolutionary War care was based upon European trauma principles, particularly those espoused by the Hunter brothers. Surgical procedures were limited mostly to soft tissue injuries and amputations. Then came the American Civil War and remarkable contributions were made regarding the development of systems for trauma care, and for the first time anaesthetics were used on a routine basis. World War I and World War II were noteworthy because of the contributions made by surgeons in the use of blood, and many lessons were learned regarding the treatment and care of wounds. After the Korean Conflict the discovery was made of the tremendous fluid shifts into the cell after severe haemorrhage shock. During the Vietnam War treatment of patients with shock was altered, resulting in better outcomes and less renal failure.

McKay and Thayre (1999: 489-491) state that during the Vietnam War in the 1960s, the military medical services achieved significant advances in the areas of urgent treatment and care, triage, initial interventions and transporting patients. The first shock trauma nurses, Elizabeth Scanlen and Jane Tarrant, pioneered the nurse's role in the first two-bed shock/trauma research centre. Dr Cowley at the University of Maryland Hospital in Baltimore, Maryland, was in charge of this unit. In 1963 the University of Maryland received the first-of-its-kind grant from the National Research

Center to establish a centre for the study of trauma. This was followed by the opening in 1966 of another trauma unit in Chicago, the Cook Country Hospital (McQuillan et al. 2002: 15). The impetus for advancement of care during trauma continued through the 1970s and 1980s, due to the fact that the American public now expected and demanded the same raised standards of emergency treatment within their country (McKay & Thayre 1999: 489-491).

Supported by their medical colleagues from the American College of Surgeons, two visionary A&E nurses working on opposite sides of the United States, namely Anita Dorr in New York and Judy Kelleher in California, acted as founders of the Emergency Nurses Association (ENA) in 1970. The foundation of the ENA was regarded as the origin of A&E nursing as speciality (McKay & Thayre 1999: 489). In 1971 the first trauma nurse coordinators were hired for a Level I trauma centre in Illinois.

It was not until the mid-1980s that the national ENA in the United States began a dialogue with A&E nurses in other parts of the world, mainly prompted by requests from overseas nurses for information and assistance (McKay & Thayre 1999: 489). According to McQuillan et al. (2002: 15) from this time onward A&E nursing developed rapidly:

- 1983 – A trauma nurse network was organised to provide a communication link for trauma nurses.
- 1989 – The Society of Trauma Nurses was formed.
- 1993 – The inaugural issue of the *Journal of Trauma Nursing* was published by the Society of Trauma Nurses (McQuillan et al. 2002: 15).

3.3.2 Education

Education for A&E nurses started with the Maryland state EMS system. It was established when a trauma coordinator position for training, designation and evaluation was created in 1975 (McQuillan et al. 2002: 15). In 1979 the Emergency Nurses Association (ENA) established a certification programme and the first certification examination was administered in July 1980 (McKay & Thayre 1999: 489). This was followed by an Advanced Trauma Life Support (ATLS) Course for nurses (pilot programme), which was taught in conjunction

with a course for physicians in 1982 (McQuillan et al. 2002: 15). The Trauma Nursing Core Course (TNCC), started by the Emergency Nurses Association, followed in 1986 (McQuillan et al. 2002: 15). The Society of Trauma Nurses collaborated with the American College of Surgeons and ATLS Committees to provide the Advanced Trauma Care for Nurses Course in 2000 (McQuillan et al. 2002: 15). Presently, various programmes are available for A&E nurses to specialise in this clinical field.

3.3.3 Scope of practice

Scope of practice within the context of this study refers to what the A&E nurse can do as part of his/her role within the emergency care environment and delineates the boundaries of the professional activities and parameters of the A&E nurse (Hickey et al. 2000: 4).

One of the most frequently asked questions is: "What can A&E nurses do?" This question has been debated throughout the world. The researcher believes that the question should be answered by referring to the scope of practice of the A&E nurse. On the other hand, the scope of practice is linked to the core competencies required by A&E nurses to manage different scenarios.

This scope of practice is outlined by the Emergency Nurses Association (ENA), a professional organisation for the speciality of emergency nursing, recognising the role of the American Nurses Association (ANA) in defining the scope of practice for the nursing profession as a whole in the USA. The association focuses on defining the standards of A&E nursing, providing quality continuing education, supporting research within this clinical speciality and promoting the profession (ENA 1999a). The scope is broad and non-specific and it provides boundaries for A&E nurses. It contains elements regarding the practice environment, patient population, philosophy of care, educational preparation, practice arrangements, regulations and ethical considerations. It also declares that each state within the USA has the authority to regulate nursing practice through nursing practice acts. These

acts vary from state to state and therefore limit the practice of the A&E nurse (ENA 2000a; Curry 1994: 207).

The core statements by the ENA (1999a) regarding the scope of practice of the emergency nurse are quoted as follows:

- "it involves the assessment, analysis, nursing diagnosis, outcome identification, planning, implementation of interventions and evaluation of human responses to perceived, actual or potential, sudden or urgent, physical or psychosocial problems that are primarily episodic or acute, and which occur in a variety of settings"
- "may require minimal care to life-support measures; patient, family, and significant other education; appropriate referral and discharge planning; acknowledgement of legal implications"
- "emergency patients are people of all ages with diagnosed or undiagnosed problems of varying complexity"
- "emergency nurses interact with and care for individuals, families, groups and communities"
- "emergency nursing practice is independent and collaborative in nature"
- "the practice of emergency nursing also includes the delivery of compassionate, competent care to consumers through education, research and consultation"
- "emergency nursing occurs in hospital emergency departments, pre-hospital and military settings, clinics, health maintenance organisations, and ambulatory care centres; business, educational, industrial and correctional institutions; and other health care environments"
- "emergency care is also at the point of contact with consumers; where they live, work, play or go to school"

When evaluating the scope of practice for A&E nurses in the USA it seems that they too have the same problems as perceived in the UK and SA – a broad non-specific scope of practice, which is interpreted differently in each state. The actual scope of practice therefore varies considerably from state to state.

3.4 UNITED KINGDOM

3.4.1 Historical background

According to McKay and Thayre (1999: 489) the first A&E nursing group in the UK was established in 1972 at the Royal College of Nurses (RCN). Three prominent A&E nurses, Betty Hoy, Kate O'Hanlon, and Ethel Buckles, led 60 nurses throughout the UK to establish a speciality within the RCN in the early 1970s. With the help of Margaret Lee, a nursing practice advisor at the Royal College of Nursing, the Accident and Emergency Forum was established in 1972. The main issues debated at this forum included the need to develop specialist education courses for A&E nurses, effective implementation of triage and the need for legislation to mandate the use of seat belts in motor vehicles (McKay & Thayre 1999: 489).

The first International Accident and Emergency Conference held in association with the Accident and Emergency Nurses Forum of the Royal College of Nursing took place in London in 1985. A&E nurses from around the world had an opportunity to share experiences and explore differences and similarities regarding A&E nursing (McKay & Thayre 1999: 489). In 1995 the association developed the concept of integrating practice development, education, research and policy to create a faculty of emergency nursing. The ultimate aims were to establish levels of clinical competency and to develop a career pathway (Sowney 2000: 73).

3.4.2 Education

Like all developing specialities, sometimes the range of education and training opportunities can lead to some confusion with no clear pathway. In 1988 the Royal College of Surgeons in England examined the emergency management of patients with major injuries. A retrospective study of 1 000 trauma-related deaths highlighted that there were many deficiencies in trauma care, ranging from inappropriate initial resuscitation, to delays in providing definitive care to patients. As a result of this report, the Advanced Trauma Life Support Course, developed by the American College of Surgeons, was introduced in

the UK. This was specifically designed to teach doctors a concise approach to assessing and managing the multi-injured patient (Sowney 2000: 73; McGinley 1999). At present A&E nurses can attend the ATLS course, but do not receive recognition.

McGinley (1999) cites that although the role of A&E nurses is "difficult to identify" and "not explicit", Lomas and Goodall (1994) states that A&E nurses form the backbone of the A&E departments and it is therefore important to educate nurses and specifically train them in this clinical field of speciality in order to improve the care of trauma patients. This view is supported by Sowney (2000: 73). In November 1990 the Trauma Nurse Core Course was imported from the United States, followed by the Advanced Trauma Nursing Course in February 1991. British nurses then started to state their beliefs and values regarding the specific management of trauma patients. Nurses were now trained within this clinical field (McGinley 1999).

In 1997 the Faculty of Emergency Nursing was launched. The faculty has two complementary aims, namely to develop nursing practice in a way that would ensure that patients receive the highest standards of care, and to assist A&E nurses in achieving their own professional goals. The faculty will therefore define standards of competence for A&E nurses, develop a core educational curriculum and focus on continual professional development (http://www.rcn.org.uk/faculty/emergencynursing/whyformed.php).

3.4.3 Scope of practice

In the UK A&E nurses are guided by the Scope of Practice and the Code of Professional Practice. Due to the fact that this scope of practice (see 3.3. – United States of America) is broad and non-specific, confusion arises regarding the professional boundaries – leaving nurses subject to conflict and a lack of clarity concerning legal accountability between the nursing and medical professions. Jones (1999: 59) states that improvements in practice are brought about by external pressures. In the UK such pressures are caused by the reduction in the availability of junior doctors, increasing workloads and the availability of multiprofessional education programmes.

Increasingly, A&E nurses have expanded their roles to encompass assessment, diagnosis, prescription of treatment and medication, and referral or discharge.

Carroll (2002) states that discrepancies, debates and arguments occur among academics, professional bodies and local health trusts as to the nature and expertise of levels of practice when it comes to specialist or advanced nursing practitioners. The NHS Executive and the UKCC have failed to provide adequate definitions and regulations regarding specialist and advanced practitioner roles. Carroll (2002: 33-35) states that Machin (1998) offered a suggestion that the advanced practice of nurses should be examined in three areas, including role adequacy associated with the level of practical knowledge and skills, role legitimacy associated with boundaries of practice, and role support with involvement in a range of levels of courses. The Faculty of Emergency Nursing should be in a position to see that all these areas are included in advanced practice A&E nursing.

3.5 SOUTH AFRICA

3.5.1 Historical background

In SA the first hospital had been established in 1652 in the Cape with the settlement of Jan van Riebeeck. It was not, however, until the arrival of the settlers from Britain in 1820 that nursing was properly introduced in this country (Masson 1985: 98). The South African War (Anglo-Boer War) in 1899-1902 had a tremendous impact on nurses and this could be seen as the start of accident and emergency nursing within the country. Although not recognised as professionals, nurses found themselves closer to the front lines than ever before, living in tents and overwhelmed not only by victims of war, but also confronted with enteric and typhoid fever (Masson 1985: 99). This was followed by influences from World War I and World War II, economic recessions, droughts, the introduction of the apartheid policy and the establishment of the Government of National Unity. These factors all shaped

the practice of nurses and midwives, but the main factors moulding these professions, came from within the professions (Searle & Pera 1997: 9).

According to Masson (1985: 98-99) the Order of St Thomas the Martyr sent Sister Emma and five associates, of which one was the famous Henrietta Stockdale, to found an Anglican nursing and teaching order at Bloemfontein. Searle and Pera state (1997: 10) that Henrietta Stockdale was the pioneer of trained nursing from as early as 1883, and until the present day nursing education has been the vital force in moulding the individual nurse. On 1 October 1914 a professional nurses association, the South African Trained Nurses Association, was established – to be replaced by the South African Nursing Association in 1944. The Association contributed immeasurably to the development of practice standards, norms and values of the profession. In 1922 post-basic nursing courses were introduced and presented at university level as early as 1935. These were followed by the introduction of baccalaureate degrees in nursing in 1955 and master's and doctoral degrees from 1967 (Searle & Pera 1997: 10).

As no literature could be found regarding the origin of A&E nursing in SA the researcher decided to conduct personal and telephonic interviews to gather first-hand information on the subject from A&E nurses within the country (see 3.5.2 – Education).

3.5.2 Education

3.5.2.1 Educating A&E nurses

The following data regarding the origin of A&E nursing as a postgraduate clinical specialisation in SA was gathered during personal and telephonic interviews with A&E nurses who had been involved in A&E nursing over a long period.

The need to start A&E programmes arose from the fact that registered nurses working in Level I hospitals realised that patients were not adequately stabilised in peripheral hospitals (Levels II, III and IV) before being transported to tertiary hospitals for further treatment. The main aim was therefore to

educate nurses working in peripheral hospitals and in rural and remote areas to stabilise the critically ill patient before transportation. Appropriate education would lead to decreased patient morbidity and mortality.

According to the ENA (2000a: 377) trauma care facilities are characterised as follows:

- A Level I trauma centre provides the most sophisticated care if managed as an acute and tertiary centre
- A Level II centre provides initial definitive trauma care with the ability to transfer to a Level I centre
- Level III and IV centres commensurate with local resources regarding their commitment to trauma care
- This is therefore also regarded as the appropriate environment for the development of this nursing discipline in the SA context.

The first A&E course was started by Rosa Sneggons in the Groote Schuur Hospital, Cape Town, in 1978/79 (Sneggons 2001). This programme encompassed both medical and trauma emergencies. Following soon, a programme was started at the Johannesburg General Hospital in 1986, presented by Rosa Sneggons and mainly aimed at trauma emergencies and the management of the severely injured patient (Delgety 2001; Toubkin 2001 & Doubell 2001). Yvonne Delgety and Vanessa Doubell later presented this programme. Both these programmes were not listed with the SANC.

In February 1992 a six-month programme, presented by Emmerentia Jansen van Rensburg, was started at the H F Verwoerd Hospital (now called the Pretoria Academic Hospital). This was the first programme to be listed with the SANC and was mainly aimed at the management of the trauma patient (Jansen van Rensburg 2001 & Thompson 2003). In 1996 the Rand Afrikaans University started a year programme in cooperation with Netcare. Glenda Mellet was the lecturer presenting the theory and Inge Tully was in charge of the practica accompaniment (Doubell 2001). This programme covered both accidents and emergencies managed within the emergency environment.

After these breakthroughs more programmes followed at various tertiary institutions. This field of study is presently registered with the SANC as a post-basic clinical speciality, mainly pertaining to the management of both accidents and emergencies. This is due to the fact that most A&E units not only manage trauma patients, but in accordance with the scope of A&E nursing practice, also have a mandate to care for a wide spectrum of patient populations and conditions.

3.5.2.2 Outcomes-based education

Across the world students and lecturers have been dissatisfied with education and training and came to the conclusion that it was ineffective and irrelevant (Malan 1997: 2). The initiatives of Sir Keith Joseph, the Secretary of State for Education and Science in the UK, led to a paradigm shift in education. The shift was towards outcomes-based teaching and learning within the education systems of first and third-world countries (Malan 1997, 2-3).

A paradigm shift in the form of outcomes-based education and training has now also taken place in SA. The new South African Qualifications Act states that all education and training should be outcomes-based and its primary aim is to ensure that SA will become an international economic role player through the augmentation of a culture of lifelong learning (Olivier 1998: ix & 1).

The development of a national, outcomes-based qualifications framework was accomplished to create lifelong learners, integrate theoretical and practical learning, and teach what is relevant to the learner and country in an accessible and flexible manner (Malan 1997, 3). The South African Qualifications Authority (SAQA) describes the requirements for qualifications, outlines procedures and stipulates rules that regulate assessment as incorporated in the National Qualifications Framework (NQF). It rests on the premise that standards should be nationally prescribed, but that the learning content and processes should be determined regionally, locally or institutionally (Malan 1997: 4). This framework also provides means to enable the person, which in this case is the A&E nurse, to achieve nationally recognised and internationally comparable qualifications (Olivier 1998: 1).

Outcomes-based learning is learning where the process is learner-driven and the outcomes will be derived from the job description and will be influenced by the context (Malan 1997: 2 - 3). Outcomes-based learning reflects the belief that the best way to get where you want to be, is to first know where you want to go – and once the goal has been determined, strategies can be implemented to achieve the goal (Olivier 1998: 20; Van der Horst & McDonald 2001: 5). The core competencies integrated into the outcomes-based education are the different areas of learning that include knowledge, skills, values and attitudes (Malan 1997: 19).

As in other countries, educational programmes developed in SA have been based on beliefs associated with the role of A&E nurses in the emergency care environment, and the various programmes differ in content. This view is supported by Cole and Ramirez (1999: 547).

According to Van der Horst & McDonald (2001: 3) learners should take responsibility for their own learning. This statement implies that nurses practising within the emergency care environment should prescribe the learning outcomes for the A&E nurse. A&E nurses have acquired insight, clinical experience and expertise within their profession and although curricula exist for the training of A&E nurses, there is no concurrence with reference to the research topic.

According to Van der Horst & McDonald (2001: 4) developing an outcomes-based curriculum offers many advantages that could be implemented during the training of the A&E nurse:

- Careful planning is vital for successful teaching, thereby ensuring that the educator knows what the A&E nurse perceives as vital knowledge, skills, values and attitudes required to manage patients in life-threatening situations. With a clear purpose, the educator can plan and select the appropriate content and prepare this component of the curriculum.
- A&E nurses will know what is expected of them in theory as well as in the emergency care environment and how to measure their own achievements.

- Educational institutions will be able to monitor the learner's progress in terms of specific learning achievements.

Outcomes-based education means that there should be proper and effective management and strategic planning for achieving results based on outcomes. The educator should determine the knowledge, skills, values and attitudes the learner (in this case the A&E nurse) needs on completion of a specific section of work (Van der Horst & McDonald 2001: 13).

3.5.3 Scope of practice

The professional-ethical responsibilities of the registered nurse in SA are empowered and authorised by the scope of practice set out in Regulation R.2598 (Regulation R.2598, 1984) and Regulation R.387 (Regulation R.387, 1985). Both the scope of practice and the regulations relating to the acts and omissions indicate that, above all, nursing should be characterised by righteousness towards the patient, and such righteousness should encompass competence, integrity and compassion (Searle & Pera 1997: 273).

The view of leaders in the nursing profession is that a scope of practice could never be defined by means of detailed acts and procedures, but by means of broad concepts that will allow for the professional development of the A&E nurse (Searle & Pera 1997: 186). The fact that the scope of practice, including the proposed new scope of practice, is written in such a manner that it does not restrict the continual developing of the nursing profession and does not set any boundaries to the extent to which each of the stated acts or procedures can be performed, provides certain dilemmas for the A&E nurse working within the emergency care environment. It seems that A&E nurses in SA are experiencing the same problems as their fellow nurses in the UK and USA.

According to Muller (1998: 83) the primary professional responsibility for which the nurse can be held liable, is the maintenance of the patient's health status, which will also include the health status of the patient during a life-threatening situation. If the nurse neglects to carry out the prescribed

professional responsibilities and such negligence is harmful to a patient, disciplinary actions by the SANC can be taken in terms of the rules set out by the acts and omissions (Regulation R.387, 1985).

The legislation regarding nursing empowers the A&E nurse to practise her profession in any type of health care setting, for the parameters of such a practice are competence, authority, responsibility, accountability, independent decision-making, collaboration, facilitation, advocacy, nursing diagnosis, planning of nursing interventions and recording (Searle & Pera 1997: 192). Defining the scope of practice of the A&E nurse is difficult, due to the fact that the development of the profession is not stagnant, but a written scope of practice sets standards that help to regulate practice (ENA 1999a).

3.6 ROLES AND DUTIES OF A&E NURSES

The current literature on the roles and duties of A&E nurses internationally is discussed. The sub-headings cover the philosophy of care, the emergency care environment and the role of the A&E nurse.

3.6.1 Philosophy of care

The philosophy of care regarding the A&E nurse as described by Cole, Ramirez and Luna-Gonzales (1999) is applicable to the South African environment. This perspective states that all patients who enter the emergency care environment are assumed to have a life-threatening illness or condition, irrespective of the initial chief complaint or reason for seeking care. It is therefore expected from the A&E nurse to use a blend of medical and nursing knowledge. Medical knowledge is used to diagnose and prescribe medical interventions, such as medication or to perform a procedure. All these interventions are then incorporated into a nursing care plan for the patient. As part of the nursing care plan, the A&E nurse may for example educate patients regarding their condition and treatment, discuss preventative measures, address effective means of self-care when discharged and assist patients with adapting to changes in lifestyle necessitated by the condition or

treatment. This philosophy is also applicable to the management of life-threatening conditions.

3.6.2 Emergency care environment

The practice environment of the A&E nurse is very wide: The A&E nurse provides health care to individuals, families and communities in a variety of settings, including – but not limited to – emergency departments, urgent care centres and pre-hospital environments (Cole et al. 1999). As the role of the A&E nurse continues to evolve, new practice settings will emerge (Cole et al. 1999).

A&E nurses provide emergency care in a variety of settings, ranging from a Level I emergency care unit to rural and remote sites. A&E nurses are assuming increasingly more responsibilities in providing health care, and many skills and procedures that were once performed only by physicians are now being performed by A&E nurses (ENA 1999a). According to the ENA (2000) A&E nurses are currently underutilised due to the fact that there is a lack of awareness of their abilities. This is also applicable to the SA context.

The role of the A&E nurse in the pre-hospital environment, including both ground and air emergency care, has been well documented. In addition A&E nurses have a long history of providing education to pre-hospital care workers (ENA 1998). The ENA (1998) stated that A&E nurses practising within this environment, should not be required to obtain a qualification other than the A&E nursing qualification, as this qualification should be adequate.

The problems regarding the SA A&E nursing context stipulated by Geyer (see 1.2 – Background to the research problem) were seen as potential problems in the USA as well. The ENA (1998) also stated that focused education and subsequent maintenance of specifically pre-hospital knowledge and skills must be a prerequisite for these nurses and that they should be regulated by State Boards of Nursing and seek recognition by the state EMS agencies for A&E nurses as unique providers of emergency care in the pre-hospital

environment. According to a position statement by the ENA it seems that A&E nurses in the USA experience the same problems as A&E nurses in SA:

- EMS agencies regulate the practice of the pre-hospital environment.
- Registered nurses who practise in the pre-hospital environment are required by law to function under a pre-hospital credential rather than under a nursing licence.

Limited use is made of A&E nurses in the pre-hospital environment in the UK, where there is a paramedic system based on specialised training. In Sweden, however, A&E nurses have been used effectively within this environment where a paramedic and an A&E nurse work as a combination team (Suserud & Haljamäe 1997: 145). In SA nurses are working in the pre-hospital environment as flight nurses and as first responders. However, when A&E nurses are acting as first responders, they are expected to obtain a qualification within this environment and then work according to these protocols and not within the scope of practice applying to the registered nurse (Regulation R. 2598, 1984).

Other roles for nurses within the pre-hospital environment in the UK include clinical manager, auditor, trainer and first responder. It is therefore evident that both clinical and non-clinical roles are included (Crouch & Hodgetts 2000: 64 - 67). A&E nurses working within the pre-hospital environment as part of the ambulance team, may derive a number of benefits from this role, including a broader clinical perspective, a different underpinning knowledge and the ability to use a "protocol-free" judgement (Crouch & Hodgetts 2000: 64).

3.6.3 Role of the A&E nurse

Accidents and emergencies continue to occur in epidemic proportions in our society as well as throughout the world, and the A&E nurse has a vital role in delivering health care within this environment. Despite this, little is known about the activities of A&E nurses in the emergency care environment, nationally and internationally (Cole & Ramirez 2000: 455).

A review of the literature revealed minimal information about the role of A&E nurses in emergency care departments (Cole & Ramirez 1999: 547). Tye (1997: 364) states that the role of the A&E nurse within the emergency care environment is rapidly developing in the UK, and the extended role has recently been a subject of increasing attention. This statement is consistent for A&E nurses in the USA and SA.

Cole et al. (1999: 547-550), an American author, believes that A&E nurses should be able to –

- assess, diagnose and treat patients of all ages with conditions ranging from urgent to non-urgent
- order and interpret diagnostic tests, as well as perform diagnostic and therapeutic non-invasive and invasive procedures for these patients
- determine the disposition of emergency department patients

Cole et al. (1999) state that various authors believe that the initial role of A&E nurses resulted from a need for health care providers to deliver care to a growing number of patients with non-urgent problems who sought health care in rural emergency departments. This need has evolved into a need for A&E nurses who can provide high-quality and cost-effective care to persons who seek health care for urgent, non-urgent or emergent conditions in a variety of emergency care environments, including emergency departments.

In SA the A&E nurse is an essential member of the health care team, reflecting the needs of the hospital and surrounding community in his/her role and functions. One finds that in some small community hospitals A&E nurses function without full-time physician coverage, but in the larger hospitals they have full-time coverage of a physician that can vary from a specialised trauma surgeon to a general practitioner (a GP in most of the cases). Although their environments may differ, the roles of A&E nurses are similar, except that some are required to perform their activities under the direct supervision of the physician, while others are not directly accountable to the physician.

According to Searle (2000: 175 - 176) modern professional nursing is both a science and an art. It not only includes a motivational force of compassion, empathy, concern, sympathy and love for one's fellow human beings, but also scientific knowledge and skills. Searle (2000: 163-164) states that the professional nurse has an expressive and an instrumental role. The instrumental role is concerned with the acquisition of knowledge about the patient's health condition. Thereafter that knowledge should be used to search for solutions to the problem, and then for planning and implementing specific nursing interventions. Following scientific grounds to resolve the problem, remains the foundation throughout. The expressive role is concerned with the establishment and maintenance of an extensive and therapeutic intervention and is system integrating, providing total well-being of the patient. This role is therefore aimed at reducing the patient's tension by accepting the person as he is and then supporting him through basic nursing care.

It is further important to identify his health needs correctly, to obtain appropriate assistance from other members of the health team and finally to carry out the therapeutic intervention and nursing care in the right manner. Inefficiency and negligence in the expressive role will give nurses a poor image, for it is the particular interpretation of the expressive role that has given nursing its distinctive character. The changing role of the professional nurse, with so much more emphasis being placed on the instrumental role, will have a deleterious effect on the image of nursing in the future.

Nursing is not merely concerned with knowledge and skill performance when managing a patient, but should also include the caring role to ensure its distinctive character. Nurses must provide individualised nursing care and guard against the nursing process becoming so problem-orientated that the needs of the patient are no longer identified.

Both these roles are therefore applicable to the A&E nurse and will have to be incorporated in the education of these nurses – not only teaching knowledge and skills, but also addressing values and attitudes in the curricula and

ensuring that these nurses are able to function independently within the emergency care environment.

Searle (2000: 168-169) also states that the A&E nurse has a dependent, independent and interdependent function on behalf of his/her patient. The dependent function of the nurse is related to obeying the law that authorises his/her practice as well as common and relevant statutory laws. The A&E nurse can only function as a nurse if he/she is registered and is dependent on the law to be a nurse and perform certain functions.

The independent function relates to a profession separate from that of medicine and the A&E nurse must therefore have an independent function from the doctor. The independent function of the nurse has four aspects which relates to the following:

- The factors inherent in nursing assessment, diagnosis, treatment and care.
- The manner in which the nurse carries out his/her duties as a registered nurse – regardless whether these are independent or interdependent functions – being responsible and accountable for his/her actions and not holding the doctor accountable for them.
- Only the A&E nurse can decide whether he/she has the knowledge and competence, and whether the act would be legally and/or ethically permissible for him/her to practise or carry out on his/her own.
- He/she has a duty to act responsibly within the parameters of his/her scope of practice, the legal and ethical constraints and his/her own level of competence (except in an emergency) – this duty forming the basis of his/her accountability.

The interdependent function refers to teamwork between health professionals and one must remember that a common goal must be reached. There are certain actions needed in the treatment of a patient that can only be authorised legally by a registered medical practitioner. In no way should this particular aspect make the nurse subordinate to the other practitioners, but due recognition and attention should be given to the functions of the other practitioners when attending the patient. These functions therefore have to be

spelled out: "Whether the doctor is the leader of a health care team or not, the registered nurse is personally accountable for her professional acts of omission and commission" (Searle 2000: 173).

Although A&E nurses strive to extend their roles, there could be a potential risk of performing a medical substitute role – carrying out medically delegated technical tasks (Tye 1997: 364-370). Such an issue lies, however, not within the scope of this research. When managing a life-threatening situation, potentially life-saving and split-second decisions must be taken on the spot and advanced life-support procedures performed without losing precious time or considering medico-legal implications.

To provide care and alleviate suffering is the very heart of the nursing profession, and true to this image the A&E nurse is committed to apply his/her special skills, knowledge, values and attitudes in a life-threatening situation. In line with several previous studies, the researcher considers clinical competence to be the most important aspect of nurse caring behaviour (Baldursdottir & Jonsdottir 2002: 67).

3.7 BOUNDARIES OF THE PRACTICE (CORE COMPETENCIES) OF A&E NURSES IN LIFE-THREATENING SITUATIONS IN THE EMERGENCY CARE ENVIRONMENT

The A&E nurse must practise within the professional boundaries as outlined by regulations and furthermore be aware of the legal liability and ethical responsibility for the delivery of patient care. He/she must continually maintain professional accountability (ENA 2001). The boundaries set by the ENA (1999b) were the only source of information regarding this topic that the researcher was able to obtain.

These boundaries are explained as being both external and internal. The external boundaries include legislation, regulations, demands made by the society expecting quality emergency care, the economic climate of the

country, health care delivery trends and resources available. The internal boundaries include forces that fall within the professional practice of nursing, e.g. the American Nurses Association's guidelines for practice, quality improvement activities and institutional and departmental policies and procedures.

ACLS, PALS and ATLS, three international courses available for doctors, paramedics and A&E nurses, were used as the backbone for setting the boundaries. All three courses can be attended by A&E nurses, but only ACLS and PALS issue the A&E nurse with a care provider certificate, proving that he/she has successfully completed a course. The ATLS course, for unknown reasons, issues only an attendance certificate – despite protest from the side of nurses passing the examination.

The extensive grey area between the work of the nurse and that of the doctor is recognised by the Medical, Dental and Supplementary Health Service Professions Act of South Africa (Searle 2000: 175). The existence of this area is obvious when it comes to the management of life-threatening situations.

In order to qualify for ACLS and PALS certificates, the knowledge and skills required from doctors, paramedics (whose protocols are based on these courses) and A&E nurses must be of equal standard. One would therefore presume that the knowledge and skills provided to patients in life-threatening situations by these three practitioners should also be on the same level and should be provided by doctors, paramedics and A&E nurses.

The role of the A&E nurse in a life-threatening situation should therefore not be underestimated. It is evident from a qualitative study done by Hughes (1988) that experienced A&E nurses are frequently advising junior doctors regarding areas of diagnosing and treatment, without formal recognition (Tye 1997: 364-370). It is also a fact that courses applying to life-saving skills in an emergency situation are at times presented to medical practitioners and paramedics by A&E nursing speciaslists.

It is, however, important to delineate the boundaries. According to Searle (2000: 176) the law imposes certain limits on all registered health professionals. In the case of A&E nurses, it is essential to realise that –

- they are dependant on the laws and regulations authorising their practice
- they cannot perform professional acts for which they are not adequately trained

3.8 CONCLUSION

It is evident that trauma is seen as an entity on its own in the USA, but in the UK trauma is seen as part of Accident and Emergency Medicine. The researcher believes that within the South African context one cannot separate trauma from other medical emergencies, as all these emergencies are treated within the emergency care environment, whether this is in a pre-hospital or hospital environment.

From the literature review it is also evident that in order to deliver competent, compassionate and high-quality care it is essential to state the core competencies required by A&E nurses to manage non-urgent and life-threatening situations in the emergency care environment. This will promote the profession and elicit recognition and acceptance of A&E nurses from other health team members. This research therefore aims to provide recommendations regarding the core competencies required by A&E nurses to manage life-threatening situations in the emergency care environment.

A&E nurses should be recognised as an autonomous field of speciality within the nursing profession, with an independent scope of practice that stipulates the core competencies that may be used by A&E nurses in life-threatening situations. It can be stated that A&E nurses can be held responsible for their acts and omissions, when their core competencies used during life-threatening situations in their professional practice are supported by both the A&E nurse and SANC and promulgated as official regulations.

Debate and argument surrounding the issues of knowledge, skills, role preparation and educational requirements are ongoing throughout the USA, UK and SA, partly due to the fact that literature addressing the issue is limited and inadequate throughout the world. This researcher established that no similar research studies have been undertaken or published so far within the SA context or internationally, and that little is known regarding the topic.

In SA there is much disagreement between academics, professional bodies and A&E nurses as to what the nature and expertise levels of practice are and should be. The researcher aims to clarify these issues by defining the emergency care environment as perceived by A&E nurses and by determining the core competencies required by A&E nurses to manage life-threatening situations in this environment. Recommendations will then be provided as to which core competencies should be included in the curricula.

In the following chapter the research results and analysis will be discussed in detail.

CHAPTER 4

RESEARCH RESULTS AND ANALYSIS

4.1 INTRODUCTION

This chapter reviews the results and analysis of the qualitative data, the compilation of the questionnaire and the results and analysis of the quantitative findings of the study. The findings are also discussed in the light of previous research findings and available literature, where applicable, in order to identify similarities and differences between this study and previous studies and literature. A comprehensive description of the research methodology was given in Chapter 2.

4.2 RESULTS AND ANALYSIS OF THE QUALITATIVE DATA

4.2.1 Introduction

During the conceptual phase of this study, qualitative data was collected. The first step involved personal and telephonic interviews in order to investigate the development of A&E nursing in SA. The data collected during these interviews was included as part of the literature review, and will therefore not be discussed in this chapter.

The third step included the FGI with experts who assisted the researcher to compile a questionnaire. After transcribing the FGI (see Annexure C – A sample of the transcribed FGI) the data was analysed as prescribed in Chapter 2.

In order to define the "emergency care environment" as perceived by A&E nurses and to determine the core competencies that are required of the A&E nurse in order to manage life-threatening situations in the emergency care environment, three questions were asked (see page 37) and the following five topics were discussed with experts during the FGI:

- The ***context*** within which the A&E nurse can practise (see Table 4.1 – Context: major categories and subcategories)
- The components of the ***systematic approach*** when managing life-threatening situations (see Table 4.2 – Systematic approach: major categories and subcategories)
- The ***knowledge*** required by the A&E nurse when managing a life-threatening situation (see Table 4.3 – Knowledge: major categories and subcategories)
- The ***skills*** required by the A&E nurse when managing a life-threatening situation (see Table 4.4 – Skills: major categories and subcategories)
- The ***attitudes and values*** required by the A&E nurse when managing a life-threatening situation (see Table 4.5 – Attitudes and values: major categories and subcategories)

Each topic has been individually presented in a table, showing the main categories and subcategories obtained during the FGI and followed by supportive literature.

4.2.2 Results and analysis

4.2.2.1 Context

To enable the researcher to define the "emergency care environment" within which the A&E nurse practises, the researcher asked the experts what they considered to be the context within which the A&E nurse should practise.

The experts agreed that life-threatening situations do not only pertain to trauma, but include other emergencies, such as medical emergencies. Most of the accident and emergency units in SA are not dedicated trauma units, but treat all accidents and emergencies, and individuals of all age groups. It was decided that all trauma courses should be transformed into A&E nursing programmes in SA. The A&E nursing programme should enable the A&E nurse to practise within the South African context and should therefore include all accidents and emergencies that are managed in accident and emergency

units, treating all individuals of different age groups, as well as the pregnant patient.

This viewpoint was immediately confirmed by group reaction. The question regarding the context within which the A&E nurse should practise, elicited the following statements from the respondents:

- *…That is the most controversial question…*
- *…I don't think it is limited to one environment…*

The controversies that were discussed concerned mainly the pre-hospital environment and correlated with the rationale for this research. The first issue concerned dual registration, already discussed in Chapter 1. Some of the responses were:

- *…that should include the pre-hospital environment…*
- *…dual registration remains an issue…*
- *…I would certainly fight tooth and nail not to have dual registration…*

The second issue that divided the group in two, was whether the A&E nurse was able to practise within a pre-hospital environment mainly related with roadwork. Roadwork refers to a national network patrolled by the emergency medical services in order to provide aid and medical assistance ranging from primary response to definitive care. One group felt that A&E nurses could work on the road and the other group felt that they could not. The discussion did not concern the knowledge, skills, values or attitudes regarding the management of life-threatening situations within this environment, but the safety aspect and extrication of accident victims from motor vehicles were of great concern. The following statements were made:

- *…we would be getting into people's way in terms of car rescues…*
- *…I think we can work on the road…there are areas where we do need more education, like scene safety and rescue…*
- *…I do not want to follow their [referring to paramedics] protocols…*

The context was then divided into four categories, namely the clinical practice (consisting of the pre-hospital and hospital environment), management, education and research. The context within which the A&E nurse practises is

very broad as seen from the perspective of the experts. The subcategories were then listed according to the information retrieved from the FGI (see Table 4.1 – Context: major categories and subcategories).

Table 4.1 – Context: major categories and subcategories

Category	Subcategory
Clinical practice within pre-hospital environment	Primary response (ambulance)
	Inter-hospital transfers of the critically ill patient (ambulance)
	Aviation medicine: primary response (helicopter)
	Aviation medicine: secondary response (helicopter)
	Aviation medicine: secondary response (fixed-wing aircraft)
	Field hospital
	Disaster management
	Sports events
	Primary health care clinics
	Occupational health
Clinical practice within hospital environment	Provincial hospital: accident and emergency unit
	Private hospital/clinic: accident and emergency unit
	Military hospital: accident and emergency unit
	Outpatients department
Management	Consultant
	Managing a crisis centre
	Disaster planning and management
	Event management (e.g. sports events)
	Liaison management
	Managing an ambulance service
	Marketing
	Risk management
	Telephone triage
Education	Lecturing within the EMS (emergency medical service)
	Lecturing A&E nurses
	Educating community regarding health needs
	Injury prevention campaign
Research	Honours degree (research for report)
	Master's degree (research for dissertation)
	Doctoral degree (research for thesis)
	Research projects (other than the three above)
	Project development

Supportive literature indicates that A&E nurses have increasingly expanded their roles and that A&E nursing is no longer confined to the emergency unit, but is a developing clinical speciality (Jones 1999: 59). The ENA (1999b: 3) states that A&E nursing occurs in the hospital emergency department, pre-hospital environment, military settings, clinics, health maintenance organisations, ambulatory care centres, in business, educational, industrial and correctional institutions and other health care environments. During the FGI the extensive role of the A&E nurse within the SA context became evident.

The four categories in which nursing can be practised as described by Muller (1998: 1) correspond with categories that emerged for this section (ENA, 2000: xvii-xxxiii). These include clinical practice, education, management and research. No literature was found regarding the context within which the A&E nurse in SA practises and the researcher therefore had to make use of experts to provide this information.

As described in the literature review, little is known on the subject internationally. Although there is considerable debate regarding the role of A&E nurses in the provision of pre-hospital care, it is evident from standard American textbooks – outlining the core curriculum for A&E nurses (ENA 2000: 679-693) – that the transfer and transport of emergency patients are part of their training. The system components included in the core curriculum provided by the ENA correspond with the components of the Emergency Medical Services (EMS) system, namely medical control, a pre-hospital triage decision scheme, inter-hospital triage criteria, policies and procedures for all phases of transfer, transfer agreements, protocols for treatment and transport, and responsibility for decision to transfer. The patient care components include transport physiology, stabilisation and preparation for transport, nursing care during transport, arrival at receiving facilities and inter-hospital transport. Flight nurses and telephone triage are seen as specialised A&E roles by the ENA (ENA 2000: 773-774).

A&E nurses are still fulfilling their tasks during wartime as described by an A&E nurse during the Iraqi war in 2003 (Trauma 2003: 7). There are also A&E nurses working in the military environment within the SA context. It is therefore evident that nurses are involved in disaster management, not only in the pre-hospital environment but also in the hospital. The core curriculum of the ENA (2000: 695) also provides a chapter regarding disaster preparedness and management.

A&E nurses play a role as consultants in various capacities, such as reviewing records for an opinion, being an expert witness in legal cases (Carol 2002: 82) and even as medical adviser for a television hospital drama (Wallis 1999: 26). Other roles enacted within the emergency care environment were described by an A&E nurse during an interview about career development. These roles included ward management, primary health care and disaster management (Pickersgill 1999: 59).

Education on injury prevention is another task of A&E nurses nationally and internationally. In SA there are programmes running such as MAGPI (medics against paediatric injuries) presenting information sessions to children of different age groups on topics such as crossing a road safely and wearing seat belts. Safety programmes presented by A&E nurses internationally include for example the "Eddie Eagle Gun Safe programme" (Howard 2001: 485).

4.2.2.2 Systematic approach

The aim of this section was to identify the components of the systematic approach used during the management of life-threatening situations as perceived by the experts. This would enable the researcher to provide structure to the questionnaire. When asked to identify these components the entire group said:

- *ABCDE! (which is a well-known emergency and trauma abbreviation for airway, breathing, circulation, disability and exposure and environmental control)*

It was therefore evident that the experts all agreed on these components. Safety was added by one respondent to be included before the "ABCDE" and the whole group agreed on "SABCDE". Safety was first regarded as pertaining to oneself and to the patient, but later during the FGI it became evident that the experts included more knowledge and skills as part of this component:

- *…I don't know where it would fit…counselling skills and that's important…*
- *…can I disagree and say shouldn't that actually be part of your general training…that's where you do psycho [psychiatry]…*
- *…It's not covered…*
- *…crisis management should be included as well…*
- *…well certainly debriefing…*
- *…when after a critical incidence…that's something that is lacking in this country…*
- *…to debrief each other…*
- *…I think it's a life-threatening thing [post-traumatic stress]…you can't care for the patient …you just don't worry about the patient…*

It was then decided by the group to include crisis intervention, conflict management, debriefing and counselling skills under safety, based on the principle that if he/she does not have adequate knowledge and skills regarding these topics, the A&E nurse would in the long run not be able to complete the "ABCDE" on account of stressors and burnout when practising within the emergency care environment.

The group of experts decided not only to include the "SABCDE" as it was used in the management of severely injured patients involved in accidents, but to include the medical emergencies. The following comments were made regarding this issue:

- *Defibrillation, cardioversion…*
- *…don't forget pacing….*
- *…drugs…go up to "D" then…*
- *…"D" for drugs…(group confirmation)*

Adjuncts, special circumstances, medical history taking, secondary (head-to-toe) assessment and recording were later added to the "SABCDE" as forming part of the systematic approach:

- *…have to have the catheterisation [urine catheter insertion]…*
- *…put that under adjuncts…*
- *…adjuncts…NG [nasogastric tube insertion], urinary catheters [urinary catheter insertion]…those things…*
- *…adjuncts…yes…NG tubes [nasogastic tube insertion]…*
- *…safety…recording and reporting…I think there is safety in that as well…*
- *…documentation…(confirmation by the group)*
- *…secondary survey…there might be something leading to a life-threatening situation…(confirmation by the group)*

Due to the fact that each of the patients seeking emergency care is unique and a wide spectrum of the lifespan of the human being is covered (ENA 1999b) it was decided to include special considerations as a separate component (see Table 4.2 – Systematic approach: major categories and subcategories).

The primary assessment, medical history taking, secondary assessment and recording were regarded as the categories used for defining the knowledge and skills required of the A&E nurse in order to manage life-threatening situations in the emergency care environment.

Table 4.2 – Systematic approach: major categories and subcategories

Category	Subcategory
Assessment and recording	Primary assessment Airway and cervical spine control Breathing and ventilation Circulation with haemorrhage control Disability, differential diagnosis, defibrillation and drugs Exposure and environmental control Adjuncts Special circumstances
	Medical history taking
	Secondary assessment Head-to-toe assessment
	Recording

Supportive literature indicates that a specialised plan of care is a necessity for the management of the critically injured or ill patient and – regardless of the environment – mechanisms to address the patient during a life-threatening situation should exist (McQuillan et al. 2002: 109; Proehl 1999: 2).

Appropriate patient management consists of the rapid assessment and management of life-threatening pathology (McQuillan et al. 2002: 113; Sanders 2000: 483). The "SABCDE" forms part of the primary assessment of the patient and is the basis for all emergency interventions delivered. All these components assessed during the primary survey are of such a critical nature that any major deviation from normal requires immediate intervention (ENA 2000: 1; Mc Quillan et al. 2002: 111). It is based on logical sequential management priorities, and the prevention of irreversible tissue hypoxia and the management of life-threatening respiratory and cardiovascular instability, brain injury and spinal cord injury before definitive diagnosis, is often essential in the management of the critically injured or ill patient (McQuillan et al. 2002: 113). Appropriate knowledge and various skills are required to ensure adequate management of the patient with a life-threatening condition. This, however, will be discussed later.

- "S" stands for safety. A safe and appropriate environment is essential in both the pre-hospital and hospital environment. The hospital environment should be kept warm to reduce the risk of hypothermia (Dolan & Holt 2000: 26). The pre-hospital environment is fraught with hazards, some of which are common to many areas of practice, while others such as chemicals, electricity and moving vehicles are unique (Dolan & Holt 2000: 20). It is potentially dangerous and you should never enter a potentially unsafe scene until you know that it is safe, for the safety of the responder is a priority. A primary goal relevant to all pre-hospital responses is to do no further harm to the victim and to maintain the safety and well-being of all the responders (McQuillan et al. 2002: 97). The personal safety of the rescuers extends beyond the duration of the incident (Sanders 2000: 481).

According to Dolan and Holt (2000: 21) this concept also includes psychological safety. Due to the nature of the work, the A&E nurse who attends to victims involved in serious incidents is exposed to sights that can be psychologically disturbing. It is therefore important to have access to debriefing sessions in order to reduce the risks of long-term psychological effects. The ENA (2000: 704) includes stress management in the core curriculum and provides signs and symptoms of delayed stress reactions. Stress related to critical incidents can adversely affect the A&E nurse and his/her capacity to respond adaptively, and can have a direct effect on the outcome of a patient. It is therefore essential to have stress management programmes in place for the benefit of the A&E nurse and employer (Caine & Ter-Bagdasarian 2003: 59). It would also ensure that the A&E nurse is able to provide the best nursing care available to the patient during a life-threatening situation.

Universal precautions should be taken with all patients. Safety therefore also consists of wearing protective clothing – both in the pre-hospital and hospital environment – to protect the A&E nurse from blood-borne pathogens (Sanders 2000: 483; Dolan & Holt 2000: 26). The use of lead aprons for all staff members should be compulsory when X-rays are taken (Dolan & Holt 2000: 26).

- "A" stands for airway and includes cervical spine control. The aim in both accidents and medical emergencies is to ensure that the patient maintains a patent airway. If this is not the case, the A&E nurse will need to perform other methods to ensure this. It is important to simultaneously maintain cervical spine integrity when managing patients involved in accidents (ENA 2000: 2; Dolan & Holt 2000: 26; Sanders 2000: 484). In a life-threatening situation the airway could be partially or totally obstructed, for example by the tongue, vomitus, blood or airway oedema. This is unacceptable and requires immediate intervention by the A&E nurse – either by securing it manually or with adjunct equipment such as the jaw thrust manoeuvre, oral or nasal airways, suction and endotracheal intubation.

- "B" stands for breathing and includes ventilation (ENA 2000: 4; Dolan & Holt 2000: 26). A patent airway does not automatically mean that the patient is able to breath properly, and therefore the A&E nurse should watch for adequate chest movement, and depth and symmetry of chest movement (Dolan & Holt 2000: 27; Sanders 2000: 484). It should also include auscultation and percussion of the chest for abnormalities. The A&E nurse will then have to decide whether supplemental oxygen via a face mask or oxygenation and ventilatory support via bag-valve-mask ventilation, followed by endotracheal intubation (or other means to ensure a patent airway) and mechanical ventilation, is necessary (Sanders 2000: 484-485; ENA 2000: 11).

- "C" stands for circulation and includes haemorrhage control. (ENA 2000: 5; Dolan & Holt 2000: 26). It also includes the initiation of cardiopulmonary resuscitation (CPR) if indicated (ENA 2000: 13; McQuillan et al. 2002: 111) and interventions to increase perfusion (ENA 2000: 13).

- "D" stands for disability and includes differential diagnosis, defibrillation and drugs. A simple and rapid assessment of the patient's neurological status should take place during the primary assessment (ENA 2000: 13; Dolan & Holt 2000: 28). One should also look for possible causes of a decreased level of consciousness, such as drugs, alcohol and cerebral oedema. Drugs should be given as indicated (ENA 2000: 13). The sequence of care for ventricular

fibrillation and pulseless ventricular tachycardia includes basic life support, defibrillation, endotracheal intubation and intravenous access (Sanders 2000: 830). Due to the fact that rapid defibrillation is crucial to increase the patient's chance of survival and for each minute that passes there is a 7-10% reduction of success, it was decided to include defibrillation under "D" (Proehl 1999: 3, 272).

- "E" stands for exposure and environmental control (Dolan & Holt 2000: 26). At the end of the primary assessment every item of clothing must be removed without risking further damage to the patient, and the patient must be log-rolled so that the back can be fully examined. Hypothermia increases the risk of mortality and morbidity for the trauma patient and must therefore be prevented and/or reversed.

- Adjuncts include the insertion of an arterial line, a nasogastric tube and urinary catheter. There was no supportive literature regarding this aspect, but within the South African context this term is often used.

When medical history is taken during the management of life-threatening situations, the "AMPLE" approach is used. "AMPLE" is an abbreviation for the following aspects of history taking: allergies, medications currently being taken, past illnesses, last meal and events preceding the injury or illness (Dolan & Holt 2000: 29; McQuillan et al. 2000: 113). Two further aspects included in history taking are the abbreviations "S" and "DEATH". With "S" the history relevant to wearing a safety belt during a motor vehicle accident is noted. The abbreviation "DEATH" stands for diabetes, epilepsy, asthma, tuberculosis and hypertension – the five most important chronic diseases found within the SA context.

Initial history taking is followed by secondary (head-to-toe) assessment – a rapid and systematical evaluation of the injured and critically ill patient to identify all injuries and determine the aetiology of signs and symptoms that seem unclear (Proehl 1999: 4). Although this assessment is not regarded essential to manage life-threatening situations, it might aid the A&E nurse in

recognising a potential life-threatening situation. If for example, the A&E nurse assesses the patient and finds a fracture of the pelvis, this would indicate that he/she should give more attention to "C" (circulation with haemorrhage control).

The researcher listed only *secondary assessment* in the questionnaire to avoid complications that may occur if the A&E nurse gives to much attention to this phase. According to Proehl (1999: 6) these complications include the following:

- Failure to recognise life-threatening situations that develop during the secondary assessment, without intervening appropriately, may result in patient deterioration.
- Failure to maintain spinal alignment and immobilisation during the secondary assessment may result in patient deterioration.
- Intervening for non-critical problems, such as extremity fractures, before correcting life-threatening problems, may result in patient deterioration.

Recording is an essential part of nursing and all nursing actions must be recorded as it is difficult to prove that an action has been implemented if not recorded (Naudé, Meyer & van Niekerk 2000: 264).

The components of the nursing process (assessment, diagnosis, planning/interventions, expected outcomes/evaluation and recording) are integrated in the above-mentioned systematic approach, together with the three characteristics of this process (purpose, organisation and creativity) (Naudé, Meyer & van Niekerk 2000: 26). The purpose in a life-threatening situation is to restore the health of the patient; organisation is achieved through the systematic approach; and creativity is relevant to the planning of individualised care. Critical thinking is essential throughout the process of effective interventions.

4.2.2.3 Knowledge

The experts were asked to give their opinion regarding knowledge required by A&E nurses to manage life-threatening situations. It was decided that the

A&E nurse would need knowledge of the anatomy of the human body, physiology, pharmacology and pathophysiology of the disease processes that lead to life-threatening situations, for example asthma, diabetes and arteriosclerosis. The following comments were made:

- *…haemodynamics [haemodynamic monitoring]…ECG monitoring and interpretation…interpretation of lethal [life-threatening] arrhythmias*
- *…physiology…*
- *…human anatomy also…*
- *…pathophysiology…MI's [myocardial infarction] things like that…*
- *…legal aspects…are you legally operating?…*
- *…pharmacology…that is the nurse's core downfall…including me…*

Concerning the interpersonal intellectual skills the following data was obtained:

- *…group dynamics and team building…A&E nursing is group work…*
- *…those people function [A&E nurses and health care providers] as a group…*
- *…they need management skills…they need to know how to manage themselves in situations….*

It was then decided to first explore the skills used by the A&E nurses and then decide what knowledge they need to perform those skills.

- *…no they go together [knowledge and skills]…(group confirmation)*
- *…first we must know the skills…then we can decide on exact knowledge…*
- *…learning…it should be a lifelong thing…*

The experts agreed that the knowledge necessary to manage life-threatening situations depends on the skills the A&E nurse needs to manage these situations (see Table 4.3 – Knowledge: major categories and subcategories).

Table 4.3 – Knowledge: major categories and subcategories

Category	Subcategory
Intellectual skills	-Applied anatomy -Applied physiology -Applied pharmacology -Applied pathophysiology -Applied knowledge regarding laboratory and diagnostic tests used within the emergency care environment
Psychomotor skills	-Psychomotor procedural skills necessary to manage life-threatening situations (procedures/nursing interventions)
Interpersonal skills	-Interaction with patients -Interaction with relevant health professionals

Supportive literature indicates that the foundation of any profession is the development of a core of knowledge that can be applied in practice (Naudé et al. 2000: 14). Formal knowledge must be the key source of knowledge and this knowledge is often implicit in the everyday practice of the A&E nurse (Burns & Bulman 2000: 43). This knowledge must be grounded on the expectancies from within the clinical practice and insight into the clinical practice of the A&E nurse. It is of the utmost importance that the goals of education are in line with those of the clinical practice of the A&E nurse.

There has been a growing acknowledgement that nursing practice is underpinned by a unique body of knowledge which guides the expert clinicians but this frequently goes unrecognised (Lathlean and Vaughan 1994: 3). Practice and education should be intertwined in such a way that the theoretical propositions arise from the practice itself and that the practice is informed by theory. Thus there is a need for both inductive and deductive approaches as mechanisms that will allow the nurse educator to increase understanding of the practice of A&E nurses (Lathlean & Vaughan 1994: 4). The researcher aimed to get the help of experts (inductive method) to provide her with information regarding the knowledge that would be required by A&E nurses to manage life-threatening situations. A national survey was therefore

conducted to facilitate delineation of the core competencies (excluding intellectual skills) that are required. This would be used as a basis for the knowledge needed.

The A&E nurse should use all the intellectual knowledge available on A&E nursing science, as well as supportive subjects to assess the patient, conceptualise the data and plan specific nursing interventions when managing a life-threatening situation. This includes learning acquired during the basic programme of nursing and new knowledge gained during the A&E nursing programme. The effective use of this knowledge – which includes subjects such as anatomy, physiology, sociology, psychology and pharmacology in nursing science – and the application thereof in the assessment, planning of and implementation of specific nursing interventions cannot be overemphasised (Naudé et al. 2000: 7).

The researcher also included knowledge regarding the skills performed during a life-threatening situation in a similar way and under similar sub-headings as used by Proehl (1999) who compiled a book regarding emergency care procedures.

Critical analysis, synthesis and evaluation are key skills for both the professional practice and academic work. *Analysis* involves the separation of a whole into its component parts, *synthesis* refers to the ability to put elements together and form a new whole and *evaluation* involves making judgements based on criteria (Van der Horst & McDonald 2001: 37). The process described above in a life-threatening situation within the emergency care environment will require unique knowledge to understand and solve problems (Burns & Bulman 2000: 40-41). One needs to acknowledge that this is a postgraduate programme and that the A&E nursing student has knowledge acquired from his/her basic training, as well as from the A&E nursing programme.

A&E nurses perform their functions on the three most complex levels of Bloom's taxonomy for the cognitive domain when managing a life-threatening

situation. This requires analysis, synthesis and evaluation of the situation when assessing the patient and planning specific nursing interventions to maintain life (McCown, Driscoll & Roop 1996:362-263). Knowledge forms the basis of Bloom's taxonomy, but it is difficult to specify knowledge required by the A&E nurse in life-threatening situations without exactly knowing what is expected of these nurses in clinical practice on a daily basis. The researcher therefore had to find out first what skills are performed by A&E nurses within the emergency care environment. The knowledge that supports these skills can then be planned. In the end it is the skills performed by the A&E nurse during a life-threatening situation that will save a patient's life – not merely psychomotor skills, but also intellectual and interpersonal skills.

It is therefore evident that the knowledge required by A&E nurses to manage life-threatening situations involves intellectual, psychomotor and interpersonal skills (Naudé et al. 2000: 28).

4.2.2.4 Skills

The experts were asked what skills are required by A&E nurses to manage life-threatening situations. The experts mainly listed the skills they thought necessary and these were then used to compile the questionnaire. Both basic and advanced life-support skills were evaluated during the discussions. The systematic approach described earlier was used to organise these skills (see Table 4.4 – Skills: major categories and subcategories).

The skills suggested when "D" was discussed, included controversial actions like prescribing appropriate medication to be used during the management of life-threatening situations. Discussions can be highlighted as follows:

- *…I'm speaking about giving adrenaline when the doctor is not there…am I allowed?…I want to be covered by my council [SANC]…*
- *…the CCA [paramedic] gives adrenaline on the road [pre-hospital environment]…and I'm not allowed to give it without a doctor's prescription…*
- *…you know why it will never be allowed? [A&E nurse to prescribe drugs during life-threatening situations] because you can't control the nurse*

[A&E nurse]…if you look at the number of paramedics on the road [pre-hospital environment]…they're very limited and they all have got some controlling body [HPCSA]…so, yes they do…

- *…but let's say you are on your own…or working in a rural area…*
- *…then you should be given, as you are as a midwife, then you are controlled by a register and you're accountable to someone…and then you can prescribe…*
- *…if you look at the new legislation that came out, they didn't include nurses…there will be rescheduling in the next six months…there will be certain drugs that A&E nurses can give if they have special training…and that authorisation will be done by the council [SANC]…*

The experts also decided to include certain skills which will be needed in special circumstances (see Table 4.4). These skills were described as follows:

- *…sexual assaults and collecting evidence…and forensics…*
- *…delivery skills…those kind of things…life-threatening situations….ask somebody…placenta previa etc…*

Neonatal stress management was later included when a neonatal nursing expert was asked to evaluate the questionnaire as part of the triangulation process. She recommended the inclusion of this skill. An expert midwife was asked to give her opinion regarding the skills that should be included as part of the supportive management for obstetric emergencies. These skills were then included into the questionnaire (see Table 4.4 – Skills: Major categories and subcategories).

As this section is detailed and extensive, literature references are given in the table as indicated.

Table 4.4 – Skills: major categories and subcategories

Guide:

Components of standard nursing practice*

Procedures performed by A&E nurses**

Procedures mainly performed by physicians or nurses in advanced or extended roles within the emergency care environment***

No literature found to indicate that procedures are performed by A&E nurses ****

(A reference is included if relevant literature could be found)

Category	Subcategory
Assessment and recording	Primary assessment (ABCDE)** (ENA 2000: 1; Proehl 1999: 2-3)
	Medical history taking** (ENA 2000: 14-16)
	Secondary (head-to-toe) assessment** (ENA 2000: 16-21; Proehl 1999: 4-5)
	Recording* (Mulder 1999: 101) ** (ENA 2000: 730-731)
Safety within pre-hospital environment	Rescue work****
	Extrication****
	Scene safety****
	Hazmat precautions****
	Prioritisation of patient management****
	Use of extrication devices****
	Crisis intervention****
	Conflict management****
	Debriefing****
	Counselling skills****
Safety within hospital environment	Hazmat precautions** (ENA 2000: 7060-710, 752)
	Prioritisation of patient management** (ENA 2000: 24)
	Use of extrication devices** (Proehl 1999: 375-376)
	Crisis intervention** (ENA 2000: 704-705, 752; Dolan & Holt 2000: 181)
	Conflict management****
	Debriefing** (Dolan & Holt 2000: 181, 185-188)
	Counselling skills** (Dolan & Holt 2000: 189-197)

Table 4.4 – (continued)

Category	Subcategory
Airway and cervical spine control	Foreign body removal: upper airway** (ENA 2000: 8; Proehl 1999:10)
	Oropharyngeal airway insertion** (ENA 2000: 8; Proehl 2000: 13)
	Nasopharyngeal airway** (ENA 2000: 8; Proehl 1999: 14-15)
	Cricoid pressure technique (Sellick's manoeuvre)**(Proehl 1999: 109)
	Airway intubation:
	Laryngeal mask airway*** (Proehl 1999: 17)
	Oesophageal-tracheal combitube airway (Combitube) **(Proehl 1999: 43-44)
	Orotracheal intubation**(ENA 2000: 8) *** (Proehl 1999: 31-32)
	Nasotracheal intubation*** (Proehl 1999: 34)
	Blind endotracheal intubation****
	Retrograde intubation*** (Proehl 1999: 37)
	Percutaneous transtracheal ventilation*** (Proehl 1999: 49-50)
	Needle cricothyroidotomy** (ENA 2000: 9) *** (Proehl 1999: 47)
	Surgical cricothyroidotomy*** (ENA 2000: 10)
	Sugical tracheostomy*** (Proehl 1999: 51)
	Endotracheal suctioning** (Proehl 1999: 99-100)
	Spinal immobilisation** (Proehl 1999: 375-376)
	Immobilisation devices:
	Cervical collars** (ENA 2000: 10; Proehl 1999: 375)
	Head immobilising device (HID/Ferno blocks) ** (ENA 2000: 10 & Proehl 1999: 375)
	Spine board** (ENA 2000: 10; Proehl 1999: 375)
	Scoop stretcher** (Proehl 1999: 375)
	Vacuum splints** (ENA 2000: 688; Proehl 1999: 387)
	Log-rolling** (Proehl 1999: 375)
	Cervical spine X-ray interpretation****
Breathing and ventilation	Initiate appropriate oxygen therapy* (Mulder 1999: 527-559) ** (ENA 2000: 11)
	Nebulisation therapy* (Mulder 1999: 527-559) ** (ENA 2000: 10)
	Bag-valve-mask ventilation** (ENA 2000: 10; Proehl 1999: 109-110)

Table 4.4 – (continued)

Category	Subcategory
	Anaesthesia bag ventilation (Boyles machine)** (Proehl 1999: 112)
	Confirmation of proper advanced airway placement ** (ENA 2000: 8; Proehl 1999: 23)
	Oxygenation and ventilation monitoring:
	Peripheral saturation monitoring** (ENA 2000: 5; Proehl 1999: 67)
	Arterial blood gas monitoring** (ENA 2000: 579)
	Exhaled or end-tidal CO_2 monitoring (capnograph) ** (ENA 2000: 9; Proehl 1999: 72)
	Peak expiratory flow monitoring (e.g. asthma patients) **(ENA 2000: 560; Proehl 1999: 70)
	Non-invasive mechanical ventilation** (Proehl 1999: 86-87)
	Mechanical ventilation** (ENA 2000: 11; Proehl 199: 120-121)
	Drawing an arterial blood gas (ABG) sample ** (ENA 2000: 76; Proehl 1999: 60-61)
	Interpretation of arterial blood gas (ABG) ** (ENA 2000: 554)
	Manipulation of treatment according to arterial blood gas (ABG) ** (ENA 2000: 554) ** (Dolan & Holt 2000: 122, 373, 380)
	Occlusive dressing for open pneumothorax (tape only three sides) ** (ENA 2000: 385)
	Emergency needle decompression of tension pneumothorax** (ENA 2000: 385) ***(Proehl 1999: 131)
	Emergency placement of an underwater drain for the treatment of a tension pneumothorax*** (Proehl 1999: 134)
	Emergency placement of an underwater drain for the treatment of a pneumothorax and/or haemothorax*** (Proehl 1999: 134)
	Chest drainage system management** (Proehl 1999: 135-137)
	Chest X-ray interpretation****
Circulation with haemorrhage control	Haemodynamic monitoring of the critically ill patient** (ENA 2000: 13)
	Analyse 12-lead ECG: myocardial infarction** (ENA 2000: 68)
	Analyse ECG strips: lethal rhythms** (ENA 2000: 77-111)
	Analyse ECG strips: non-lethal rhythms** (ENA 2000: 77-111)
	Control external bleeding** (ENA 2000: 12)

Table 4.4 – (continued)

Category	Subcategory
	Suturing of skin lacerations** (ENA 2000: 666)
	Administration of resuscitation fluids** (ENA 2000: 12)
	MAST suit application** (ENA 2000: 12 Proehl 1999: 170-173)
	Intravenous access:
	Peripheral line access * (Mulder 1997: 371) ** (ENA 2000: 13; Proehl 1999: 204-205)
	Internal jugular venous access*** (Proehl 1999: 215-216)
	External jugular venous access*** (Proehl 1999: 209)
	Femoral venous access*** (Proehl 1999: 218-219)
	Intraosseous access **(Proehl 1999: 225-226)
	Central line access*** (Proehl 1999: 211-212)
	Peripheral vein cutdown*** (Proehl 1999: 222-223)
	Umbilical venous access****
	Umbilical arterial access****
	Emergency pericardiocentesis for treatment of a pericardial tamponade *** (Proehl 1999: 177-179)
	Effective performance of CPR (ventilation and compression) * (Mulder 1999: 637-662) ** (ENA 2000: 13)
	Splinting of limbs** (ENA 2000: 688)
	Splinting of pelvis** (ENA 2000: 386)
	Limb X-ray interpretation****
	Pelvic X-ray interpretation****
Disability, differential diagnosis, defibrillation and drugs	Monitoring patient's level of consciousness:
	AVPU scale** (ENA 2000: 13)
	Glasgow coma scale** (ENA 2000: 13)
	Neonatal stress response** (ENA 2000: 448)
	Blood glucose monitoring** (Dolan & Holt 2000: 388)
	Differential diagnosis for cardiac arrest (correctable causes)** (ENA 2000: 106)
	Defibrillation* (Mulder 1999: 662-679) ** (ENA 2000: 105)
	Cardioversion** (ENA 2000: 13; Proehl 1999: 276-277)
	External pacing** (ENA 2000: 99; Proehl 1999: 281-282)
	Vagal manoeuvres** (ENA 2000: 89)
	Prescribing appropriate medication to facilitate:
	Sedation** (ENA 2000: 89)

Table 4.4 – (continued)

Category	Subcategory
	Analgesia*** (ENA 2000: 63)
	Skeletal muscle relaxation****
	Treatment of cardiac arrest* (Mulder 1999: 637-660) ** (ENA 2000: 105)
	Correction of hypoxia* (Mulder 1999: 527) ** (ENA 2000: 605)
	Increased cardiac output with the use of positive inotropes*** (ENA 2000: 608-609)
	Correction of metabolic acidosis** (ENA 2000: 605)
	Thrombolysis in acute myocardial infarction ** (Proehl 1999: 570-571) ** (ENA 2000: 70)
	Treatment of acute pulmonary oedema *** (ENA 2000: 76-77)
Exposure and environmental control	Measures to reverse hypothermia ** (ENA 2000: 182-183; Proehl 1999: 488-489)
	Measures to reverse hyperthermia** (ENA 2000: 178-179; Proehl 1999: 491)
Adjuncts	Arterial line insertion** (Proehl 1999: 296-298)
	Nasogastric tube insertion* (Mulder 1997: 447) ** (ENA 2000: 688)
	Urine catheter insertion* (Mulder 1999: 343) ** (ENA 2000: 605)
Special circumstances	Supportive management for obstetric emergencies:
	Normal delivery** (ENA 2000: 446; Proehl 1999: 366-368)
	Breech presentation****
	Prolapsed cord****
	Shoulder presentation****
	Multiple pregnancy****
	Placenta abruptio** (ENA 2000: 439)
	Placenta previa** (ENA 2000: 439)
	Premature labour****
	Supporting the rape victim** (Dolan & Holt 2000: 417-419)
	Collecting forensic evidence from the rape victim** (Dolan & Holt 2000: 417-419)
	Neonatal stress management** (ENA 2000: 448)
	Selecting an appropriate transport mode for the critically ill or injured patient ** (ENA 2000: 679-693)

After compiling a list of the skills that were perceived by the experts as skills required by A&E nurses to manage life-threatening situations, the researcher carried out a thorough, *supportive literature* review, including prescribed books, procedure manuals and the ENA core curriculum used in A&E nurse education programmes. The purpose with the review was to establish whether each of the skills was regarded as indicated at the beginning of the above table, namely:

- Components of standard nursing practice*
- Procedures performed by A&E nurses**
- Procedures mainly performed by physicians or nurses in advanced or extended roles within the emergency care environment***
- No literature found to indicate that procedures are performed by A&E nurses****

Each skill was individually assessed and the relevant status of the skill, as well as the relevant literature, appropriately indicated (see Table 4.4).

4.2.2.5 Attitudes and values

The experts were asked what attitudes and values were required by A&E nurses to manage life-threatening situations (see Table 4.5 – Attitudes and values: major themes and subthemes). The following quotes are examples of what was discussed during the FGI:

- *…treat everybody the same…being accommodating…knowing that they might be different from you…*
- *…should have respect for other people and for their values…*
- *…attitudes and values…that's a personal thing…*
- *…it's still up to the individual…*
- *…accountable…yes, you must be accountable…and realise that…*
- *…you must keep your skills up to date…that's up to them…*

Table 4.5 – Attitudes and values: major categories and subcategories

Category	Subcategory
Attitudes and values the practising A&E nurse should have	have self-respect
	respect others
	respect the possessions of others
	respect the values of others
	respect the views of others
	respect the religious beliefs of others
	be aware of the need for a clinical specialist to have applicable knowledge, skills, and attitudes and values
	accept accountability for his/her decisions
	accept accountability for his/her activities
	acknowledge his/her own limitations
	acknowledge the importance of knowledge
	acknowledge the importance of skills
	acknowledge the importance of attitudes
	acknowledge the importance of values

Supportive literature indicates that attitudes and values form part of outcomes-based education (Van der Horst & McDonald 2001: 24). An attitude is a personal feeling or belief that influences the A&E nurse to act in a certain way when managing a life-threatening situation, and therefore affects the choice he/she makes. It is often instilled at a young age and in many cases learnt at home (McCown et al. 1996: 361; Van der Horst & McDonald 2001: 35). Values on the other hand are the worth, desirability, or utility of a thing, on the qualities on which these depend (*The Concise Oxford Dictionary* 1995:1459). What must be identified are the attitudes necessary for effective practice in specific settings, in this case the emergency care environment (Hinchliff 1999: 94).

Attitudes and values are learnt through socialisation (learning about social roles), and because we are all different these are highly individual (DeYoung 1990; Van der Horst & McDonald 2001: 46). Although socialisation is a continuous process throughout the lifespan of the A&E nurse, in this context

the researcher refers to socialisation of the A&E nurse within the emergency care environment. Professional socialisation is a complex process during which the A&E nurse acquires the skills, content and sense of occupational identity characteristic of the profession. Fundamental to this process is the internalisation of the profession's attitudes and values (Hickey, Quimette & Venegoni 2000: 46-47).

By asking the experts what they considered to be the attitudes and values of A&E nurses, the researcher attempted to identify these attitudes and values within the emergency environment in which A&E nurses practise.

After identifying the categories and subcategories of each of the five topics, a questionnaire was compiled (see Annexure D – Questionnaire) which was then distributed nationally to A&E nursing lecturers as well as trained and student A&E nurses.

The following section includes the quantitative data, results and analysis obtained from the questionnaire.

4.2.3 Compilation of the questionnaire

Following the analysis of the qualitative data obtained from the FGI, a questionnaire was compiled to enable the researcher to continue with the empirical phase of the research.

The questionnaire consisted of 5 different sections:

- Section A – Demographical information
- Section B – Context
- Section C – Advanced life-support **skills performed** by A&E nurses in life-threatening situations
- Section D – Advanced **skills essential** for A&E nurses in life-threatening situations to be included in **curricula**
- Section E – Attitudes and values of the A&E nurse

Section A was not based on the qualitative data, but additionally incorporated in the questionnaire by the researcher. This section would be used to describe the sample and determine characteristics that might influence the frequency of skills performed by respondents and their perceptions regarding the essential advanced skills that had to be included in the curriculum. Table 4.6 – Layout of Section A of questionnaire – explains the layout of the first section of the questionnaire.

Table 4.6 – Layout of Section A of questionnaire

Question no	Topic	Description of question	Researcher's rationale
1.	Gender	The respondent had to mark the appropriate box: -male or female	The data would be used to describe the gender of the sample population.
2.	Age	Various age group options were provided: –younger than 25 years –25-29 years –30-34 years –35-39 years –40-44 years –45 years or older	The data obtained would be used for describing the sample population in terms of age. A perception of the researcher was that mainly the younger registered nurses worked within the emergency care environment due to -burnout and -increased physical activities. The researcher therefore asked this question to determine the average age of the respondents. It was also important for designing a curriculum, because learning styles sometimes differ, showing a correlation with age.
3.	Province employed	The researcher provided the respondent the option of all the provinces of SA to indicate where he/she was then employed.	The researcher would use this information to describe the sample in terms of the province he/she was then working in. The information would be used to indicate the distribution of A&E nurses throughout SA.

Table 4.6 – (continued)

Question no	Topic	Description of question	Researcher's rationale
4.	Present professional status	The question provided the following options: –A&E nurse (trained) –A&E nurse (student) –A&E nurse (lecturer)	The researcher would use the information to describe the qualifications of the respondents relevant to A&E nursing and aimed to ensure that all the respondents fell within the selection criteria. Questionnaires completed by respondents not falling within one of these categories were not used.
5.	Experience in number of years	The researcher provided various options: –Less than 2years –2-3 years –4-5 years –6-7 years –8-9 years –10 years or more	The researcher would use this information to describe the experience of the respondents in number of years.
6.	Hours on average of work per week	The question provided various options: –Not applicable –Up to 12 hours/week –13 - 24 hours/week –25-36 hours/week –37 -48 hours/week –More than 48 hours/week	This would lead to an assumption that A&E nurses working 12 hours or less per week would render a smaller input in this research – especially when completing Section C.

Table 4.6 – (continued)

Question no	Topic	Description of question	Researcher's rationale
7.	Type of hospital the respondent was then working in	The question provided different options: –Not applicable –Provincial hospital –Private hospital/clinic –Military hospital –Other (please specify)	The researcher would use this information to provide an indication as to the distribution of A&E nurses on different levels of care throughout SA. This information would also be used to determine whether there was a difference between the respondents working in the government sector and respondents working in the private sector regarding the skills performed and essential skills to be included in the curriculum.
8.	Accredited level of the emergency care unit	The question provided the following options incorporating different levels used for emergency care unit accreditation: –Not applicable –Level I (highest) –Level II –Level III (lowest) –Other (please specify)	The researcher would use this information to determine on which level the respondents worked. The information could then be used to indicate the distribution of A&E nurses with regard to the different emergency care unit levels throughout SA.
9.	Types of patients managed	This question involved various options concerning the obvious emergencies that were managed in the emergency care environment.	The researcher aimed to establish the types of patients managed in the emergency care environment within the SA context.

Table 4.6 – (continued)

Question no	Topic	Description of question	Researcher's rationale
10.	Independent decisions	Various options were provided in order to find out to what extent the respondents make independent decisions within the emergency care environment.	The researcher aimed to establish whether A&E nurses were expected to make independent decisions within the SA context and how often this was expected of them.
11.	Registered as a midwife or accoucheur	The respondent had to indicate whether he/she was a midwife or accoucheur or none of these.	The researcher aimed to determine what percentage of A&E nurses were not midwives or accoucheurs. The researcher further aimed to determine whether the midwife and accoucheur regarded the inclusion of supportive management for obstetric emergencies to the same extent as the respondents not registered as either of the above-mentioned practitioners. (See Annexure D – Questionnare, special circumstances).

4.3 RESULTS AND ANALYSIS OF THE QUANTITATIVE DATA

4.3.1 Introduction

The empirical phase of this research included the national survey conducted by means of the distribution of the questionnaire. The results and analysis of the quantitative data thus obtained, will now be described according to the principles explained in Chapter 2 (see 4.4.4.5 – Data analysis).

Each of the five sections will be discussed individually, except for Sections C and D which will be discussed simultaneously. The result of each variable will be reported on. Please refer to the questionnaire (Annexure D).

412 copies of the questionnaire were distributed. 132 respondents completed the questionnaire, representing a response rate of 51,0% (see rationale 5.3.1 – Distribution and return of questionnaire). Some respondents did not complete all the questions. The N value (expressing the number of respondents completing each question) will be indicated at each individual variable.

Next to each heading, the numbers of the questions relevant to the theme are indicated in a block e.g. A1_1 to A1_2

4.3.2 Section A – Demographical information

Section A focused on the demographical information regarding the respondents.

4.3.2.1 Gender A1_1 to A1_2

Question 1 concerns the gender of the respondents. All the respondents completed this question, thus N = 132. 116 females (87,9%) and 16 males (12,1%) accounted for the total population. The data is illustrated in Figure 4.1.

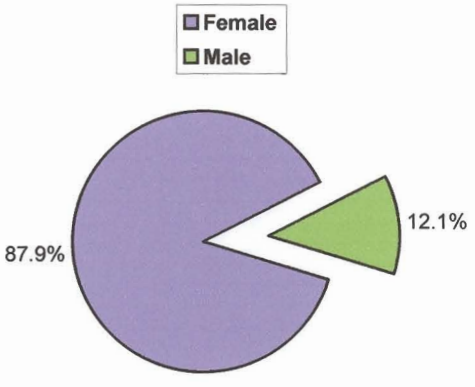

Figure 4.1 - Gender

The majority of the respondents involved in the emergency care environment were female (87,9%).

4.3.2.2 Age A2_1 to A2_6

Question 2 concerns the age of the respondents. This question was included to monitor the average age of A&E nurses within the emergency care environment. All the respondents completed this question, thus N = 132. Three (3) respondents (2,3%) were younger than 25 years, 36 respondents (27,3%) were between 25 and 29 years old and 37 respondents (28,0%) were between 30 and 34 years old. 27 respondents (20,5%) were between 35 and 39 years old, 18 respondents (13,6%) were between 40 and 44 years old and 11 respondents (8,3%) were older than 44 years. The data is illustrated in Figure 4.2.

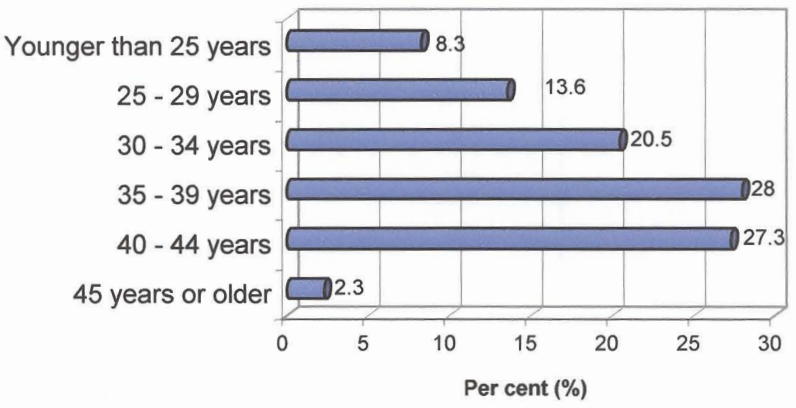

Figure 4.2 - Age

The majority of the respondents were between 25 and 44 years old.

4.3.2.3 Employment A3_1 to A3_92

Question 3 determines the different provinces in which the respondents were then working and all the respondents completed this question, thus N = 132. The data is illustrated in Table 4.7.

Table 4.7 – Provinces where employed

Province	Frequency	Percentage
Eastern Cape	5	3,8%
Free State	6	4,6%
Gauteng	86	65,2%
KwaZulu-Natal	27	20,5%
Limpopo (Northern Province)	1	0,8%
Mpumalanga	2	1,5%
Northern Cape	Nil	0,0%
North-West	1	0,8%
Western Cape	4	3,0%
	N = 132	

The majority of the respondents were then employed in Gauteng and KwaZulu-Natal.

4.3.2.4 Professional status A4_1 to A4_4

Question 4 determined the present professional status of the respondents and all the respondents completed this question, thus N = 132. 75 respondents (56,8%) were trained A&E nurses, 33 respondents (25,0%) were student A&E nurses and six (6) respondents (4,6%) were A&E nursing lecturers. 18 respondents (13,6%) indicated that they were not one of the above mentioned. The researcher went through each of the questionnaires completed by these respondents and it was then evident that the 18 respondents (13,6%) who indicated "other" were trained A&E nurses as well as either unit managers, trauma coordinators, critical care nurses or working in a different environment at the time. The total number of trained A&E nurses for the purpose of this research are 93 respondents (70,4%). The data is illustrated in Figure 4. 3.

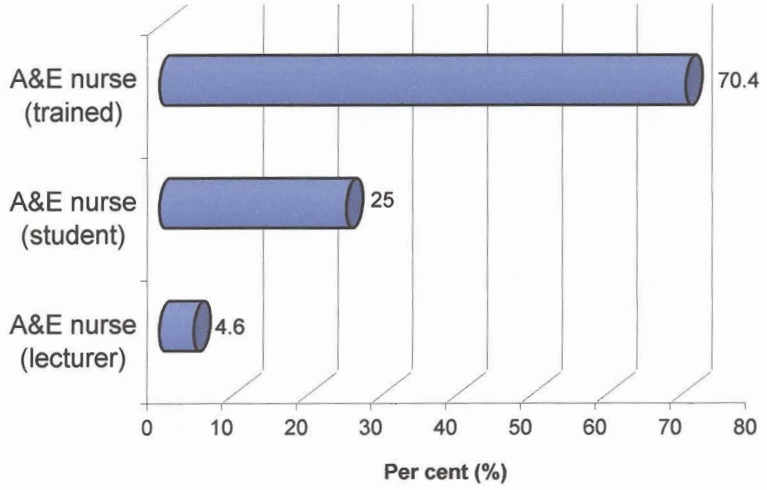

Figure 4.3 - Professional status

It is evident from the above figure that the majority of the respondents were trauma-trained A&E nurses, followed by student A&E nurses and lecturers.

4.3.2.5 Experience A5_1 to A5_6

Question 5 determined in number of years the experience of the respondents in the emergency care environment and all the respondents completed this question, thus N = 132. Ten (10) respondents (7,6%) indicated that they had less than two (2) years experience, 24 respondents (18,2%) indicated that they had two (2) to three (3) years experience, 31 respondents (23,5%) had four (4) to five (5) years experience and 26 respondents (19,7%) had six (6) to seven (7) years experience. A further 14 respondents (10,6%) had eight (8) to nine (9) years experience and 27 respondents (20,5%) had more than 10 years experience. The data is illustrated in Figure 4.4.

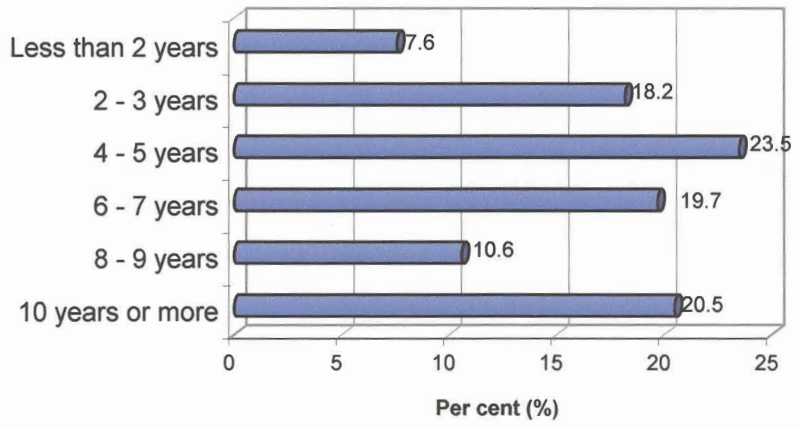

Figure 4.4 - Years experience

It is evident from the above figure that the respondents who completed the questionnaire had a vast amount of clinical experience within the emergency care environment. 67 respondents (50,8%) had more than five (5) years experience within the emergency care environment.

4.3.2.6 Hours on average work per week A6_1 to A6_6

Question 6 determined the average number of hours per week the respondents worked in the emergency care environment and all the respondents completed this question, thus N = 132. 12 respondents (9,1%) indicated that they did not work in the emergency care environment, one (1) respondent (0,8%) indicated that he/she worked up to 12 hours and six (6) respondents (4,6%) indicated that they worked between 13 and 24 hours per week. The majority of the respondents worked more than 24 hours per week and included 10 respondents (7,6%) working 25 to 36 hours per week, 84 respondents (63,6%) working 37 to 48 hours per week and 19 respondents (14,4%) working more than 48 hours per week. The data is illustrated in Figure 4.5.

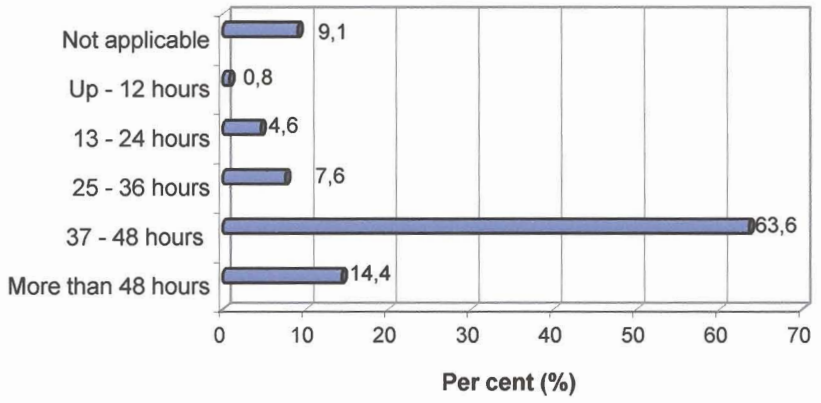

Figure 4.5 - Hours per week

The majority of the respondents had a full-time job within the emergency care environment and was working between 37 and 48 hours per week.

4.3.2.7 Type of hospital A7_1 to A7_5

Question 7 determined the type of hospital the respondents where then working in and all the respondents completed this question, thus N = 132. Four (4) respondents (3,0%) indicated that this question was not applicable, 28 respondents (21,2%) indicated that they worked in a provincial hospital, 95 respondents (72,0%) indicated that they worked in a private hospital or clinic and five (5) respondents (3,8%) indicated that they were working in a military hospital. The data is illustrated in Figure 4.6.

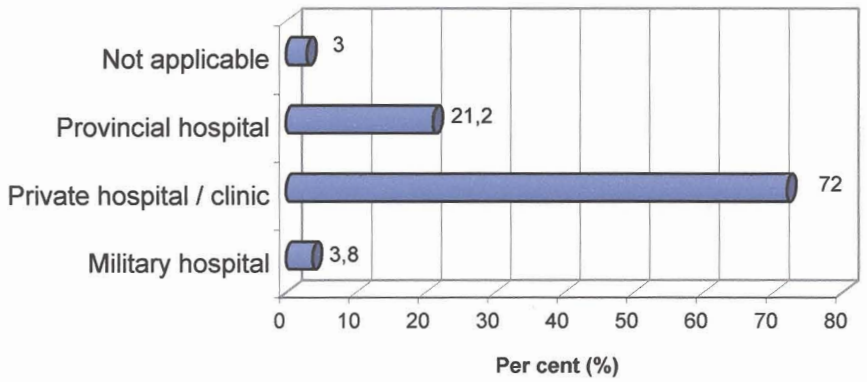

Figure 4.6 - Type of hospital

The majority of the respondents were working in private hospital or clinics, followed by provincial and military hospitals.

4.3.2.8 *Accredited level A8_1 to A8_6*

Question 8 concerned the accredited level of the emergency care unit where the respondents were then working and two (2) respondents did not complete this question, thus N = 130. 11 respondents (8,5%) indicated that this question was not applicable, which implies that they were not working in a hospital (but in other facilities, e.g. ambulance services), 61 respondents (46,9%) indicated that they were working in a Level I facility, 46 respondents (35,4%) indicated that they were working in a Level II facility and eight (8) respondents (6,2%) indicated that they were working in a Level III facility. Four (4) respondents (3,1%) indicated that they did not know the accredited level of the facility they were working in. The data is illustrated in Figure 4.7.

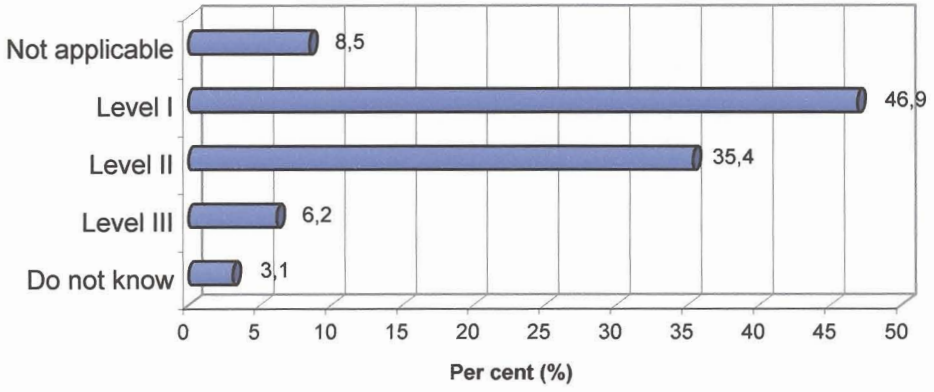

Figure 4.7 - Accredited level

The majority of the respondents were working in Level I and Level II hospitals.

4.3.2.9 *Types of patients managed A9: 9_1 to 9_6*

Question 9 determined the types of patients managed in the emergency care environment by the respondents. Each type of patient managed will be discussed individually. The data is illustrated in Figure 4. 8

A9_1 : Of the 132 respondents, 129 completed this question and three (3) did not, thus N = 129. All 129 respondents (100,0%) indicated that patients involved in **accidents / trauma** were treated in their emergency care environment.

A9_2 : Of the 132 respondents, 127 completed this question and five did not, thus N = 127. 124 respondents (97,6%) indicated that patients with **medical emergencies** were treated within the emergency care environment they worked in and three (3) respondents (2,4%) indicated that this was not the case.

A9_3 : Of the 132 respondents, 126 completed this question and six (6) did not, thus N = 126. 125 respondents (99,2%) indicated that **paediatric emergencies** were treated within the emergency care environment they worked in and three (3) respondents (0,8%) indicated that this was not the case.

A9_4 : Of the 132 respondents, 120 completed this question and 12 did not, thus N = 120. 95 respondents (79,2%) indicated that **primary health care patients** were treated within the emergency care environment they worked in and 25 respondents (20,8%) indicated that this was not the case.

A9_5 : Of the 132 respondents, 122 completed this question and 10 did not, thus N = 122. 120 respondents (98,4%) indicated that **occupational emergencies** were treated within the emergency care environment they worked in and two (2) respondents (1,6%) indicated that this was not the case.

A9_6 : Of the 132 respondents, 23 completed this question and 109 did not, thus N = 23. 22 respondents (95,7%) indicated that **other emergencies** were treated within the emergency care environment they worked in and one (1) respondent (4,4%) indicated that this was not the case.

The other emergencies included by the respondents were:

- Sexual assault patients (13 respondents)
- Gynaecology and obstetric emergencies (5 respondents)
- Surgical emergencies (2 respondents)
- Aggressive patients (1 respondent)
- Psychiatric emergencies (1 respondent)

The data of question 9 is illustrated in Figure 4.8.

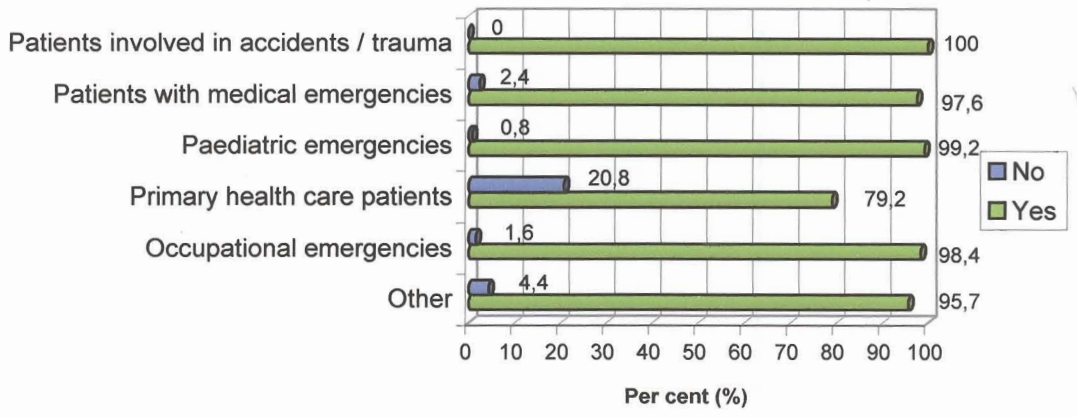

Figure 4.8 - Types of patients

The majority of the respondents indicated that they managed all the types listed in the questionnaire. Other types of patients were also mentioned that were not mentioned during the FGI.

4.3.2.10 Independent decisions A10_1 to A10_6

Question 10 indicated how often the A&E nurse made independent decisions in the absence of a doctor in the emergency care environment.

Of the 132 respondents, 121 completed this question and 11 did not, thus N = 121. 11 respondents (9,1%) indicated that they never made independent

decisions, four (4) respondents (3,3%) indicated that they made an independent decision at least once a year and five (5) respondents (4,1%) indicated that they made an independent decision at least once every six (6) months in the absence of a doctor. Nine (9) respondents (7,4%) indicated that they made independent decisions at least once a month, 19 respondents (15,7%) indicated that they made independent decisions at least once a week and 73 respondents (60,3%) indicated that they made independent decisions at least once a shift. The data is illustrated in Figure 4.9.

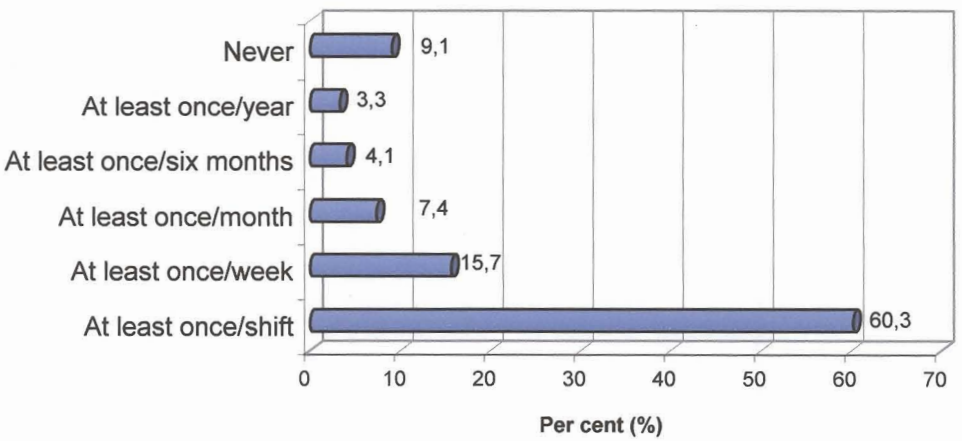

Figure 4.9 - Independent decisions

The fact that 60,0% of A&E nurses indicated that they made independent decisions at least once a shift indicates the important role these nurses play within the emergency care environment.

4.3.2.11 Midwife or accoucheur A11_1 to A11_2

Question 11 determined whether a respondent was either a midwife or an accoucheur or not one of these. This would enable the researcher to identify the needs of the midwife/accoucheur versus the non-midwife/non-accoucheur to include supportive and obstetric emergencies in the curriculum. 131 respondents completed this question and one (1) did not, thus N = 131. 111 respondents (84,7%) indicated that they were either a midwife or accoucheur

and 20 respondents (15,3%) indicated that they were not one of these. The data is illustrated in Figure 4.10.

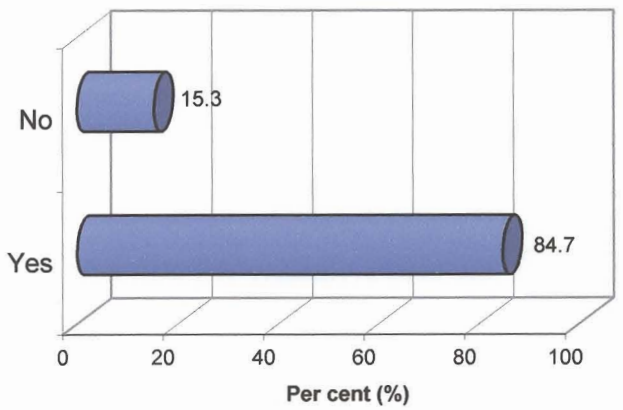

Figure 4.10 - Midwife or accoucheur

The majority of respondents (84,7%) indicated that they were midwives or accoucheurs.

4.3.3 Section B – Context

Section B focused on the current and previous clinical and non-clinical professional experience of the A&E nurse. This would help to define the "emergency care environment" within which the A&E nurse currently practises. The data is presented in Table 4.8.

Table 4.8 – Clinical and non-clinical professional experience

	Yes	No	N
Clinical practice within pre-hospital environment			
Primary response (ambulance)	91 (73,4%)	33 (26,6%)	124
Inter-hospital transfers of the critically ill patient (ambulance)	79 (68,1%)	37 (31,9%)	116
Aviation medicine: primary response (helicopter)	30 (29,1%)	73 (70,9%)	103
Aviation medicine: secondary response (helicopter)	27 (26,5%)	75 (73,5%)	102
Aviation medicine: secondary response (fixed-wing aircraft)	23 (22,8%)	78 (77,2%)	101
Field hospital	27 (26,2%)	76 (73,8%)	103
Disaster management	61 (54,5%)	51 (45,5%)	112
Sports events	69 (60,5%)	45 (39,5%)	114
Primary health care clinics	60 (54,6%)	50 (45,5%)	110
Occupational health	31 (29,8%)	73 (70,2%)	104
Other (please specify)	6 (85,7%)	1 (14,3%)	7
Clinical practice within hospital environment			
Provincial hospital: accident and emergency unit	108 (87,8%)	15 (12,2%)	123
Private hospital/clinic: accident and emergency unit	108 (87,8%)	15 (12,2%)	123
Military hospital: accident and emergency unit	8 (8,8%)	83 (91,2%)	91
Outpatients department	71 (67,0%)	35 (33,0%)	106
Other (please specify)	6 (75,0%)	2 (25,0%)	8
Management			
Consultant	16 (16,5%)	81 (83,5%)	97
Managing a crisis	25 (25,0%)	75 (75,0%)	100
Disaster planning and management	52 (49,5%)	53 (50,5%)	105
Event management (e.g. sports events)	33 (31,7%)	71 (68,3%)	104
Liaison management	18 (18,8%)	78 (81,3%)	96
Managing an ambulance service	7 (7,2%)	90 (92,8%)	97
Marketing	24 (24,0%)	76 (76,0%)	100
Risk management	28 (28,6%)	70 (71,4%)	98

Table 4.8 – Clinical and non-clinical professional experience

Clinical practice within pre-hospital environment			
	Yes	**No**	**N**
Telephone triage	42 (38,9%)	66 (61,1%)	108
Other (please specify)	5 (83,3%)	1 (16,7%)	6
Education			
Lecturing with EMS (emergency medical service)	28 (27,7%)	73 (72,3%)	101
Lecturing A&E nurses	65 (56,0%)	51 (44,0%)	116
Educating community regarding health needs	78 (68,4%)	36 (31,6%)	114
Injury prevention campaign	38 (38,0%)	62 (62,0%)	100
Other (please specify)	12 (100,0%)	0	12
Research			
Honours degree (research for report)	9 (9,3%)	88 (90,7%)	97
Master's degree (research for dissertation)	4 (4,1%)	93 (95,9%)	97
Doctoral degree (research for thesis)	0	96 (100,0%)	96
Research projects (other than the three above)	42 (38,2%)	68 (61,8%)	110
Project development	17 (16,8%)	84 (83,2%)	101
Other (please specify)	9 (9,3%)	88 (90,7%)	97

The context within which the A&E nurse practises is summarised as follows:

- A&E nurses are working in a multifaceted environment, including clinical practice, management, education and research.
- Clinical practice:

- A&E nurses are working in both the pre-hospital and hospital environment

- Additional areas added to the pre-hospital environment include medical standby at e.g. rock concerts.

- The hospital environment entails the accident and emergency care units in provincial, private and military hospitals, as well as the outpatient department.

- A respondent added the accident and emergency care unit of a mine hospital, including pre-hospital exposure when mining accidents occur.

- General wards, critical care units and a wound dressing clinic were also added to the list by respondents.

- Management:

- A&E nurses are involved in various management roles within the pre-hospital and hospital environment.

-Additional management roles added by respondents were unit managers and shift leaders.

- Education:

- A&E nurses play a role in the education of pre-hospital personnel and colleagues.

- A&E nurses are involved in community education regarding health needs and injury prevention.

- Education regarding cardiopulmonary resuscitation was added to the list by the respondents.

- Research:

-Only 10,0% of the respondents have been involved in postgraduate research projects up to a master's degree level. This could be due to the fact that this clinical speciality is relatively new.

4.3.4 Section C and Section D

Section C focused on the advanced life-support skills performed by A&E nurses in life-threatening situations (*performance frequency*) and Section D focused on the advanced skills essential for A&E nurses in life-threatening situations to be included in the curriculum (*importance*). By combining the analyses of Sections C and D the researcher would get an integrated representation, enabling her to reflect simultaneously on how often advanced life-support skills are performed by A&E nurses in life-threatening situations and whether A&E nurses regard these as essential skills to be included in the curriculum. The data is reflected in figures (graphs), followed by statistics presented by means of tables.

These two sections were evaluated by assessing the variables for Section C with the correspondent variables for Section D. The mean scores for these variables were provided graphically. Spearman's correlation was used to determine whether there were relationships between the variables for these sections (see Annexure D – Spearman correlation between the variables in Section C and Section D) and to indicate when a relationship was established.

In determining whether there is a difference between the state hospitals and private hospitals pertaining to the frequency of performance and importance of the skills, statistics were provided in figures (graphs) and tables. **Only where differences were noticed were they discussed** and illustrated by means of a graph.

Note: In certain cases, although the Chi-square is large, more than 20,0% of the cells have expected frequencies less than five (5). The Chi-square may in these cases not be a valid test.

4.3.4.1 Assessment and recording C1_1 to C1_4; D1_1 to D1_4

This section provides the results and analysis of the four (4) skills that fall within the assessment and recording section: primary assessment, medical history taking, secondary assessment and recording.

Figures 4.11 and 4.12 illustrate the four (4) skills visually by indicating the mean score for each variable.

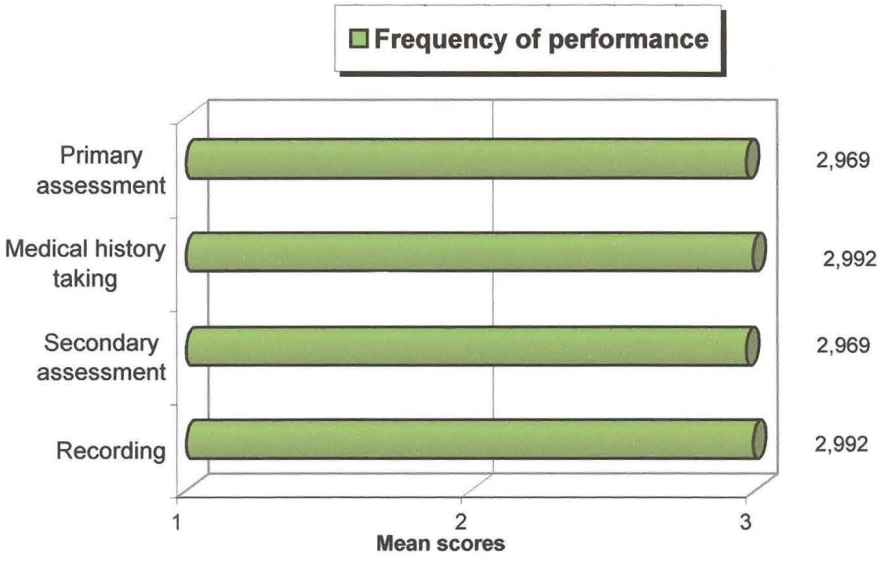

Figure 4.11 - Assessment and recording

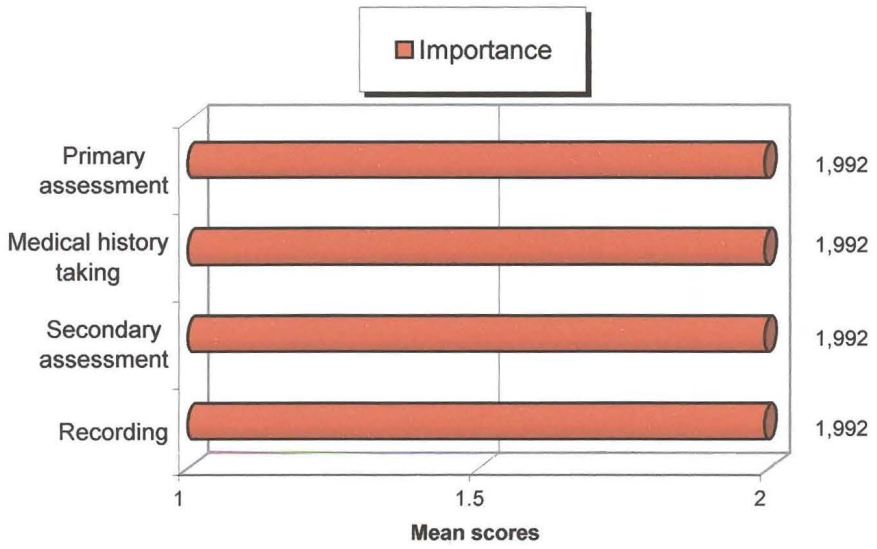

Figure 4.12 - Assessment and recording

Table 4.9 reflects the *frequency of performance* of advanced life-support skills pertaining to assessment and recording. Note that the majority of the respondents indicated that they frequently perform the skills.

Table 4.10 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure E – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Primary assessment indicated a highly significant Spearman correlation coefficient (r_s 0,233)
- Secondary assessment indicated a significant Spearman correlation coefficient (r_s 0,211)

Table 4.9 – Frequency of performance of advanced life-support skills (%) – C1_1 to C1_4

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Assessment and recording																				
Primary assessment (ABCDE)	0	0,0	0	0,0	32	100,0	0	0,0	4	4,3	90	95,7	0	0,0	4	3,2	122	96,8	1,403	1
Medical history taking	0	0,0	0	0,0	32	100,0	0	0,0	1	1,1	93	98,9	0	0,0	1	0,8	125	99,2	0,343	1
Secondary (head-to-toe) assessment	0	0,0	2	6,1	31	93,9	0	0,	2	2,1	92	97,9	0	0,0	4	3,2	123	96,9	1,239	1
Recording	0	0,0	0	0,0	33	100,0	0	0,0	1	1,1	93	98,9	0	0,0	1	0,8	126	99,2	0,354	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.10 – Importance of advanced life-support skills (%) – D1_1 to D1_4

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Assessment and recording														
Primary assessment (ABCDE)	1	3,3	31	96,9	0	0,0	94	100,0	1	0,8	125	99,2	2,961	1
Medical history taking	1	3,1	31	96,9	0	0,0	94	100,0	1	0,8	125	99,2	2,961	1
Secondary (head-to-toe) assessment	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Recording	1	3,2	30	96,	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.2 *Safety within pre-hospital environment C2_1 to C2_10; D2_1 to D2_10*

This question will be analysed in three parts because the actions are related to each other, and to simplify the figures.

a) *Part 1 C2_1 to C2_3; D2_1 to D2_3*

Part 1 provides the results and analysis of performance of the first three skills pertaining to safety within the pre-hospital environment: rescue, extrication and scene safety.

Figures 4.13 and 4.14 illustrate the skills visually by indicating the mean score for each variable.

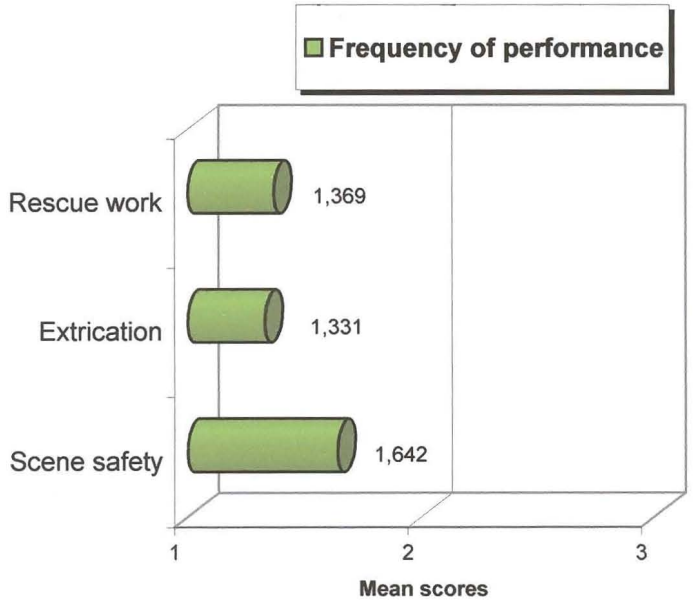

Figure 4.13 - Safety within pre-hospital environment (Part 1)

Figure 4.14 - Safety within pre-hospital environment (Part 1)

Table 4.11 reflects the *frequency of performance* of advanced life-support pertaining to these three skills. Note that the majority of the respondents indicated that they perform these skills seldom or never.

Table 4.12 reflects the *importance* of these skills to be included in the curriculum. Note that the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

b) Part 2 C2_4 to C2_6; D2_4 to D2_6

Part 2 provides the results and analysis of performance of three skills pertaining to safety within the pre-hospital environment: hazmat precautions, prioritisation of patient management and use of extrication devices.

Figures 4.15 and 4.16 illustrate the skills visually by indicating the mean score for each variable.

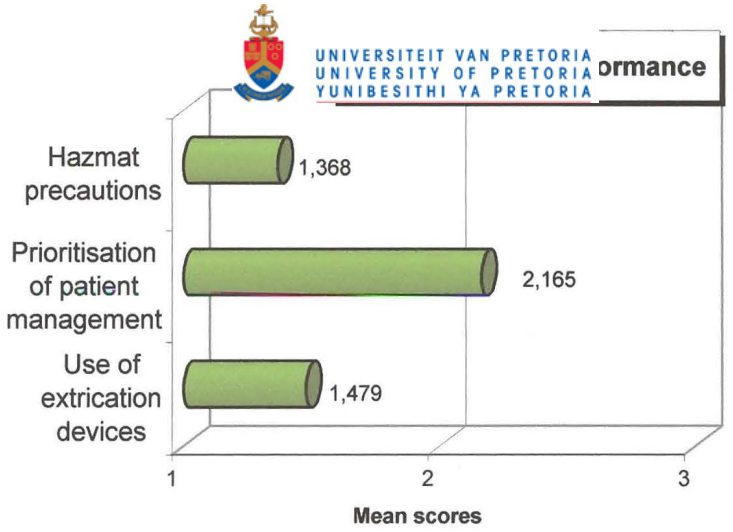

Figure 4.15 - Safety within pre-hospital environment (Part 2)

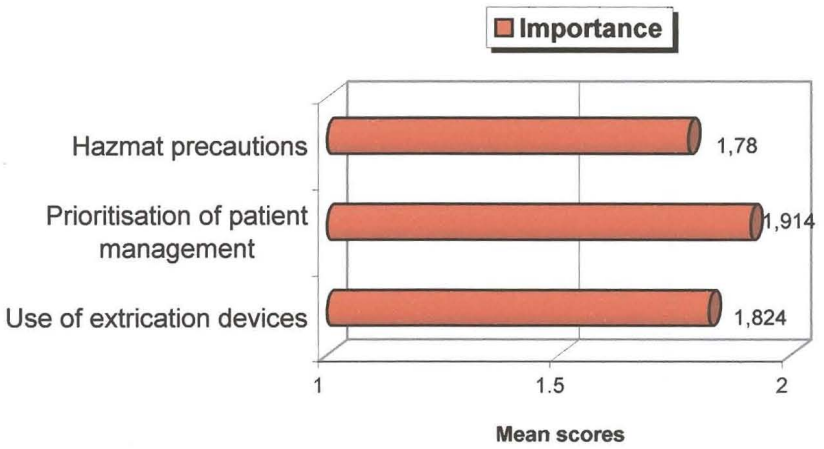

Figure 4.16 - Safety within pre-hospital environment (Part 2)

Table 4.11 reflects the *frequency of performance* of advanced life-support pertaining to these skills. Note that the majority of the respondents indicated that they perform skills pertaining to both hazmat precautions (78,1%) and use of extrication devices (69,8%) seldom or never, but that more than half of the respondents (55,4%) indicated that they frequently perform skills pertaining to prioritisation of patient management within the pre-hospital environment.

Table 4.13 reflects the *importance* of these skills to be included in the curriculum. Note that the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

c) *Part 3* C2_7 to C2_10; D2_7 to D2_10

Part 3 provides the results and analysis of performance of four skills pertaining to safety within the pre-hospital environment: crisis intervention, conflict management, debriefing and counselling skills.

Figures 4.17 and 4.18 illustrate the skills visually by indicating the mean score for each skill.

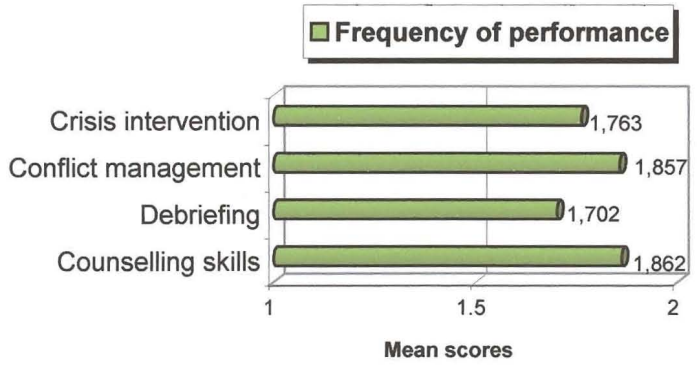

Figure 4.17 - Safety within pre-hospital environment (Part 3)

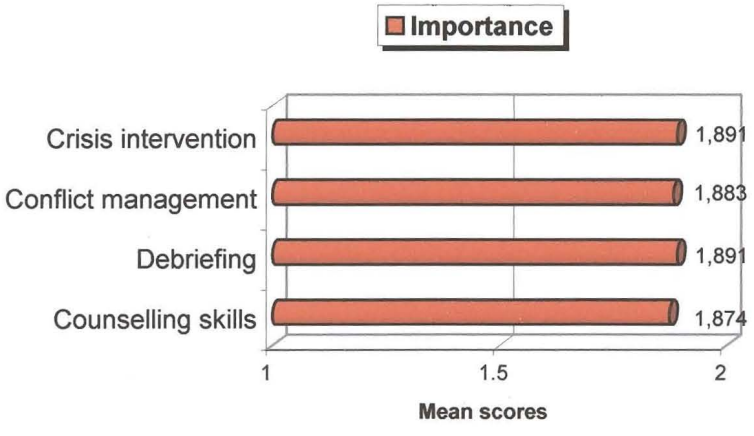

Figure 4.18 - Safety within pre-hospital environment (Part 3)

Table 4.11 reflects the *frequency of performance* of advanced life-support skills pertaining to safety within the pre-hospital environment regarding these skills. Regarding crisis intervention it is evident that the majority of the respondents indicated that they perform this skill seldom/never or periodically, although 27,2% indicated that they frequently perform this skill. The respondents indicated that they frequently perform conflict management (33,9%), debriefing (25,6%) and counselling skills (33,6%), although the majority indicated that they perform these skills seldom/never or periodically.

Table 4.12 reflects the *importance* of these skills to be included in the curriculum. Note that the majority of the respondents indicated that they agree that all four skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) for Part 1 illustrated the following:

- Rescue indicated a highly significant Spearman correlation coefficient (r_s 0,245)
- Extrication indicated a highly significant Spearman correlation coefficient (r_s 0,324)
- Scene safety indicated a highly significant Spearman correlation coefficient of (r_s 0,303)
- Hazmat precautions indicated a highly significant Spearman correlation coefficient (r_s 0,383)
- Prioritisation of patient management indicated a highly significant Spearman correlation coefficient (r_s 0,332)
- Use of extrication devices indicated a highly significant Spearman correlation coefficient (r_s 0,271)
- Conflict management indicated a highly significant Spearman correlation coefficient (r_s 0,243)

- Debriefing indicated a highly significant Spearman correlation coefficient (r_s 0,299)
- Counselling skills indicated a highly significant Spearman correlation coefficient (r_s 0,293)

Table 4.11 – Frequency of performance of advanced life-support skills (%) – C2_1 to C2_10

Skills	State hospitals						Private hospitals						Total						x^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Safety within pre-hospital environment																				
Part 1																				
Rescue	23	71,9	4	12,5	5	15,6	64	74,4	14	16,3	8	9,3	87	73,7	18	15,3	13	11,0	1,085	2
Extrication	23	82,1	2	7,1	3	10,7	65	75,6	12	14,0	9	10,5	88	77,2	14	12,3	12	10,5	0,917	2
Scene safety	18	60,0	4	13,3	8	26,7	54	62,8	9	10,5	23	26,7	72	62,1	13	11,2	31	26,7	0,191	2
Part 2																				
Hazmat precautions	21	75,0	1	3,6	6	21,4	64	78,1	7	8,5	11	13,4	85	77,3	8	7,3	17	15,5	1,600	2
Prioritisation of patient management	12	40,0	0	0,0	18	60,0	32	36,8	6	6,9	49	56,3	44	37,6	6	5,1	67	57,3	2,183	2
Use of extrication devices	23	79,3	2	6,9	4	13,8	57	66,3	13	15,1	16	18,6	80	69,6	15	13,0	20	17,4	1,942	2
Part 3																				
Crisis intervention	15	51,7	6	20,7	8	27,6	42	49,4	20	23,5	23	27,1	57	50,0	26	22,8	31	27,2	0,102	2
Conflict management	12	38,7	6	19,4	13	41,9	42	50,0	16	19,1	26	31,0	54	47,0	22	19,1	39	33,9	1,421	2
Debriefing	17	58,6	5	17,2	7	24,1	47	53,4	18	20,5	23	26,1	64	54,7	23	19,7	30	25,6	0,257	2
Counselling skills	16	51,6	6	19,4	9	29,0	41	46,6	16	18,2	31	35,2	57	47,9	22	18,5	40	33,6	0,400	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.12 – Importance of advanced life-support skills (%) – D2_1 to D2_10

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Safety within pre-hospital environment														
Part 1														
Rescue	8	25,8	23	74,2	15	16,1	78	83,9	23	18,6	101	81,5	1,441	1
Extrication	9	30,0	21	70,0	16	17,2	77	82,8	25	20,3	98	79,7	2,293	1
Scene safety	8	25,8	23	74,2	10	10,8	83	89,3	18	14,5	106	85,5	4,246	1
Part 2														
Hazmat precautions	10	35,7	18	64,3	16	17,6	75	82,4	26	21,9	93	78,2	4,123*	1
Prioritisation of patient management	4	12,9	27	87,1	7	7,5	86	92,5	11	8,9	113	91,1	0,831	1
Use of extrication devices	9	31,0	20	69,0	12	13,0	80	87,0	21	17,4	100	82,6	4,976*	1
Part 3														
Crisis intervention	4	12,9	27	87,1	9	9,7	84	90,3	13	10,5	111	89,5	0,258	1
Conflict management	4	12,9	27	87,1	10	10,8	83	89,3	14	11,3	110	88,7	0,107	1
Debriefing	4	12,9	27	87,1	8	8,6	85	91,4	12	9,7	112	90,3	0,492	1
Counselling skills	6	19,4	25	80,7	9	9,8	83	90,2	15	12,2	108	87,8	1,984	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.3 *Safety within hospital environment C3_1 to C3_7; D3_1 to D3_7*

This question will be analysed in two parts because the actions are related and to simplify the figures.

a) *Part 1 C3_1 to C3_3; D3_1 to D3_3*

Part 1 provides the results and analysis of performance of the first three skills pertaining to safety within the hospital environment: hazmat precautions, prioritisation of patient management and use of extrication devices.

Figures 4.19 and 4.20 illustrate the skills visually by indicating the mean score for each variable.

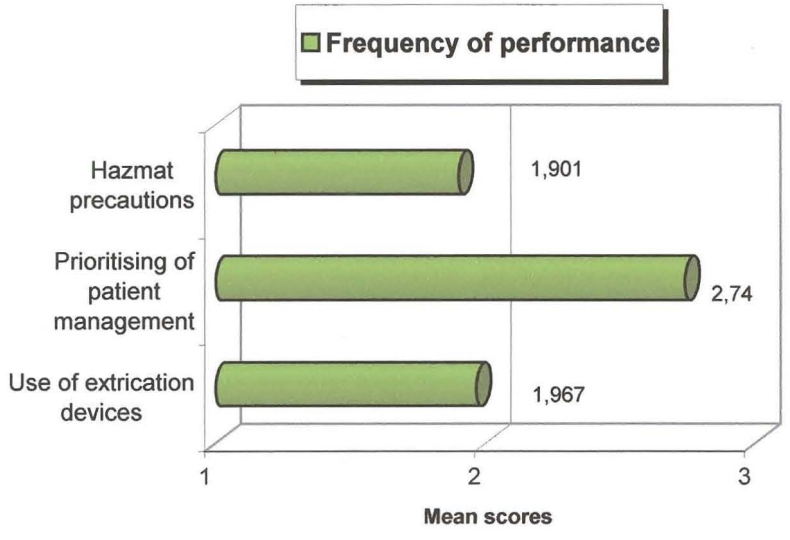

Figure 4.19 - Safety within hospital environment (Part 1)

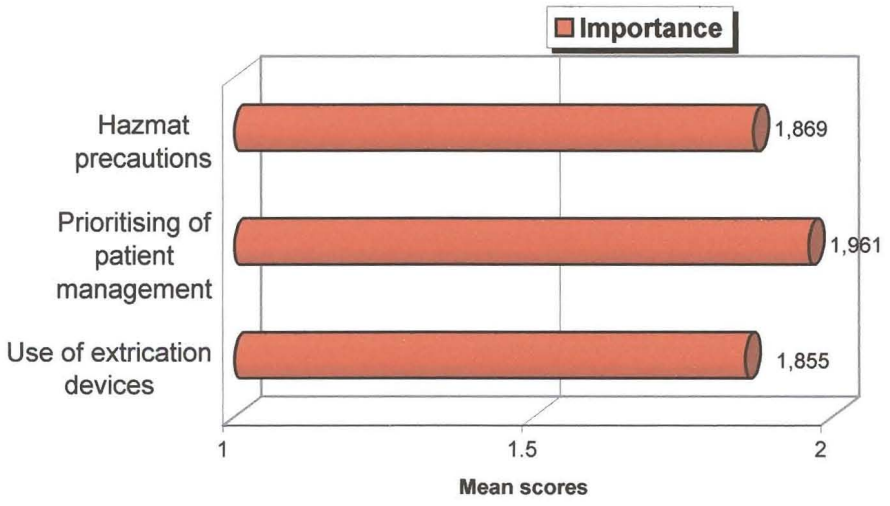

Figure 4.20 - Safety within hospital environment (Part 1)

Table 4.13 reflects the *frequency of performance* of advanced life-support skills pertaining to safety within the hospital environment. Note that the majority of the respondents indicated that they frequently perform the skill prioritisation of patient management. Hazmat precautions were used seldom/never or periodically and only 36,9% indicated that they frequently use this skill. Similar findings pertaining to extrication devices were found and only 42,5% participants indicated that they frequently use this skill.

Table 4.14 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

b) Part 2 C3_4 to C3_7; D3_4 to D3_7

Part 2 provides the results and analysis of performance of four skills pertaining to safety within the hospital environment: crisis intervention, conflict management, debriefing and counselling.

Figures 4.21 and 4.22 illustrate the skills visually by indicating the mean score for each variable.

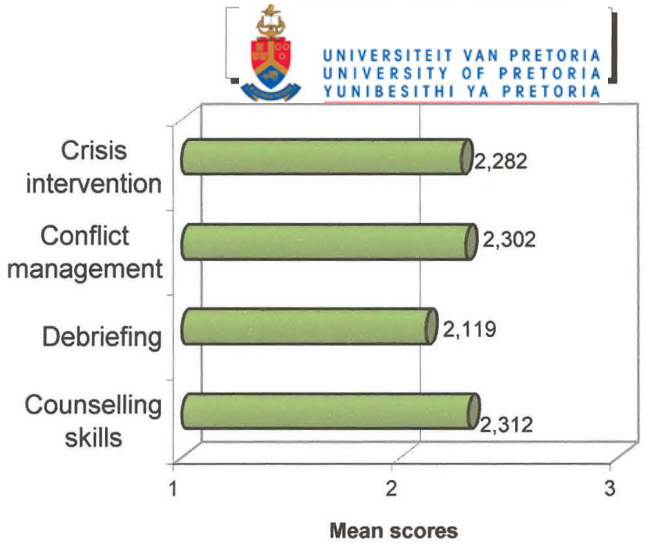

Figure 4.21 - Safety within hospital environment (Part 3)

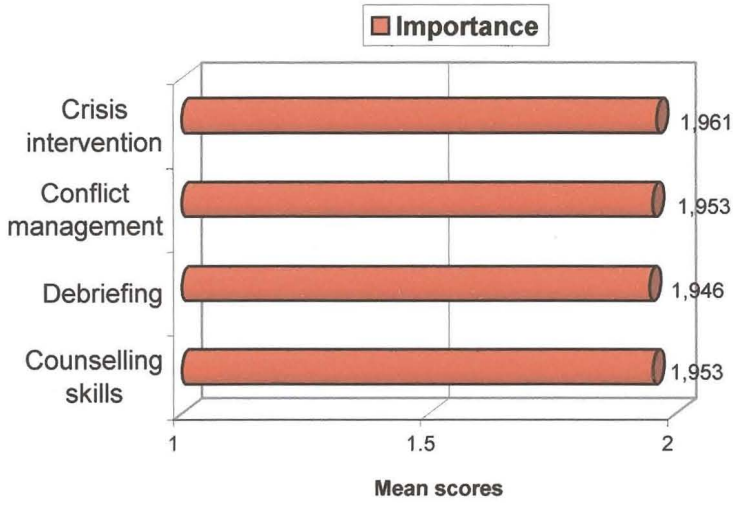

Figure 4.22 - Safety within hospital environment (Part 3)

Table 4.5 summarises the *frequency of performance* of advanced life-support skills pertaining to safety within the hospital environment. Note that the majority of the respondents indicated that they frequently perform the skills, except hazmat precautions (38,3), use of extrication devices (43,1) and debriefing (47,5).

Table 4.6 summarises the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Hazmat precautions indicated a highly significant Spearman correlation coefficient (r_s 0,538)
- Prioritisation of patient management indicated a significant Spearman correlation coefficient (r_s 0,188)
- Use of extrication devices indicated a highly significant Spearman correlation coefficient (r_s 0,297)
- Crisis intervention indicated a significant Spearman correlation coefficient (r_s 0,221)
- Conflict management indicated a highly significant Spearman correlation coefficient (r_s 0,291)
- Counselling skills indicated a significant Spearman correlation coefficient (r_s 0,231)

Table 4.13 – Frequency of performance of advanced life-support skills (%) – C3_1 to C3_7

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Safety within hospital environment																				
Part 1																				
Hazmat precautions	6	25,0	8	33,3	10	41,7	43	51,8	9	10,8	31	37,4	49	45,8	17	15,9	41	38,3	8,939*	2
Prioritisation of patient management	1	3,2	0	0,0	30	96,8	10	10,9	5	5,4	77	83,7	11	8,9	5	4,1	107	87,0	3,656	2
Use of extrication devices	14	53,9	1	3,9	11	42,3	39	43,3	12	13,3	39	43,3	53	45,7	13	11,2	50	43,1	2,113	2
Part 2																				
Crisis intervention	7	24,1	5	17,2	17	58,6	20	22,0	24	26,4	47	51,7	27	22,5	29	24,2	64	53,3	1,005	2
Conflict management	3	9,7	9	29,0	19	61,3	21	23,1	26	28,6	44	48,4	24	19,7	35	28,7	63	51,6	2,862	2
Debriefing	11	35,5	2	6,5	18	58,1	30	33,0	21	23,1	40	44,0	41	33,6	23	18,9	58	47,5	4,402	2
Counselling skills	9	29,0	6	19,4	16	51,6	21	23,3	15	16,7	54	60,0	30	24,8	21	17,4	70	57,9	0,678	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.14 – Importance of advanced life-support skills (%) – D3_1 to D3_7

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Safety within hospital environment														
Part 1														
Hazmat precautions	6	22,2	21	77,8	10	11,0	81	89,0	16	13,6	102	86,4	2,242	1
Prioritisation of patient management	1	3,3	29	96,7	4	4,3	90	95,7	5	4,0	119	96,0	0,050	1
Use of extrication devices	4	14,8	23	85,2	13	14,0	80	86,0	17	14,2	103	85,8	0,012	1
Part 2														
Crisis intervention	1	3,2	30	96,8	3	3,2	91	96,8	4	3,2	121	96,8	0,000	1
Conflict management	2	6,5	29	93,6	3	3,2	91	96,8	5	4,0	120	96,0	0,645	1
Debriefing	3	9,7	28	90,3	3	3,2	91	96,8	6	4,8	119	95,2	2,146	1
Counselling skills	3	9,7	28	90,3	3	3,2	90	96,8	6	4,8	118	95,2	2,102	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,0$

4.3.4.4 *Airway and cervical spine control C4_1 to C4_14; D4_1 to D4_14*

This question will be analysed in seven parts because the actions are related to each other, and to simplify the figures.

a) *Part 1 C4_1 to C4_4; D4_1 to D4_4*

Part 1 provides the results and analysis of performance of the first four skills pertaining to airway and cervical spine control: foreign body removal: upper airway, oropharyngeal airway insertion, nasopharyngeal airway insertion and cricoid pressure (Sellick's manoeuvre).

Figures 4.23 and 4.24 illustrate the skills visually by indicating the mean score for each variable.

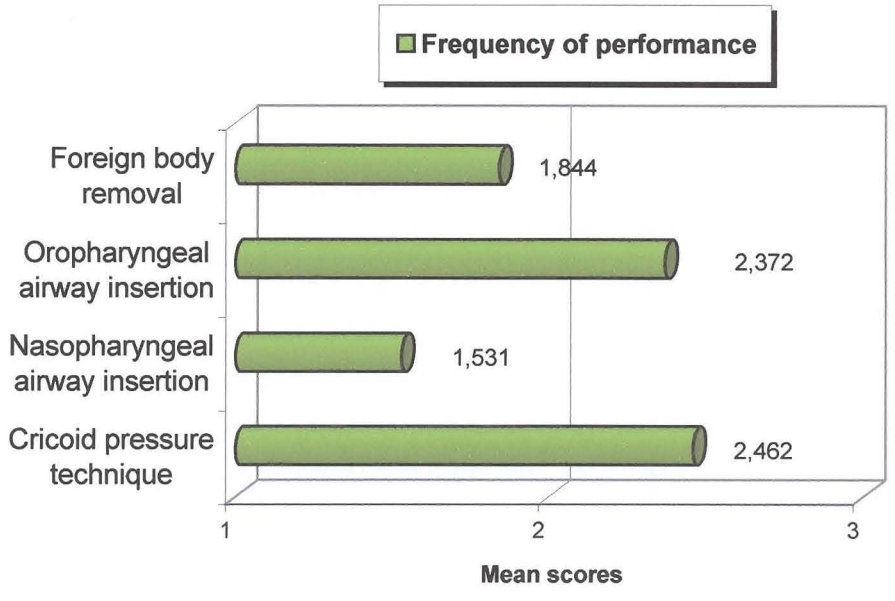

Figure 4.23 - Airway and cervical spine control (Part 1)

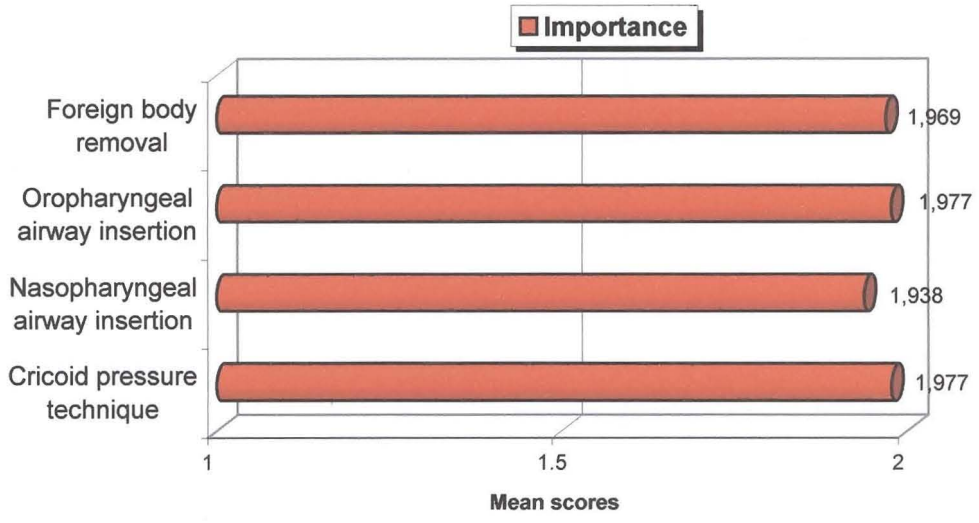

Figure 4.24 - Airway and cervical spine control (Part 1)

Table 4.15 reflects the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they frequently perform oropharyngeal airway insertion (52,7%) and cricoid pressure technique (57,0%). Foreign body removal from the upper airway and insertion of the nasopharyngeal airway were seldom/never or frequently performed.

Table 4.16 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that all four these skills are important and should be included in the curriculum.

b) Part 2 C4_51 to C4_53; D4_51 to D4_53

Part 2 provides the results and analysis of performance of three skills pertaining to airway and cervical spine control: laryngeal mask airway, oesophageal-tracheal combitube airway and orotracheal intubation.

Figures 4.25 and 4.26 illustrate the three skills visually by indicating the mean score for each variable.

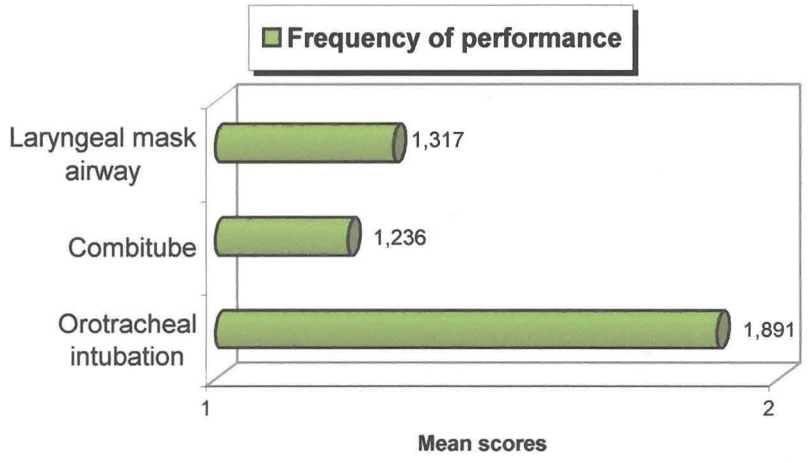

Figure 4.25 -Airway and cervical spine control (Part 2)

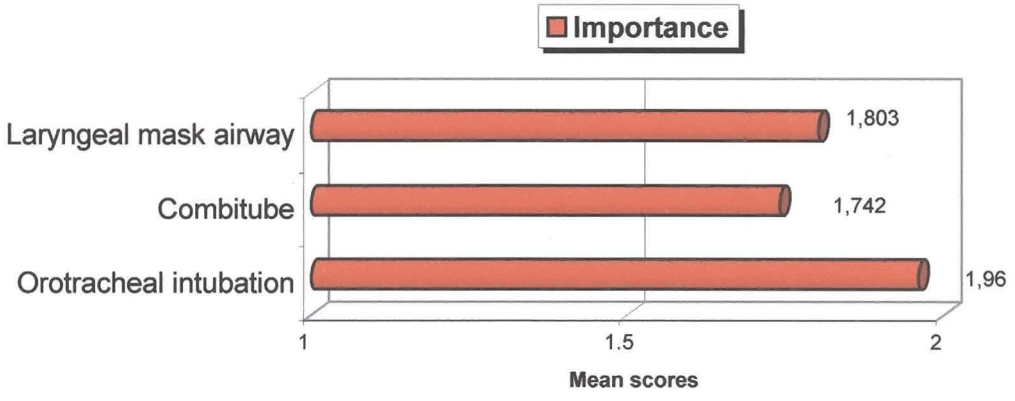

Figure 4.26 - Airway and cervical spine control (Part 2)

Table 4.15 reflects the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they seldom/never perform laryngeal mask airway and oesophageal-tracheal combitube. Orotracheal intubation, however, was distributed almost equally over the whole continuum.

Table 4.16 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

c) *Part 3 C4_54 to C4_56; D4_54 to D4_56*

Part 3 provides the results and analysis of performance of the first three skills pertaining to airway and cervical spine control: nasotracheal intubation, blind endotracheal intubation and retrograde intubation.

Figures 4.27 and 4.28 illustrate the three skills visually by indicating the mean score for each variable.

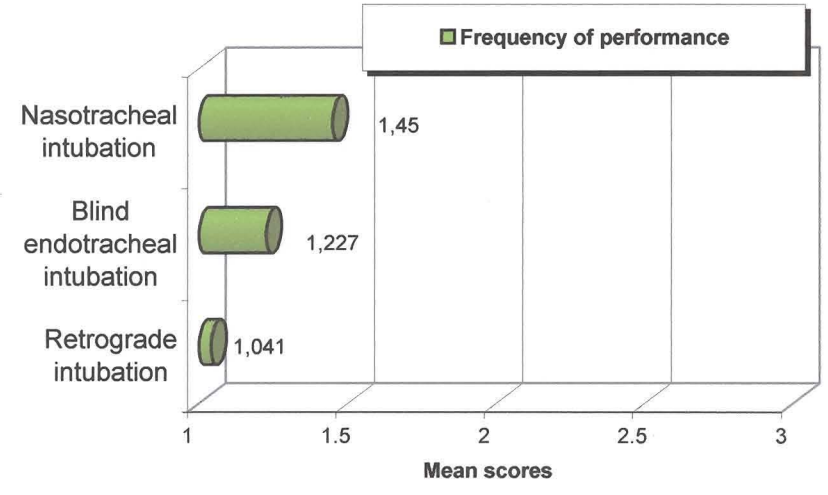

Figure 4.27 - Airway and cervical spine control (Part 3)

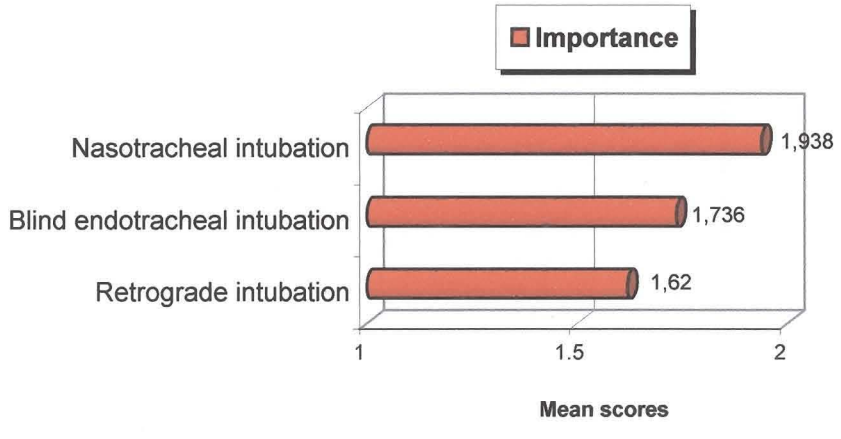

Figure 4.28 – Airway and cervical spine control (Part 3)

Table 4.15 reflects the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they perform the skills seldom/never.

Table 4.16 reflects the *importance* of these skills to be included in the curriculum. Although the majority of the respondents indicated that all three skills are important and should be included in the curriculum, it was to a lesser extent evident regarding blind endotracheal intubation (73,6%) and retrograde intubation (62,0%).

d) Part 4 C4_6 to C4_8; D4_6 to D4_8

Part 4 provides the results and analysis of performance of three skills pertaining to airway and cervical spine control: percutaneous transtracheal ventilation, needle cricothyroidotomy and surgical cricothyroidotomy.

Figures 4.29 and 4.30 illustrate the three skills visually by indicating the mean score for each variable.

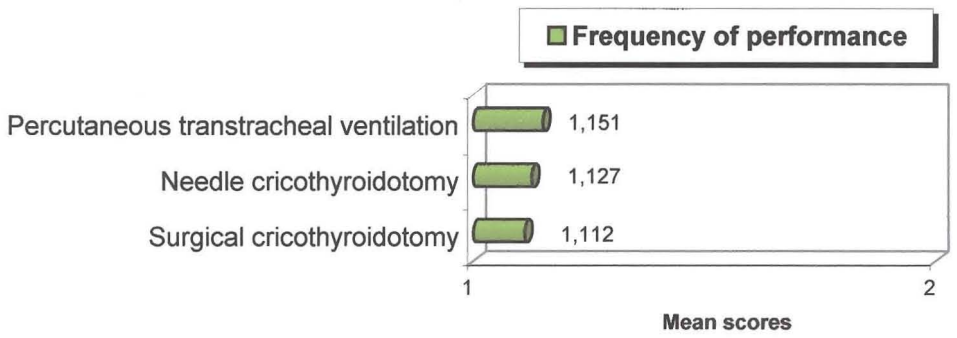

Figure 4.29 - Airway and cervical control (Part 4)

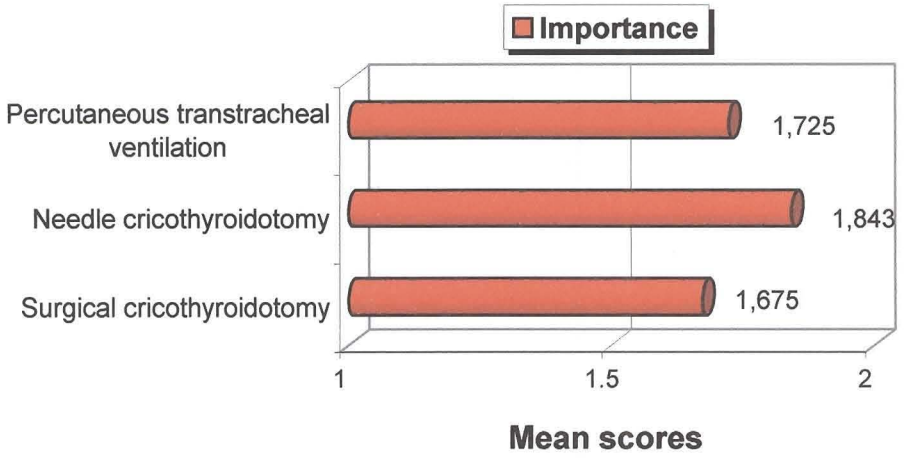

Figure 4.30 - Airway and cervical control (Part 4)

Table 4.15 summarises the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they perform the skills seldom/never.

Table 4.16 summarises the *importance* of these skills to be included in the curriculum. Although the majority of the respondents indicated that all three skills are important and should be included in the curriculum, it was to a lesser extent evident regarding percutaneous transtracheal ventilation (73,3%) and surgical cricothyroidotomy (66,4%).

e) Part 5 C4_9 to C4_11; D4_9 to D4_11

Part 1 provides the results and analysis of performance of three skills pertaining to airway and cervical spine control: surgical tracheostomy, endotracheal suctioning and spinal immobilisation.

Figures 4.31 and 4.32 illustrate the three skills by indicating the mean score for each variable.

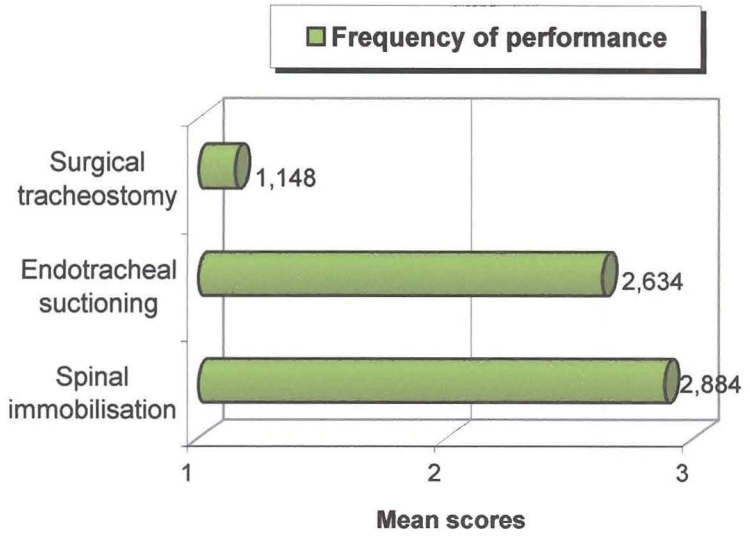

Figure 4.31- Airway and cervical spine control (Part 5)

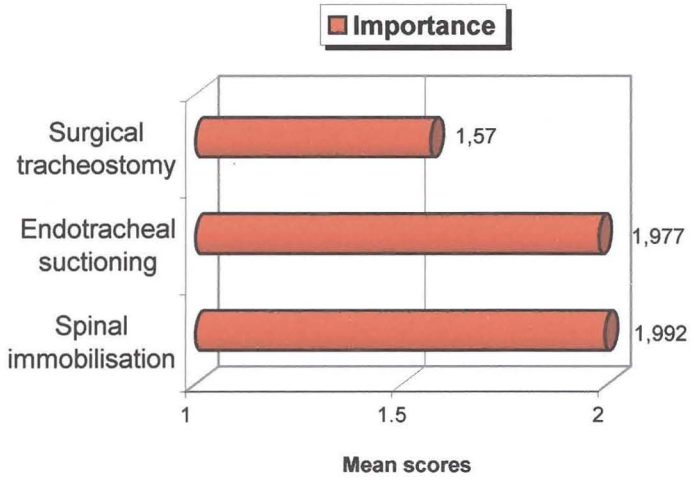

Figure 4.32 - Airway and cervical spine control (Part 5)

Table 4.15 reflects the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they perform surgical tracheostomy seldom/never (88,7%), and endotracheal suctioning (70,1%) and spinal immobilisation frequently (89,6%).

Table 4.16 reflects the *importance* of these skills to be included in the curriculum. The majority of the respondents indicated that endotracheal suctioning and spinal immobilisation should be included in the curriculum, but only 58,1% indicated that surgical tracheostomy should be included.

f) Part 6 C4_121 to C4_123; D4_121 to D4_123

Part 6 provides the results and analysis of performance of three skills pertaining to airway and cervical spine control: cervical collars, head immobilising devices and spine board.

Figures 4.33 and 4.34 illustrate the skills visually by indicating the mean score for each variable.

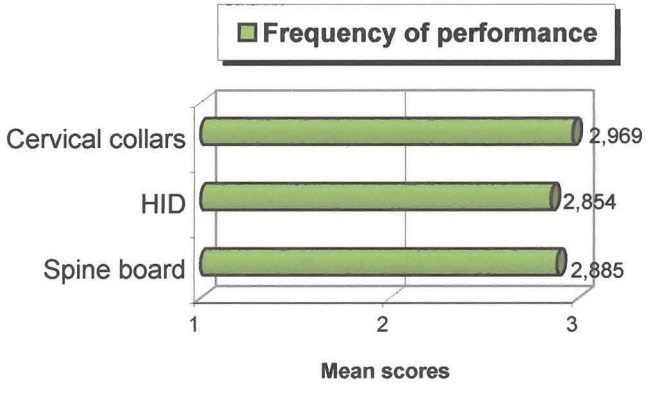

Figure 4.33 - Airway and cervical spine control (Part 6)

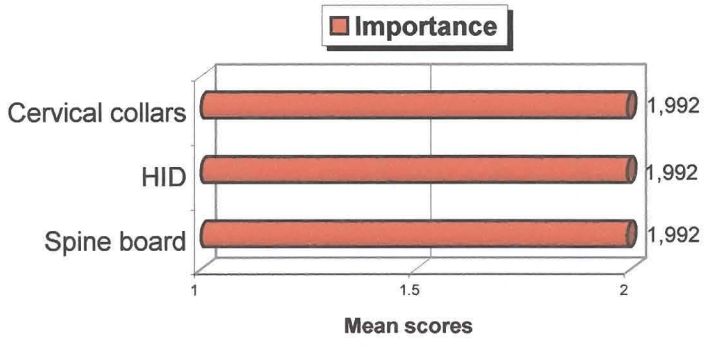

Figure 4.34 - Airway and cervical spine control (Part 6)

Table 4.15 reflects the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they frequently perform the skills.

Table 4.16 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

g) Part 7 C4_124 to C4_14; D4_124 to D4_14

Part 7 provides the results and analysis of performance of four skills pertaining to airway and cervical spine control: scoop stretcher, vacuum splints, log-rolling and cervical spine X-ray interpretation.

Figures 4.35 and 4.36 reflect the skills visually by indicating the mean score for each variable.

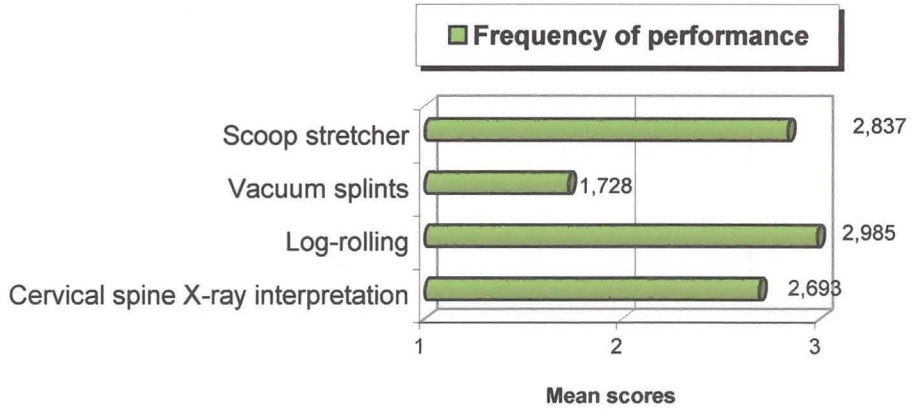

Figure 4.35 - Airway and cervical control (Part 7)

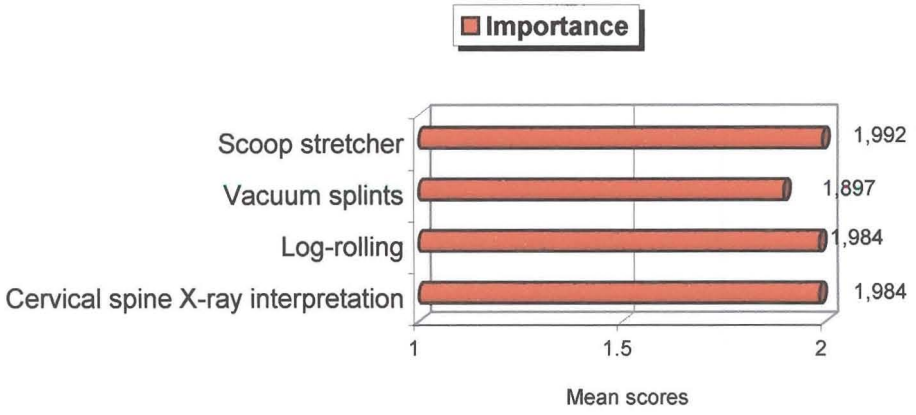

Figure 4.36 - Airway and cervical control (Part 7)

Table 4.15 reflects the *frequency of performance* of advanced life-support skills pertaining to airway and cervical spine control. Note that the majority of the respondents indicated that they frequently perform scoop stretcher, log-rolling and cervical spine X-ray interpretation. Vacuum splints were applied seldom/never (57,9%) by the respondents.

Table 4.16 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Foreign body removal: upper airway indicated a significant Spearman correlation coefficient (r_s 0,196)
- Laryngeal mask airway indicated a highly significant Spearman correlation coefficient (r_s 0,257)
- Oesophageal-tracheal combitube airway (Combitube) indicated a highly significant Spearman correlation coefficient (r_s 0,292)
- Nasotracheal intubation indicated a highly significant Spearman correlation coefficient (r_s 0,293)

- Blind endotracheal intubation indicated a highly significant Spearman correlation coefficient (r_s 0,291)
- Retrograde intubation indicated a highly significant Spearman correlation coefficient (r_s 0,342)
- Needle cricothyroidotomy indicated a significant Spearman correlation coefficient (r_s 0,218)
- Surgical cricothyroidotomy indicated a highly significant Spearman correlation coefficient (r_s 0,249)
- Surgical tracheostomy indicated a highly significant Spearman correlation coefficient (r_s 0,384)
- Cervical collars indicated a significant Spearman correlation coefficient (r_s 0,200)
- Head immobilising devices indicated a significant Spearman correlation coefficient (r_s 0,185)
- Spine board indicated a significant Spearman correlation coefficient (r_s 0,212)
- Scoop stretcher indicated a significant Spearman correlation coefficient (r_s 0,191)
- Vacuum splints indicated a highly significant Spearman correlation coefficient (r_s 0.333)
- Log-rolling indicated a significant Spearman correlation coefficient (r_s 0.175)
- Cervical spine X-ray interpretation indicated a highly significant Spearman correlation coefficient (r_s 0.291)

Table 4.15 – Frequency of performance of advanced life-support skills (%) C4_1 to C4_14

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Airway and cervical spine control																				
Part 1																				
Foreign body removal: upper airway	17	51,5	3	9,1	13	39,4	41	45,1	23	25,3	27	29,7	58	46,8	26	21,0	40	32,3	3,951	2
Oropharyngeal airway insertion	5	15,2	4	12,1	24	72,7	15	16,3	36	39,1	41	44,6	20	16,0	40	32,0	65	52,0	9,262**	2
Nasopharyn-geal airway insertion	21	67,7	3	9,7	7	22,6	61	65,6	15	16,1	17	18,3	82	66,1	18	14,5	24	19,4	0,905	2
Cricoid pressure technique (Sellick's manoeuvre)	2	6,1	9	27,3	22	66,7	12	12,9	32	34,4	49	52,7	14	11,1	41	32,5	71	56,4	2,252	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.15 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 2																				
Airway intubation																				
Laryngeal mask airway	26	83,9	2	6,5	3	9,7	69	75,8	12	13,2	10	11,0	95	77,9	14	11,5	13	10,7	1,144	2
Oesophageal-tracheal combitube airway (Combitube)	24	80,0	3	10,0	3	10,0	76	85,4	6	6,7	7	7,9	100	84,0	9	7,6	10	8,4	0,514	2
Orotracheal intubation	14	45,2	5	16,1	12	38,7	35	37,6	35	37,6	23	24,7	49	39,5	40	32,3	35	28,2	5,276	2
Part 3																				
Nasotracheal intubation	21	65,6	5	15,6	6	18,8	68	73,1	13	14,0	12	12,9	89	71,2	18	14,4	18	14,4	0,798	2
Blind endotracheal intubation	26	81,3	2	6,3	4	12,5	78	84,8	10	10,9	4	4,4	104	83,9	12	9,7	8	6,5	3,005	2
Retrograde intubation	31	100,0	0	0,0	0	0,0	85	96,6	1	1,1	2	2,3	116	97,5	1	0,8	2	1,7	1,084	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.15 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 4																				
Percuta-neous transtracheal ventilation	26	92,9	0	0,0	2	7,1	77	88,5	6	6,9	4	4,6	103	89,6	6	5,2	6	5,2	2,239	2
Needle crico-thyroidotomy	26	89,7	1	3,5	2	6,9	85	91,4	5	5,4	3	3,2	111	91,0	6	4,9	5	4,1	0,901	2
Surgical crico-thyroidotomy	27	93,1	0	0,0	2	6,9	84	91,3	6	6,5	2	2,2	111	91,7	6	5,0	4	3,3	3,387	2
Part 5																				
Surgical tracheostomy	27	87,1	3	9,7	1	3,2	83	89,3	6	6,5	4	4,3	110	88,7	9	7,3	5	4,0	0,412	2
Endotracheal suctioning	1	3,13	4	12,5	27	84,4	8	8,4	25	26,3	62	65,3	9	7,1	29	22,8	89	70,1	4,196	2
Spinal immobilisation	1	3,23	1	3,23	29	93,6	1	1,1	10	10,6	83	88,3	2	1,6	11	8,8	112	89,6	2,208	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.15 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 6																				
Immobilisation devices																				
Cervical collars	0	0,0	0	0,0	100	100,0	0	0,0	2	2,1	93	97,9	0	0,0	2	1,6	125	98,4	0,685	1
Head immobilising devices (HID/Femo blocks)	4	12,9	3	9,7	24	77,4	2	2,1	3	3,2	90	94,7	6	4,8	6	4,8	114	90,5	8,584	2
Spine board	2	6,3	5	15,6	25	78,1	1	1,1	2	2,1	92	96,8	3	2,4	7	5,5	117	92,13	11,586	2
Part 7																				
Scoop stretcher	4	12,9	3	9,7	24	77,4	2	2,1	4	4,3	88	93,6	6	4,8	7	5,6	112	89,6	7,546	2
Vacuum splints	23	76,7	0	0,0	7	23,3	47	51,7	14	15,4	30	33,0	70	57,9	14	11,6	37	30,6	7,741	2
Log-rolling	0	0,0	0	0,0	32	100,0	0	0,0	1	1,1	94	99,0	0	0,0	1	0,8	126	99,2	0,340	1
Cervical spine X-ray interpretation	10	32,3	2	6,5	19	61,3	4	4,4	5	5,4	83	90,2	14	11,4	7	5,7	102	82,9	18,251	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.16 – Importance of advanced life-support skills (%) D4_1 to D4_14

Skills	State hospitals				Private hospitals				Total				χ^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Airway and cervical spine control														
Part 1														
Foreign body removal: upper airway	2	6,5	29	93,6	2	2,1	92	97,9	4	3,2	121	96,8	1,407	1
Oropharyngeal airway insertion	2	6,5	29	93,6	1	1,1	93	98,9	3	2,4	122	97,6	2,889	1
Nasopharyngeal airway insertion	2	6,5	29	93,6	6	6,4	88	93,6	8	6,4	117	93,6	0,000	1
Cricoid pressure technique (Sellick's manoeuvre)	1	3,2	30	96,8	2	2,1	92	97,9	3	2,4	122	97,6	0,120	1
Part 2														
Airway intubation														
Laryngeal mask airway	6	19,4	25	80,7	19	20,7	73	79,4	25	20,3	98	79,7	0,024	1
Oesophageal-tracheal combitube airway (Combitube)	8	26,7	22	73,3	23	25,6	67	74,4	31	25,8	89	74,2	0,015	1
Orotracheal intubation	2	6,9	27	93,1	3	3,3	89	96,7	5	4,1	116	95,9	0,736	1
Part 3														
Nasotracheal intubation	2	6,7	28	93,3	5	5,3	89	94,7	7	5,7	117	94,4	0,078	1
Blind endotracheal intubation	9	30,0	21	70,0	23	25,3	68	74,7	32	26,5	89	73,6	0,259	1
Retrograde intubation	14	50,0	14	50,0	30	33,7	59	66,3	44	37,6	73	62,4	2,409	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.16 – (continued)

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Part 4														
Percutaneous transtracheal ventilation	10	38,5	16	61,5	21	23,3	69	76,7	31	26,7	85	73,3	2,358	1
Needle cricothyroidotomy	8	26,7	22	73,3	12	12,9	81	87,1	20	16,3	103	83,7	3,156	1
Surgical cricothyroidotomy	13	43,3	17	56,7	28	30,4	64	69,6	41	33,6	81	66,4	1,687	1
Part 5														
Surgical tracheostomy	15	48,4	16	51,6	37	39,8	56	60,2	52	41,9	72	58,1	0,707	1
Endotracheal suctioning	1	3,3	29	96,7	2	2,1	92	97,9	3	2,4	121	97,6	0,140	1
Spinal immobilisation	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1
Part 6														
Immobilising devices														
Cervical collars	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Head immobilising devices (HID/Ferno blocks)	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Part 7														
Spine board	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Scoop stretcher	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Vacuum splints	5	17,2	24	82,8	8	8,6	85	91,4	13	10,7	109	89,3	1,733	1
Log-rolling	1	3,2	30	96,7	1	1,1	93	98,9	2	1,6	123	98,4	0,692	1
Cervical spine X-ray interpretation	2	6,5	29	93,6	0	0,0	94	100,0	2	1,6	123	98,4	6,163	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.5 *Breathing and ventilation* C5_1 to C5_17; D5_1 to D5_17

This question will be analysed in five parts because the actions are related to each other, and to simplify the figures.

a) *Part 1* C5_1 to C5_4; D5_1 to D5_4

Part 1 provides the results and analysis of performance of four skills pertaining to breathing and ventilation: initiate appropriate oxygen therapy, nebulisation therapy, bag-valve-mask ventilation and anaesthesia bag ventilation. Figures 4.37 and 4.38 illustrate the skills visually by indicating the mean score for each variable.

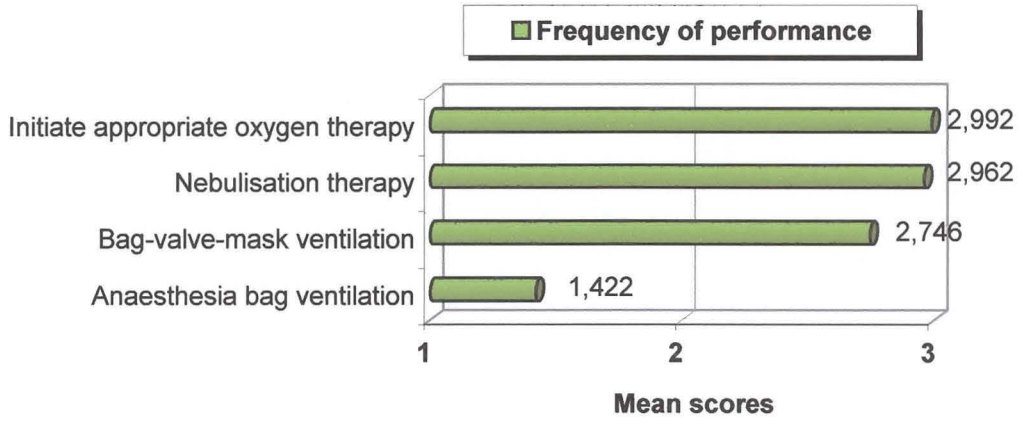

Figure 4.37 - Breathing and ventilation (Part 1)

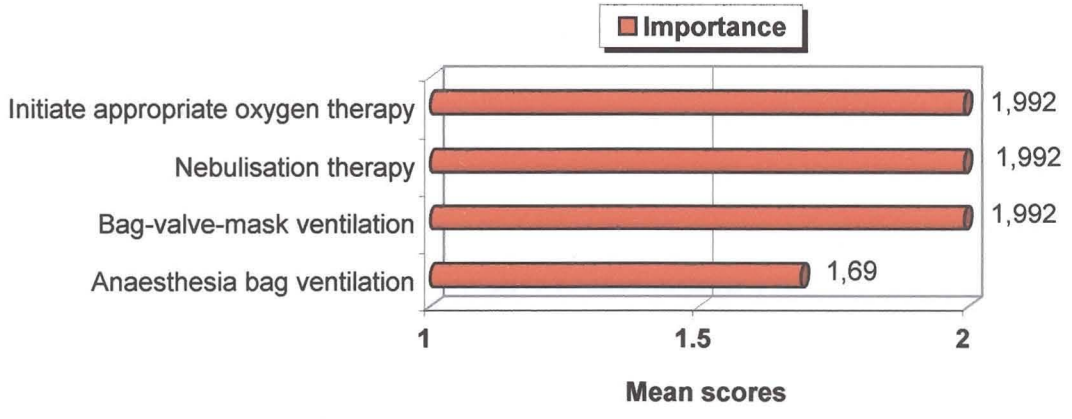

Figure 4.38 - Breathing and ventilation (Part 1)

Table 4.17 reflects the *frequency of performance* of advanced life-support skills pertaining to breathing and ventilation. Note that the majority of the respondents indicated that they perform the skills oxygen therapy, nebulisation therapy and bag-valve-mask ventilation frequently. However, the respondents indicated that the anaesthesia bag ventilation is used seldom/never (75,8%).

Table 4.18 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum. Regarding anaesthesia bag ventilation the respondents indicated to a lesser extent (68,9%) that the skills should be included in the curriculum.

b) Part 2 C5_5 to C5_63; D5_5 to D5_63

Part 2 provides the results and analysis of performance of four skills pertaining to breathing and ventilation: confirmation of proper advanced airway placement, peripheral saturation monitoring, arterial blood gas monitoring and exhaled end-tidal CO_2 monitoring.

Figures 4.39 and 4.40 illustrate the skills visually by indicating the mean score for each variable.

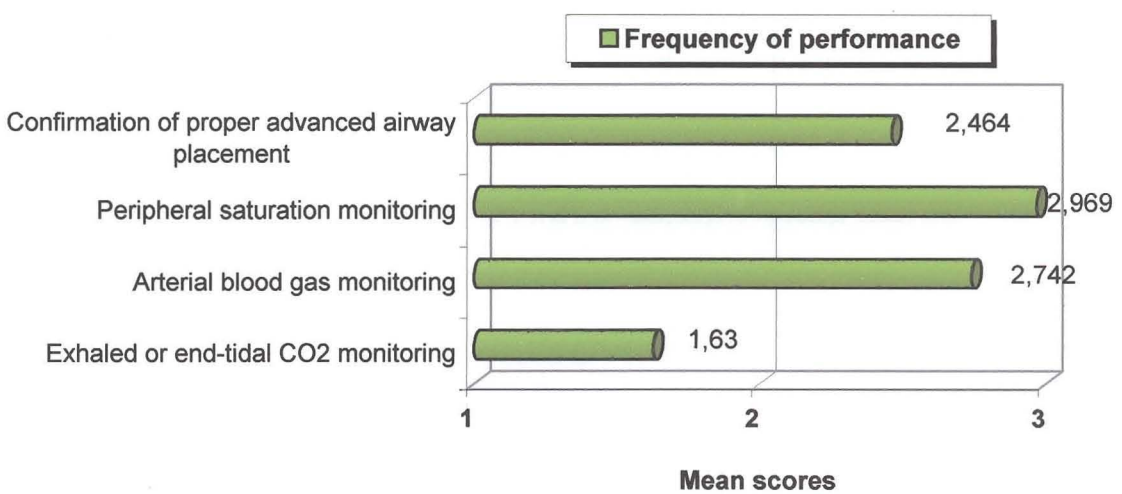

Figure 4.39 - Breathing and ventilation (Part 2)

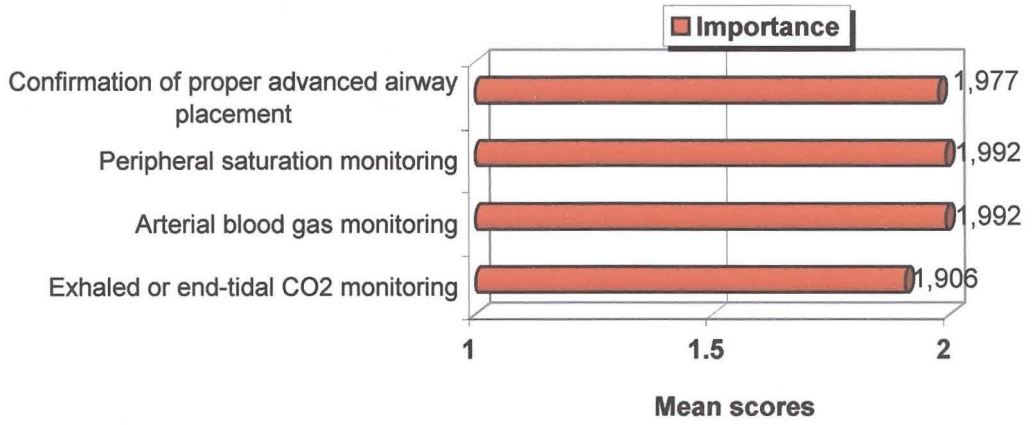

Figure 4.40 - Breathing and ventilation (Part 2)

Table 4.17 reflects the *frequency of performance* of advanced life-support skills pertaining to breathing and ventilation. Note that the majority of the respondents indicated that they frequently perform proper advanced airway placement, peripheral saturation monitoring and arterial blood gas monitoring. However, the majority of the respondents reported that the skill exhaled end-tidal CO_2 monitoring was performed seldom/never (63,4%).

Table 4.18 reflects the *importance* of these skills to be included in the curriculum and the majority of respondents indicated that they agree that these skills are important and should be included in the curriculum.

c) *Part 3* *C5_64 to C5_9; D5_64 to D5_9*

Part 3 provides the results and analysis of performance of four skills pertaining to breathing and ventilation: peak inspiratory flow monitoring, non-invasive mechanical ventilation, mechanical ventilation and drawing an arterial blood gas sample.

Figures 4.41 and 4.42 illustrate the skills visually by indicating the mean scores for each variable.

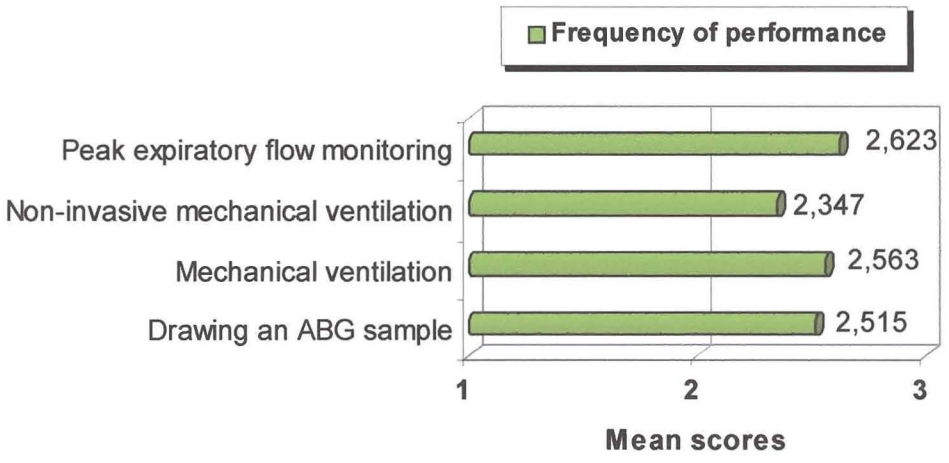

Figure 4.41- Breathing and ventilation (Part 3)

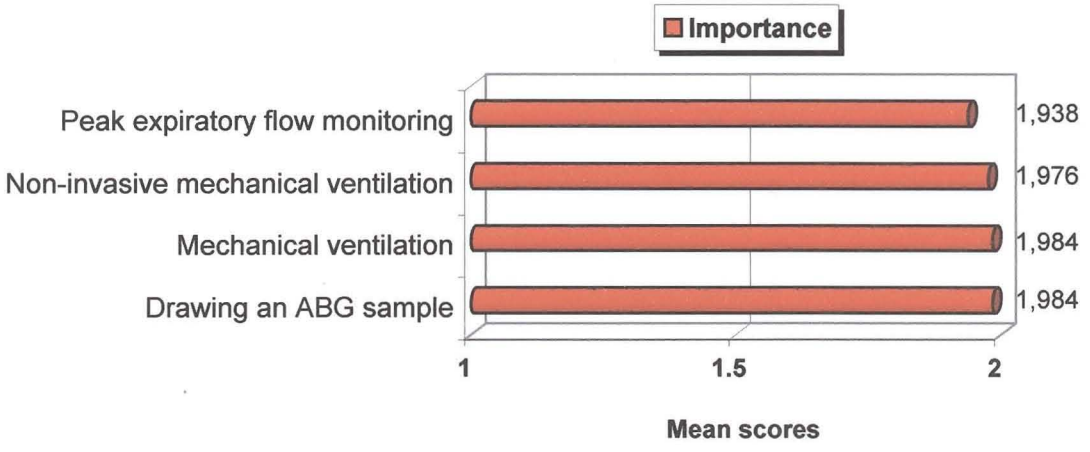

Figure 4.42 - Breathing and ventilation (Part 3)

Table 4.17 reflects the *frequency of performance* of advanced life-support skills pertaining to breathing and ventilation. Note that the majority of the respondents indicated that they frequently perform the skills.

Table 4.18 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

d) Part 4 C5_10 to C5_13; D5_10 to D5_13

Part 4 provides the results and analysis of performance of four skills pertaining to breathing and ventilation: interpretation of arterial blood gas, manipulation of treatment according to arterial blood gas results, occlusive dressing for open pneumothorax and emergency needle decompression of tension pneumothorax. Figures 4.43 and 4.44 illustrate the skills visually by indicating the mean score for each variable.

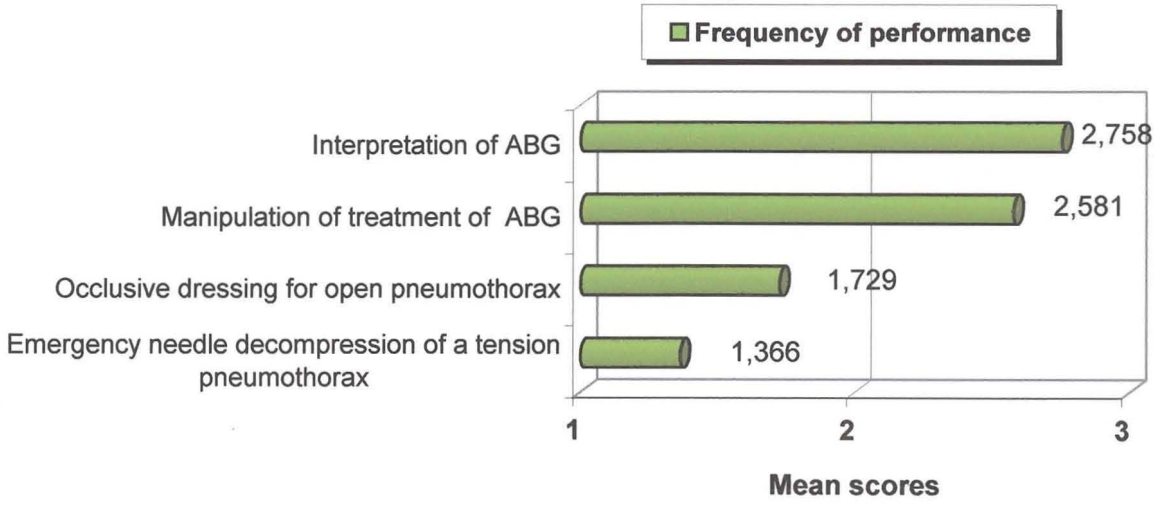

Figure 4.43 – Breathing and ventilation (Part 4)

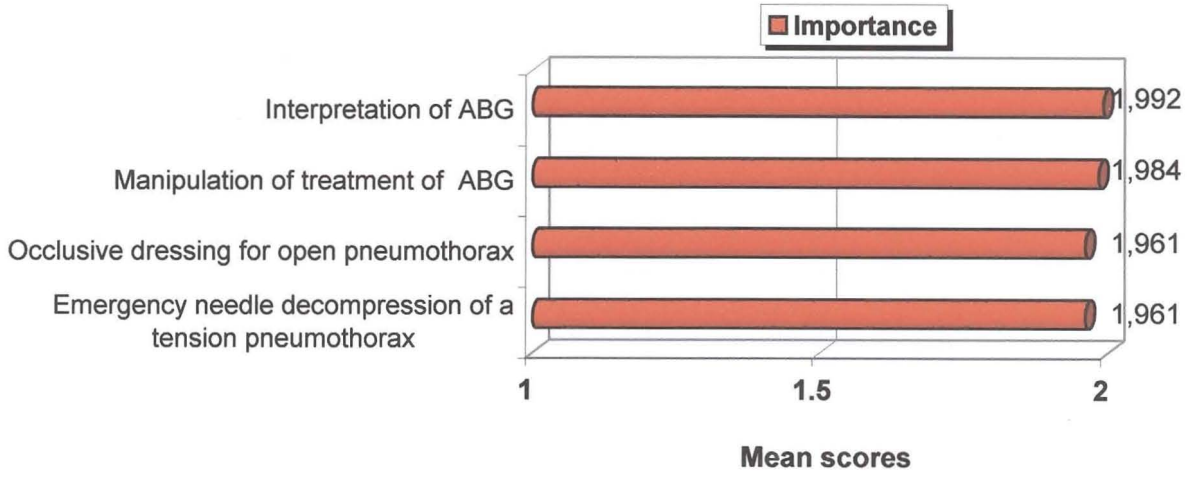

Figure 4.44 - Breathing and ventilation (Part 4)

Table 4.17 reflects the *frequency of performance* of advanced life-support skills pertaining to breathing and ventilation. Note that the majority of the respondents indicated that they frequently perform interpretation of arterial blood gas and manipulation of treatment according to arterial blood gas results. However, the majority of the respondents indicated that they perform occlusive dressing for open pneumothorax and emergency needle decompression seldom/never – this skill was also indicated to be performed periodically (26,4%) and frequently (24,0%). Decompression of tension pneumothorax was used seldom/never (74,8%).

Table 4.18 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

e) Part 5 C5_14 to C5_17; D5_14 to D5_17

Part 5 provides the results and analysis of performance of four skills pertaining to breathing and ventilation: emergency placement of an underwater drain for treatment of a tension pneumothorax, emergency placement of an underwater drain for treatment of a pneumo and/or haemothorax, chest drainage system management and chest X-ray interpretation.

Figures 4.45 and 4.46 illustrate the skills visually by indicating the mean score for each variable.

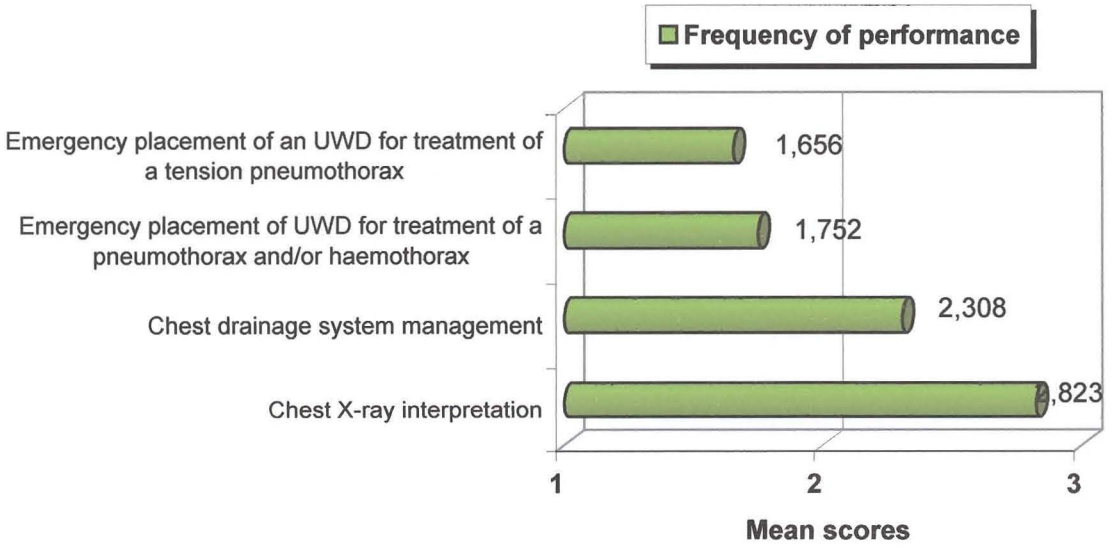

Figure 4.45 - Breathing and ventilation (Part 5)

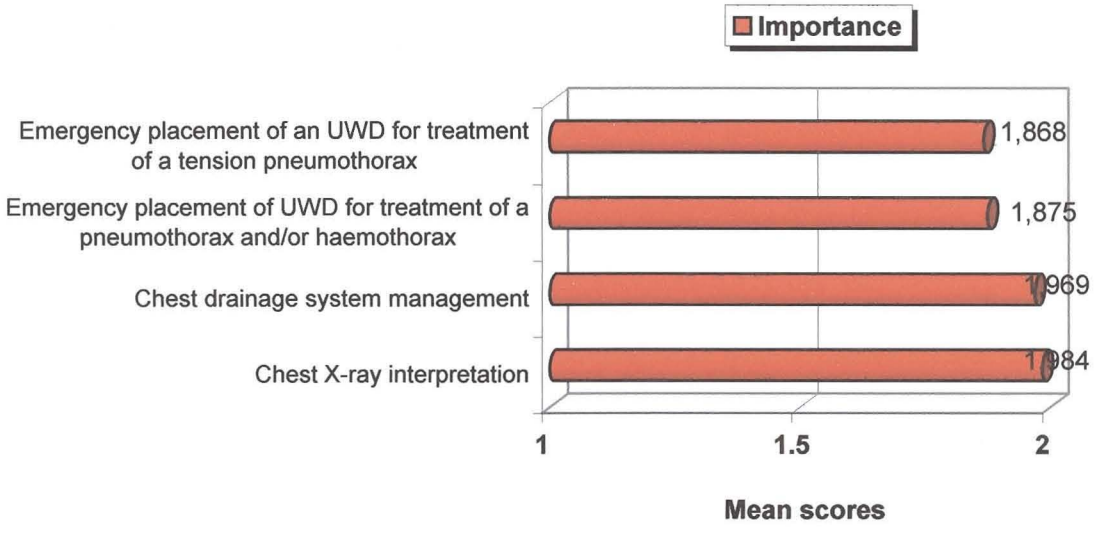

Figure 4.46 - Breathing and ventilation (Part 5)

Table 4.17 reflects the *frequency of performance* of advanced life-support skills pertaining to breathing and ventilation. Note that the majority of the respondents indicated that they perform emergency placement of an underwater drain for treatment of a tension pneumothorax seldom/never (59,1%), although 25,2% indicated that they frequently perform this skill. The majority of the respondents also indicated that they perform emergency placement of an underwater drain for treatment of a pneumothorax and/or haemothorax seldom/never (54,4%), although 30,4% indicated that they frequently perform this skill. Regarding chest drainage system management and chest X-ray interpretation the majority of the respondents indicated that they frequently perform these skills.

Table 4.18 reflects the *importance* of these skills to be included in the curriculum and the majority of respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Initiate appropriate oxygen therapy indicated a highly significant Spearman correlation coefficient (r_s 0,296)
- Bag-valve-mask ventilation indicated a significant Spearman correlation coefficient (r_s 0,190)
- Anaesthesia bag ventilation indicated a highly significant Spearman correlation coefficient (r_s 0,458)
- Confirmation of proper advanced airway placement indicated a highly significant Spearman correlation coefficient (r_s 0,383)
- Peripheral saturation monitoring indicated a highly significant Spearman correlation coefficient (r_s 0,316)
- Arterial blood gas monitoring indicated a highly significant Spearman correlation coefficient (r_s 0,304)
- Exhaled or end-tidal CO_2 monitoring indicated a highly significant Spearman correlation coefficient (r_s 0,412)

- Peak expiratory flow monitoring indicated a highly significant Spearman correlation coefficient (r_s 0,347)
- Non-invasive mechanical ventilation indicated a highly significant Spearman correlation coefficient (r_s 0,250)
- Mechanical ventilation indicated a highly significant Spearman correlation coefficient (r_s 0240)
- Drawing an arterial blood gas sample indicated a significant Spearman correlation coefficient (r_s 0,192)
- Interpretation of arterial blood gas indicated a significant Spearman correlation coefficient (r_s 0,198)
- Manipulation of treatment according to arterial blood gas indicated a highly significant Spearman correlation coefficient (r_s 0,343)
- Occlusive dressing for open pneumothorax indicated a highly significant Spearman correlation coefficient (r_s 0,230)
- Emergency placement of an underwater drain for treatment of a tension pneumothorax indicated a highly significant Spearman correlation coefficient (r_s 0,323)
- Emergency placement of an underwater drain for treatment of a pneumothorax and/or haemothorax indicated a highly significant Spearman correlation coefficient (r_s 0,359)

Table 4.17 – Frequency of performance of advanced life-support skills (%) C5_1 to C5_17

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Breathing and circulation																				
Part 1																				
Initiate appropriate oxygen therapy	0	0,0	0	0,0	32	100,0	0	0,0	0	0,0	95	100,0	0	0,0	0	0,0	127	100,0	0,000	0
Nebulisation therapy	0	0,0	0	0.0	32	100,0	1	1,1	2	2,1	92	96,8	1	0,8	2	1,6	124	97,6	1,035	2
Bag-valve-mask ventilation	1	3,1	3	9,4	28	87,5	4	4,3	19	20,2	71	75,5	5	4,0	22	17,5	99	78,6	2,118	2
Anaesthesia bag ventilation (Boyles machine)	22	68,8	1	3,1	9	28,1	72	78,3	7	7,6	13	14,1	94	75,8	8	6,5	22	17,7	3,644	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.17 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 2																				
Confirmation of proper advanced airway placement	10	33,3	5	16,7	15	50,0	12	13,2	16	17,6	63	69,2	22	18,2	21	17,4	78	64,5	6,342*	2
Oxygenation and ventilation monitoring																				
Peripheral saturation monitoring	0	0,0	0	0,0	30	100,0	1	1,1	1	1,1	93	97,9	1	0,8	1	0,8	123	98,4	0,642	2
Arterial blood gas (ABG) monitoring	1	3,2	4	12,9	26	83,9	5	5,4	16	17,2	72	77,4	6	4,8	20	16,1	98	79,0	0,611	2
Exhaled or end-tidal CO_2 monitoring (capnograph)	22	71,0	3	9,7	6	19,4	56	60,9	10	10,9	26	28,3	78	63,4	13	10,6	32	26,0	1,111	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.17 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 3																				
Peak inspiratory flow monitoring (e.g. asthma patients)	6	19,4	2	6,5	23	74,2	10	10,5	13	13,7	72	75,8	16	12,7	15	11,9	95	75,4	2,470	2
Non-invasive mechanical ventilation	7	23,3	5	16,7	18	60,0	19	21,1	20	22,2	51	56,7	26	21,7	25	20,8	69	57,5	0,428	2
Mechanical ventilation	2	6,3	10	31,3	20	62,5	11	12,0	19	20,7	62	67,4	13	10,5	29	23,4	82	66,1	1,964	2
Drawing an arterial blood gas (ABG) sample	2	6,5	4	12,9	25	80,7	17	17,9	20	21,1	58	61,1	19	15,1	24	19,1	83	65,9	4,207	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.17 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 4																				
Interpretation of arterial blood gas (ABG)	1	3,0	3	9,1	29	87,9	5	5,3	16	16,8	74	77,9	6	4,7	19	14,8	103	80,5	1,555	2
Manipulation of treatment according to arterial blood gas (ABG)	2	6,5	6	19,4	23	74,2	13	13,8	16	17,0	65	69,2	15	12,0	22	17,6	88	70,4	1,214	2
Occlusive dressing for open pneumothorax (tape only three sides)	14	43,8	8	25,0	10	31,3	48	51,6	25	26,9	20	21,5	62	49,6	33	26,4	30	24,0	1,271	2
Emergency needle decompression of tension pneumothorax	24	75,0	3	9,4	5	15,6	71	74,7	14	14,7	10	10,5	95	74,8	17	13,4	15	11,8	1,041	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.17 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 5																				
Emergency placement of an underwater drain for treatment of a tension pneumotho-rax	20	62,5	4	12,5	8	25,0	55	57,9	16	16,8	24	25,3	75	59,1	20	15,8	32	25,2	0,373	2
Emergency placement of an underwater drain for treatment of a pneumo-thorax and/or haemothorax	19	59,4	3	9,4	10	31,3	49	52,7	16	17,2	28	30,1	68	54,4	19	15,2	38	30,4	1,166	2
Chest drai-nage system management	6	18,2	7	21,2	20	60,6	19	20,4	32	34,4	42	45,2	25	19,8	39	31,0	62	49,2	2,613	2
Chest X-ray interpretation		12,1		12,1		75,8		2,2		6,5		91,4	6	4,8	10	7,9	110	87,3	6,754	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.18 – Importance of advanced life-support skills (%) D5_1 to D5_17

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Breathing and ventilation														
Part 1														
Initiate appropriate oxygen therapy	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Nebulisation therapy	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Bag-valve-mask ventilation	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Anaesthesia bag ventilation (Boyles machine)	8	27,6	21	72,4	30	32,3	63	67,7	38	31,2	84	68,9	0,225	1
Part 2														
Confirmation of proper advanced airway placement	1	3,3	29	96,7	2	2,1	92	97,9	3	2,4	121	97,6	0,140	1
Oxygenation and ventilation monitoring														
Peripheral saturation monitoring	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Arterial blood gas (ABG) monitoring	0	0,0	31	100,0	1	1,1	93	98,9	1	0,8	124	99,2	0,332	1
Exhaled or end-tidal CO_2 monitoring (capnograph)	4	12,9	27	87,1	8	8,6	85	91,4	12	9,7	112	90,3	0,492	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.18 – (continued)

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Part 3														
Peak inspiratory flow monitoring (e.g.aAsthma patients)	5	16,1	26	83,9	3	3,2	91	96,8	8	6,4	117	93,6	6,514	1
Non-invasive mechanical ventilation	1	3,2	30	96,8	2	2,2	90	97,8	3	2,4	120	97,6	0,108	1
Mechanical ventilation	1	3,2	30	96,8	1	1,1	92	98,9	2	1,6	122	98,4	0,678	1
Drawing an arterial blood gas (ABG) sample	1	3,2	30	96,8	1	1,1	91	98,9	2	1,6	121	98,4	0,663	1
Part 4														
Interpretation of arterial blood gas (ABG)	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Manipulation of treatment according to arterial blood gas (ABG)	1	3,2	30	96,8	1	1,1	93	98,9	2	1,6	123	98,4	0,692	1
Occlusive dressing for open pneumothorax (tape only three sides)	2	6,5	29	93,6	3	3,2	90	96,8	5	4,0	119	96,0	0,625	1
Emergency needle decompression of tension pneumothorax	4	12,9	27	87,1	1	1,1	93	98,9	5	4,0	120	96,0	8,510	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.18 – (continued)

Skills	State hospitals				Private hospitals				Total				χ^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Part 5														
Emergency placement of an underwater drain for treatment of a tension pneumothorax	5	16,1	26	83,9	11	11,7	83	88,3	16	12,8	109	87,2	0,409	1
Emergency placement of an underwater drain for treatment of a pneumothorax and/or haemothorax	5	16,1	26	83,9	10	10,8	83	89,3	15	12,1	109	87,9	0,632	1
Chest drainage system management	2	6,5	29	93,6	2	2,1	92	97,9	4	3,2	121	96,8	1,407	1
Chest X-ray interpretation	1	3,2	30	96,8	1	1,1	93	98,9	2	1,6	123	98,4	0,692	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.6 *Circulation with haemorrhage control C6_1 to C6_15; D6_1 to D6_15*

This question will be analysed in six separate parts because the actions are related to each other and to simplify the figures.

a) *Part 1 C6_1 to C6_4; D6_1 to D6_14*

Part 1 provides the results and analysis of performance of four skills pertaining to circulation with haemorrhage control: haemodynamic monitoring of the critically ill patient, analyse 12-lead ECG: myocardial infarction, analyse ECG strips: lethal rhythms and analyse ECG strip: non-lethal strips.

Figures 4.47 and 4.48 illustrate the skills visually by indicating the mean score for each variable.

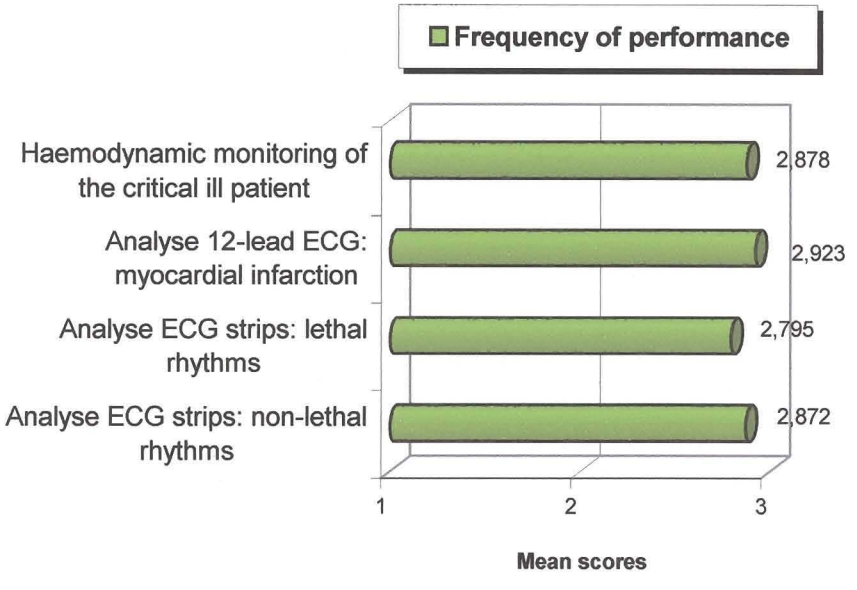

Figure 4.47- Circulation with haemorrhage control (Part 1)

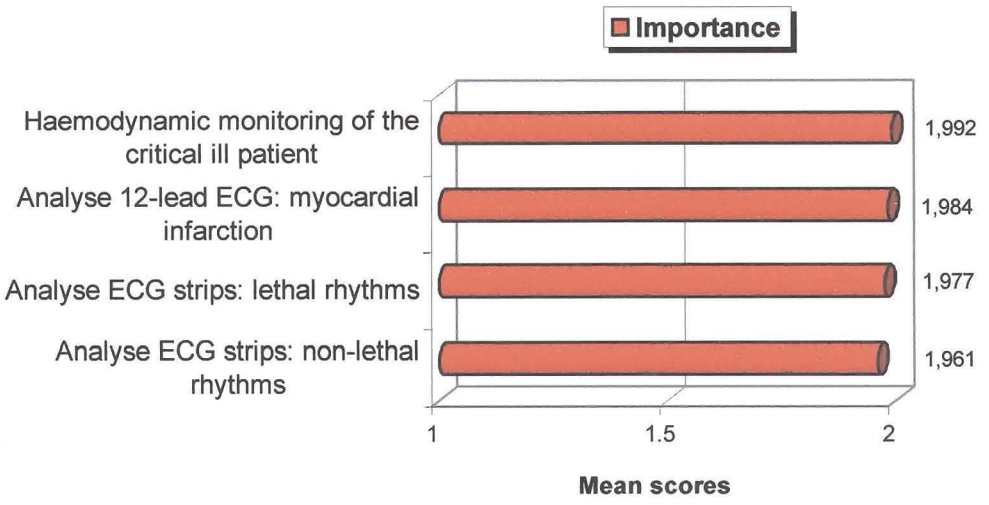

Figure 4.48 - Circulation with haemorrhage control (Part 1)

Table 4.19 reflects the *frequency of performance* of advanced life-support skills pertaining to circulation with haemorrhage control. Note that the majority of the respondents indicated that they frequently perform the skills pertaining to assessment and recording.

Table 4.20 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

b) Part 2 C6_5 to C6_8; D6_5 to D6_8

Part 2 provides the results and analysis of performance of four skills pertaining to circulation with haemorrhage control: control external bleeding, suturing of skin lacerations, administration of resuscitation fluids and MAST suit application.

Figures 4.49 and 4.50 illustrate the skills visually by indicating the mean scores for each variable.

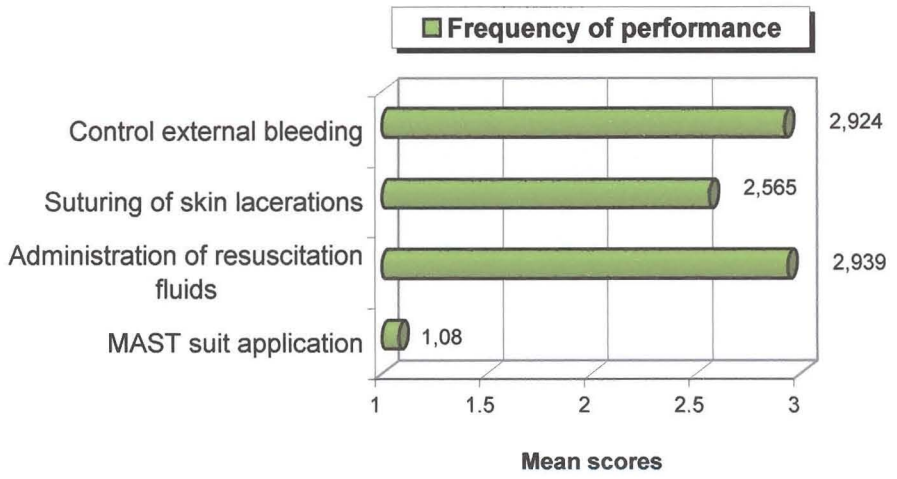

Figure 4.49 - Circulation with haemorrhage control (Part 2)

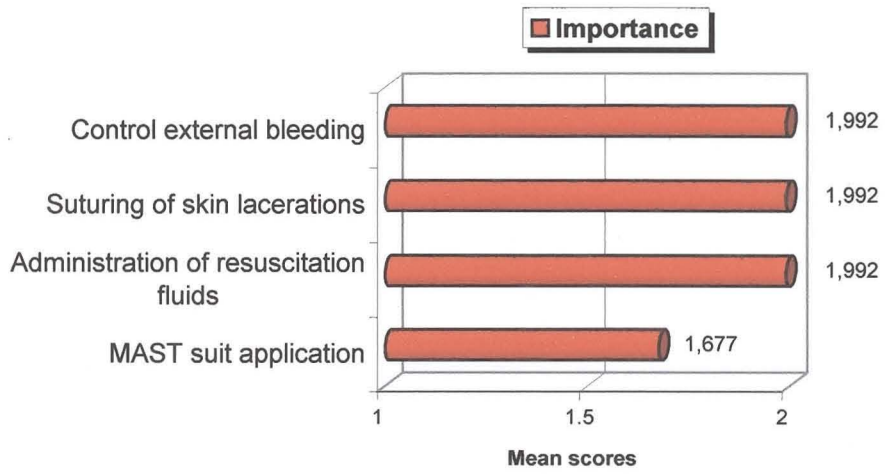

Figure 4.50 - Circulation with haemorrhage control (Part 2)

Table 4.19 reflects the *frequency of performance* of advanced life-support skills pertaining to circulation with heamorrhage control. Note that the majority of the respondents indicated that they frequently perform the skills, except the MAST suit application. This skill was performed seldom/never according to the majority of the respondents (92,6%).

Table 4.20 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum. However, only 67,7% of the respondents agreed and 32,5% of the respondents disagreed that MAST suit application should be included in the curriculum.

c) *Part 3 C6_9 to C6_94; D6_5 to D6_94*

Part 3 provides the results and analysis of performance of four skills pertaining to circulation with haemorrhage control: peripheral line access, internal jugular venous access, external jugular venous access and femoral venous access.

Figures 4.51 and 4.52 illustrate the skills visually by indicating the mean score for each variable.

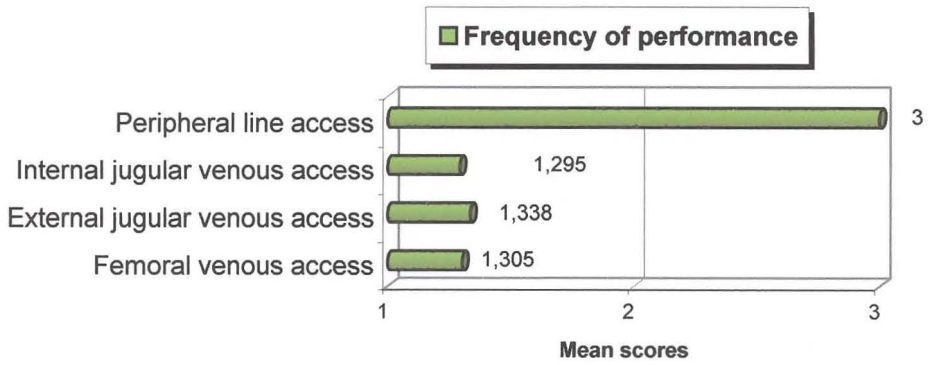

Figure 4.51 - Circulation with haemorrhage control (Part 3)

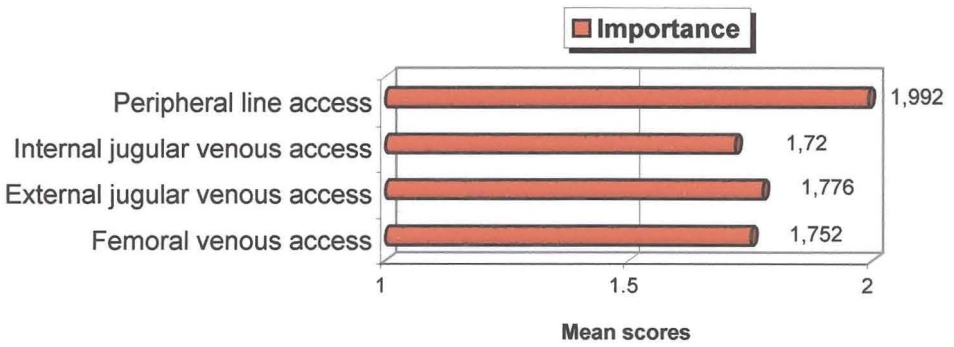

Figure 4.52 - Circulation with haemorrhage control (Part 3)

Table 4.19 reflects the *frequency of performance* of advanced life-support skills pertaining to assessment and recording. Note that the majority of the respondents indicated that they frequently perform peripheral line access. However, respondents indicated that they seldom/never perform internal jugular venous access, external jugular venous access and femoral venous access.

Table 4.20 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

d) Part 4 C6_95 to C6_99; D6_95 to D6_99

Part 4 provides the results and analysis of performance of five skills pertaining to circulation with haemorrhage control: intraosseous access, central line access, peripheral vein cutdown, umbilical venous access and umbilical arterial access.

Figures 4.53 and 4.54 illustrate the skills visually by indicating the mean score for each variable.

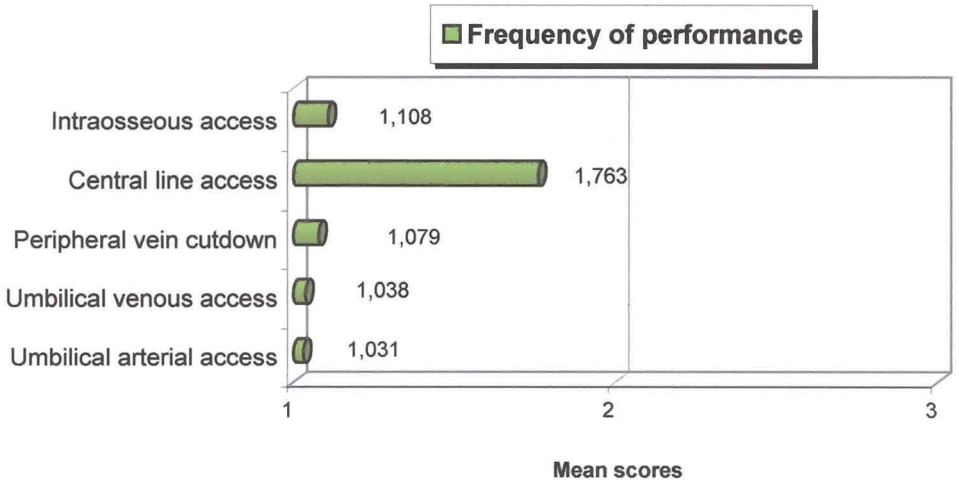

Figure 4.53 - Circulation with haemorrhage control (Part 4)

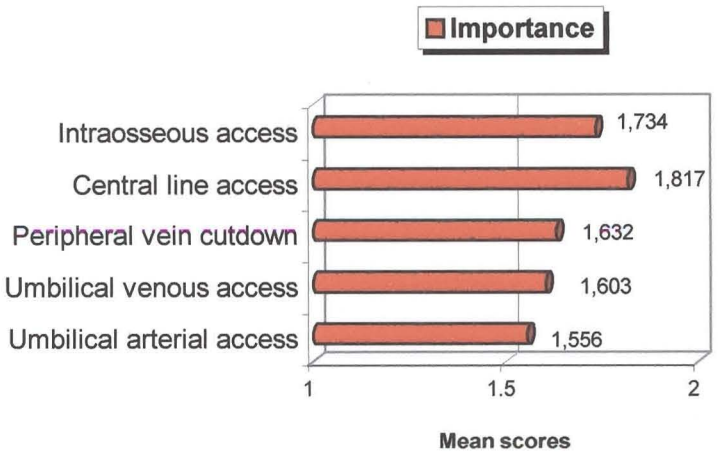

Figure 4.54 - Circulation with haemorrhage control (Part 4)

Table 4.19 reflects the *frequency of performance* of advanced life-support skills pertaining to circulation with haemorrhage control. Note that the majority of the respondents indicated that they perform these skills seldom/never. However, 30,9% respondents indicated that they perform central line access frequently and 15,0% indicated that they perform the skill periodically.

Table 4.20 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

e) Part 5 C6_10 to C6_12; D6_10 to D6_12

Part 5 provides the results and analysis of performance of three skills pertaining to circulation with haemorrhage control: emergency pericardiocentesis for treatment of a pericardial tamponade, effective performance of CPR and splinting of limbs.

Figures 4.55 and 4.56 illustrate the skills visually by indicating the mean score for each variable.

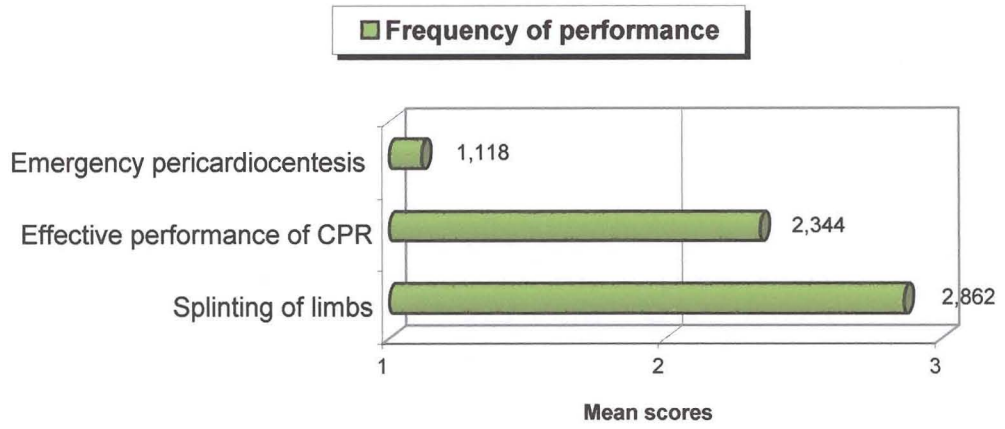

Figure 4.55 - Circulation with haemorrhage control (Part 5)

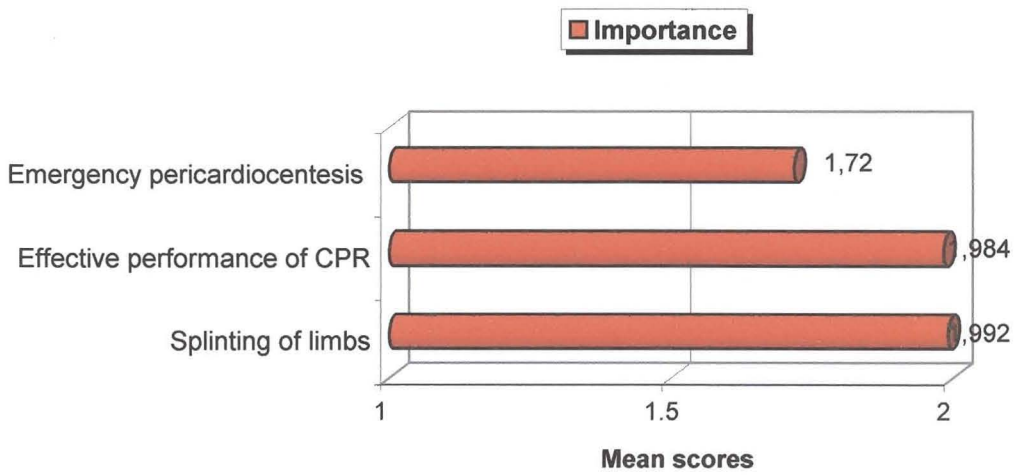

Figure 4.56 - Circulation with haemorrhage control (Part 5)

Table 4.19 reflects the *frequency of performance* of advanced life-support skills pertaining to circulation with haemorrhage control. Note that the majority of the respondents indicated that they perform emergency pericardiocentesis for treatment of a pericardial tamponade seldom/never (92,7%), whereas 45,7% indicated that they perform effective CPR frequently and 44,1% of the respondents indicated that they perform this skill periodically. Splinting of limbs are frequently performed.

Table 4.20 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

f) Part 6 C6_13 to C6_15; D6_13 to D6_15

Part 6 provides the results and analysis of performance of four skills pertaining to circulation with haemorrhage control: splinting of pelvis, limb X-ray interpretation and pelvic X-ray interpretation.

Figures 4.57 and 4.58 illustrate the skills visually by indicating the mean score for each variable.

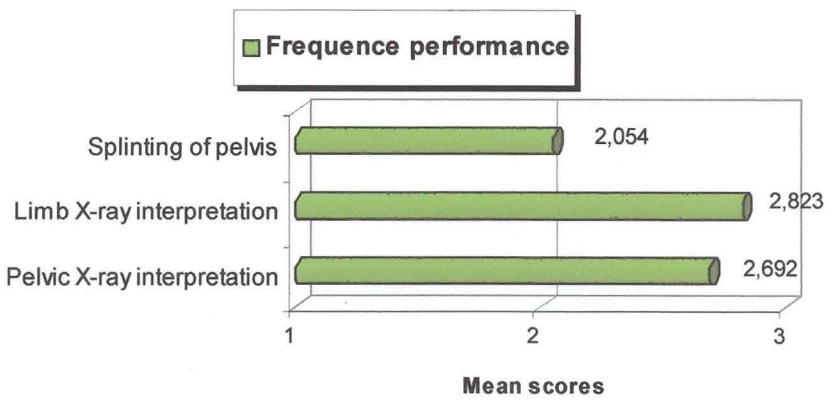

Figure 4.57 - Circulation with haemorrhage control (Part 6)

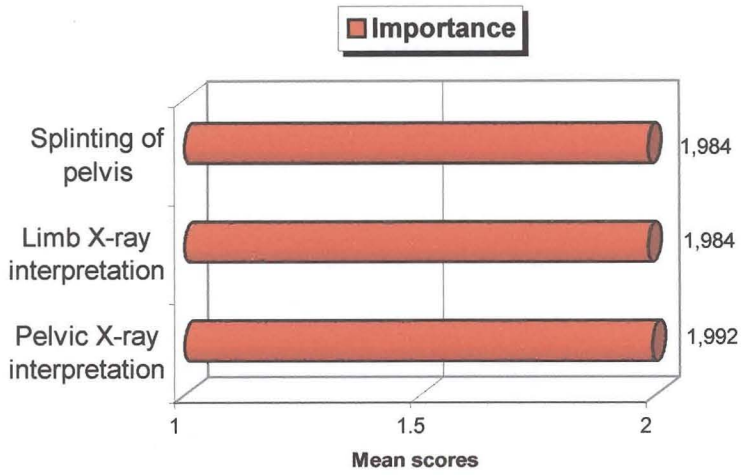

Figure 4.58 - Circulation with haemorrhage control (Part 6)

Table 4.19 reflects the *frequency of performance* of advanced life-support skills pertaining to circulation with haemorrhage control. Note that the skill splinting of pelvis is performed seldom/never (31,2%), periodically (32,0%) and frequently (36,8%). Limb X-ray interpretation (87,3%) and pelvic X-ray interpretation (76,2%) were both performed frequently.

Table 4.20 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- MAST suit application indicated a highly significant Spearman correlation coefficient (r_s 0,299)
- Internal jugular venous access indicated a significant Spearman correlation coefficient (r_s 0,183)
- External jugular venous access indicated a highly significant Spearman correlation coefficient (r_s 0,338)

- Femoral venous access indicated a highly significant Spearman correlation coefficient (r_s 0,378)
- Intraosseous access indicated a highly significant Spearman correlation coefficient (r_s 0,319)
- Central line access indicated a highly significant Spearman correlation coefficient (r_s 0,384)
- Peripheral vein cutdown indicated a highly significant Spearman correlation coefficient (r_s 0,343)
- Umbilical venous access indicated a highly significant Spearman correlation coefficient (r_s 0,376)
- Umbilical arterial access indicated a highly significant Spearman correlation coefficient (r_s 0,275)
- Emergency pericardiocentesis for treatment of a pericardial tamponade indicated a highly significant Spearman correlation coefficient (r_s 0,242)
- Splinting of limbs indicated a highly significant Spearman correlation coefficient (r_s 0,250)
- Splinting of pelvis indicated a significant Spearman correlation coefficient (r_s 0,221)
- Limb X-ray interpretation indicated a significant Spearman correlation coefficient (r_s 0,228)

Table 4.19 – Frequency of performance of advanced life-support skills (%) C6_1 to C6_15

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Circulation with haemorrhage control																				
Part 1																				
Haemodynamic monitoring of the critically ill patient	4	3,0	4	0,0	25	97,0	2	3,2	6	7,5	85	89,4	4	3,2	7	5,5	116	91,3	2,614	2
Analyse 12-lead ECG: myocardial infarction	1	3,0	1	3,0	31	93,9	0	0,0	6	6,5	87	93,6	1	0,8	7	5,6	118	93,7	3,332	2
Analyse ECG strip: lethal rhythms	2	6,3	3	9,4	27	84,4	5	5,5	7	7,7	79	86,8	7	5,7	10	8,1	106	86,2	0,123	2
Analyse ECG strips: non-lethal rhythms	2	6,5	1	3,2	28	90,3	3	3,3	4	4,4	83	92,2	5	4,1	5	4,1	111	91,7	0,635	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.19 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 2																				
Control external bleeding	0	0,0	4	12,1	29	87,9	1	1,1	3	3,2	90	95,7	1	0,8	7	5,5	119	93,7	4,046	2
Suturing of skin lacerations	1	3,0	0	0,0	32	97,0	17	18,1	20	21,3	57	60,6	18	14,2	20	15,8	89	70,1	15,528**	2
Administration of resuscitation fluids	0	0,0	0	0,0	33	100,0	0	0,0	8	8,5	86	91,5	0	0,0	8	6,3	119	93,7	2,997	1
MAST suit applications	28	93,3	1	3,3	1	3,3	84	92,3	7	7,7	0	0,0	112	92,6	8	6,6	1	0,8	3,684	2
Part 3																				
Intravenous access																				
Peripheral line access	0	0,0	0	0,0	33	100,0	0	0,0	0	0,0	93	100,0	0	0,0	0	0,0	126	100,0	0,000	0
Internal jugular venous access	25	80,7	3	9,7	3	9,7	73	77,7	14	14,9	7	7,5	98	78,4	17	13,6	10	8,0	0,638	2
External jugular venous access	25	75,8	4	12,1	4	12,1	71	75,5	14	14,9	9	9,6	96	75,6	18	14,2	13	10,2	0,287	2
Femoral venous access	23	69,7	2	6,0	8	24,2	79	84,0	10	10,6	5	5,32	102	80,3	12	9,5	13	10,2	9,712	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.19 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 4																				
Intraosseous access	27	81,8	5	15,2	1	3,0	86	92,5	7	7,5	0	0,0	113	89,7	12	9,5	1	0,8	4,613	2
Central line access	19	57,6	3	9,1	11	33,3	49	52,1	16	17,0	29	30,9	68	53,5	19	15,0	40	31,5	1,210	2
Peripheral vein cutdown	29	93,6	1	3,2	1	3,2	86	93,5	5	5,4	1	1,1	115	93,5	6	4,9	2	1,6	0,884	2
Umbilical venous access	30	90,1	3	9,1	0	0,0	91	97,9	2	2,2	0	0,0	121	96,0	5	4,0	0	0,0	3,079	1
Umbilical arterial access	31	93,9	2	6,1	0	0,0	91	97,9	2	2,2	0	0,0	122	96,8	4	3,2	0	0,0	1,212	1
Part 5																				
Emergency pericardiocente-sis for treatment of a pericardial tamponade	30	93,8	0	0,0	2	6,3	84	92,3	3	3,3	4	4,4	114	92,7	3	2,4	6	4,9	1,227	2
Effective performance of CPR (ventilation and compressions)	3	9,1	10	30,3	20	60,6	10	10,6	46	48,9	38	40,4	13	10,2	56	44,1	58	45,7	4,158	2
Splinting of limbs	1	3,0	1	3,0	31	93,9	1	1,1	10	10,8	82	88,2	2	1,6	11	8,7	113	89,7	2,341	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.19 – (continued)

Skills	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 6																				
Splinting of pelvis	15	45,5	6	18,2	12	36,4	24	26,1	34	37,0	34	37,0	39	31,2	40	32,0	46	36,8	5,598	2
Limb X-ray interpretation	2	6,3	2	6,3	28	87,5	3	3,2	9	9,6	82	87,2	5	4,0	11	8,7	110	87,3	0,865	2
Pelvic X-ray interpretation	5	15,2	5	15,2	23	69,7	3	3,2	17	18,3	73	78,5	8	6,4	22	17,5	96	76,2	5,840	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.20 – Importance of advanced life-support skills (%) D6_1 to D6_15

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Circulation with haemorrhage control														
Part 1														
Haemodynamic monitoring of the critically ill patient	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Analyse 12-lead ECG: myocardial infarction	2	6,5	29	93,6	0	0,0	94	100,0	2	1,6	123	98,4	6,163	1
Analyse ECG strip: lethal rhythms	3	9,7	28	90,3	0	0,0	94	100,0	3	2,4	122	97,6	9,320	1
Analyse ECG strips: non-lethal rhythms	3	10,0	27	90,0	2	2,1	92	97,9	5	4,0	119	96,0	3,642	1
Part 2														
Control external bleeding	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Suturing of skin lacerations	1	3,2	30	96,8	0	0,0	94	100,0	1	0,8	124	99,2	3,057	1
Administration of resuscitation fluids	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1
MAST suit applications	10	33,3	20	66,7	30	32,3	63	67,7	40	32,5	83	67,5	0,012	1
Part 3														
Intravenous access														
Peripheral line access	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1
Internal jugular venous access	9	30,0	21	70,0	24	26,4	67	73,6	33	27,3	88	72,7	0,150	1
External jugular venous access	9	30,0	21	70,0	17	18,7	74	81,3	26	21,5	95	78,5	1,713	1
Femoral venous access	5	16,7	25	83,3	24	26,4	67	73,6	29	24,0	92	76,0	1,167	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.20 – (continued)

Skills	State hospitals				Private hospitals				Total				χ^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Part 4														
Intraosseous access	9	30,0	21	70,0	22	24,4	68	75,6	31	25,8	89	74,2	0,363	1
Central line access	6	20,0	24	80,0	16	17,4	76	82,6	22	18,0	100	82,0	0,104	1
Peripheral vein cutdown	9	30,0	21	70,0	34	37,4	57	62,4	43	35,5	78	64,5	0,534	1
Umbilical venous access	13	43,3	17	56,7	34	37,0	58	63,0	47	38,5	75	61,5	0,388	1
Umbilical arterial access	13	43,3	17	56,7	40	43,5	52	56,5	53	43,4	69	56,6	0,000	1
Part 5														
Emergency pericardiocentesis for treatment of a pericardial tamponade	8	26,7	22	73,3	26	28,6	65	71,4	34	28,1	87	71,9	0,041	1
Effective performance of CPR (ventilation and compressions)	1	3,3	29	96,7	1	1,1	92	98,9	2	1,6	121	98,4	0,723	1
Splinting of limbs	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1
Part 6														
Splinting of pelvis	2	6,7	28	93,3	0	0,0	93	100,0	2	1,6	121	98,4	6,303	1
Limb X-ray interpretation	1	3,3	29	96,7	1	1,1	92	98,9	2	1,6	121	98,4	0,723	1
Pelvic X-ray interpretation	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.7 *Disability, differential diagnosis, defibrillation and drugs C7_1 to C7_89; D7_1 to D7_89*

This question will be analysed in five separate parts because the actions are related to each other, and to simplify the figures.

a) *Part 1 C7_11 to C7_13; D7_11 to D7_13*

Part 1 provides the results and analysis of performance of three skills pertaining to disability, differential diagnosis, defibrillation and drugs: AVPU scale, Glasgow coma scale and neonatal stress response.

Figures 4.59 and 4.60 illustrate the skills visually by indicating the mean score for each variable.

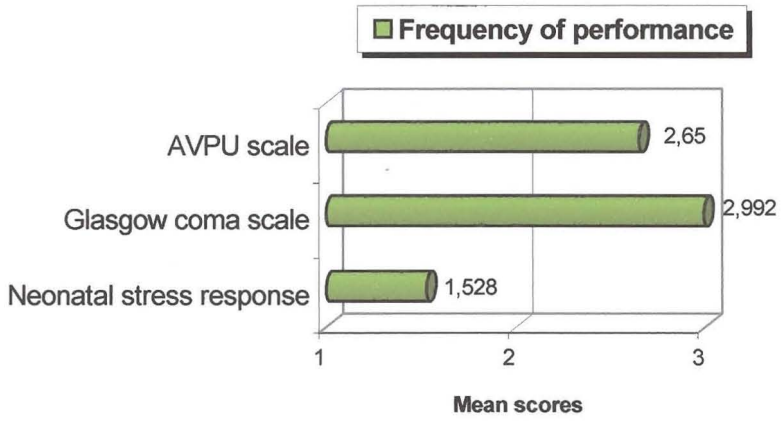

Figure 4.59 - Disability, diagnosis, defribillation and drugs (Part 1)

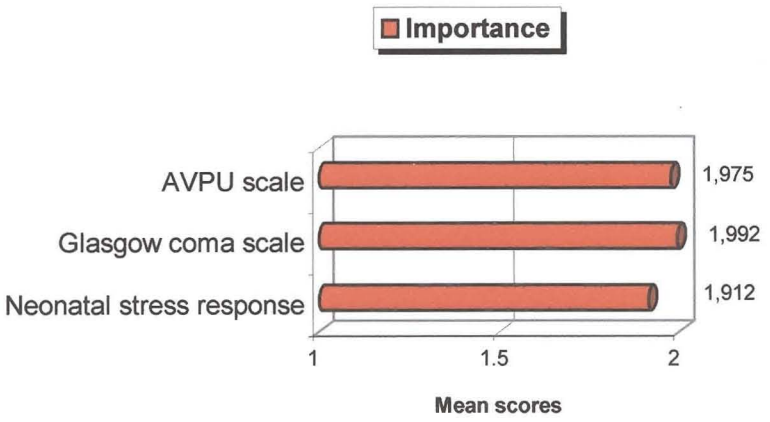

Figure 4.60 - Disability, diagnosis, defribillation and drugs (Part 1)

Table 4.21 reflects the *frequency of performance* of advanced life-support skills pertaining to disability, differential diagnosis, defibrillation and drugs. Note that the majority of the respondents indicated that they frequently perform the skills AVPU scale and Glasgow coma scale.

Table 4.22 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

b) Part 2 C7_2 to C7_4; D7_2 to D7_4

Part 2 provides the results and analysis of performance of three skills pertaining to disability, differential diagnosis, defibrillation and drugs: blood glucose monitoring, differential diagnosis for cardiac arrest and defibrillation.

Figures 4.61 and 4.62 illustrate the skills visually by indicating the mean score for each variable.

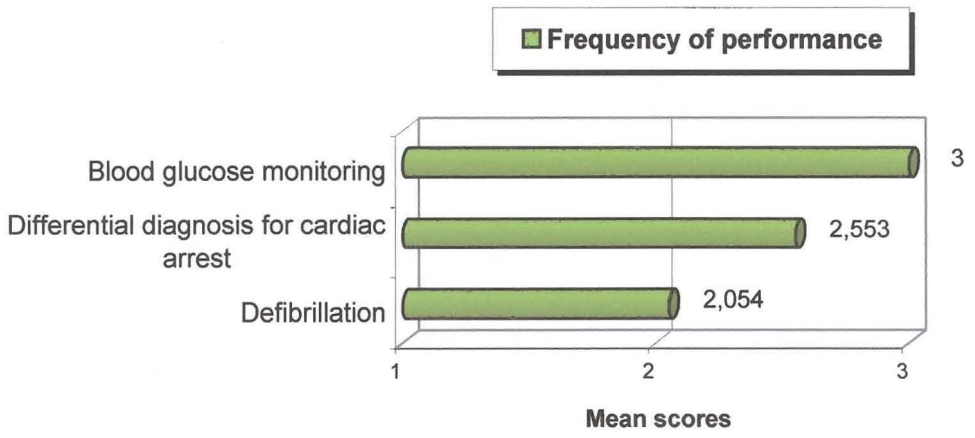

Figure 4.61 -Disability, differential diagnosis, defibrillation and drugs (Part 2)

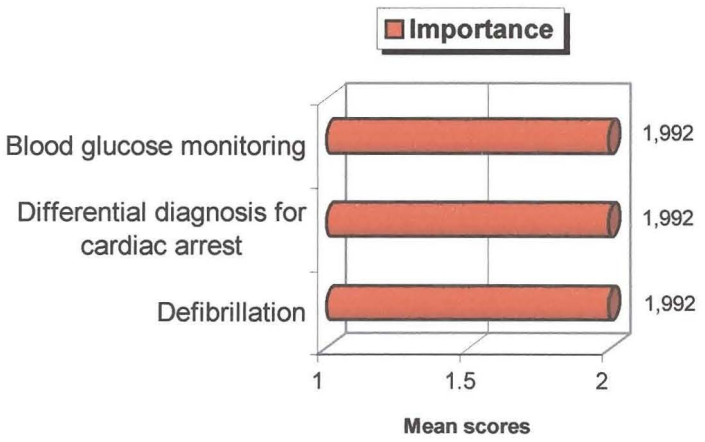

Figure 4.62 - Disability, differential diagnosis, defribrillation and drugs (Part 2)

Table 4.21 reflects the *frequency of performance* of advanced life-support skills pertaining to disability, differential diagnosis, defibrillation and drugs. Note that the majority of the respondents indicated that they frequently perform monitoring of glucose and differential diagnosis for cardiac arrest.

However, the performance frequency for defibrillation was distributed throughout the continuum.

Table 4.22 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

c) *Part 3* C7_5 to C7_7; D7_5 to D7_7

Part 3 provides the results and analysis of performance of the first three skills pertaining to disability, differential diagnosis, defibrillation and drugs: cardioversion, external pacing and vagal manoeuvres.

Figures 4.63 and 4.64 illustrate the skills visually by indicating the mean score for each variable.

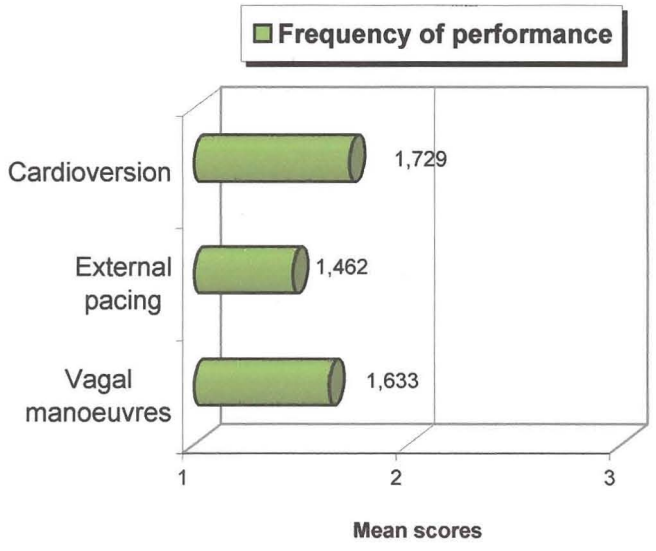

Figure 4.63 - Disability, differential diagnosis, defibrillation and drugs (Part 3)

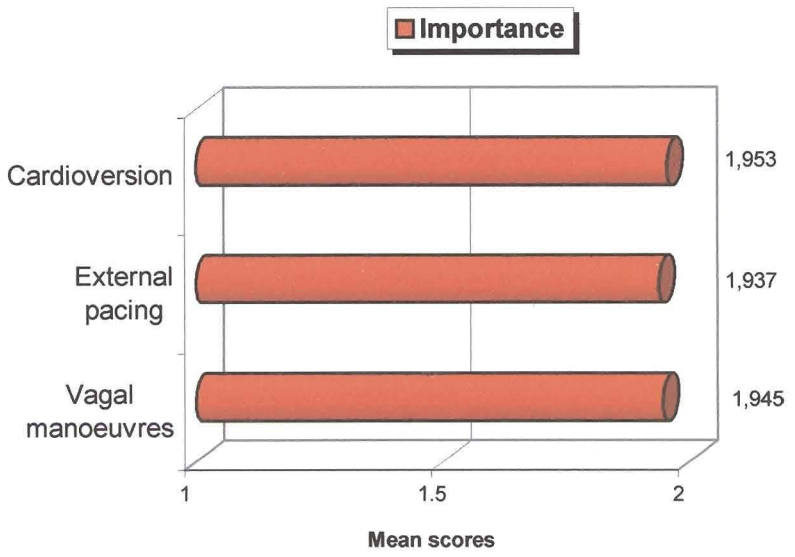

Figure 4.64 - Disability, differential diagnosis, defibrillation and drugs (Part 3)

Table 4.21 reflects the *frequency of performance* of advanced life-support skills pertaining to disability, differential diagnosis, defibrillation and drugs. Note that the majority of the respondents indicated that they perform the skills seldom or never. However, cardioversion was spread throughout the continuum.

Table 4.22 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

d) Part 4 C7_81 to C7_84; D7_81 to D7_84

Part 4 provides the results and analysis of performance of four skills pertaining to disability, differential diagnosis, defibrillation and drugs: sedation, analgesia, skeletal muscle relaxation and treatment of cardiac arrest.

Figures 4.65 and 4.66 visually illustrates the skills pertaining to assessment and recording and show that all four skills are performed frequently and are seen as important to include in the curriculum.

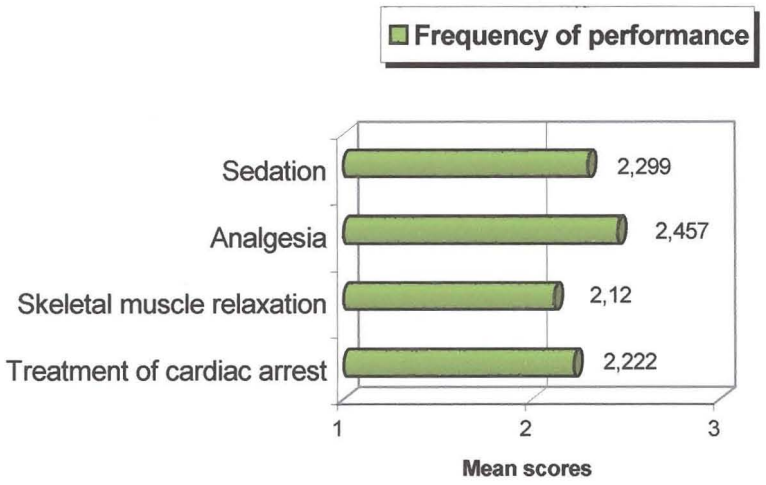

Figure 4.65 - Disability, differential diagnosis, defribrillation and drugs (Part 4)

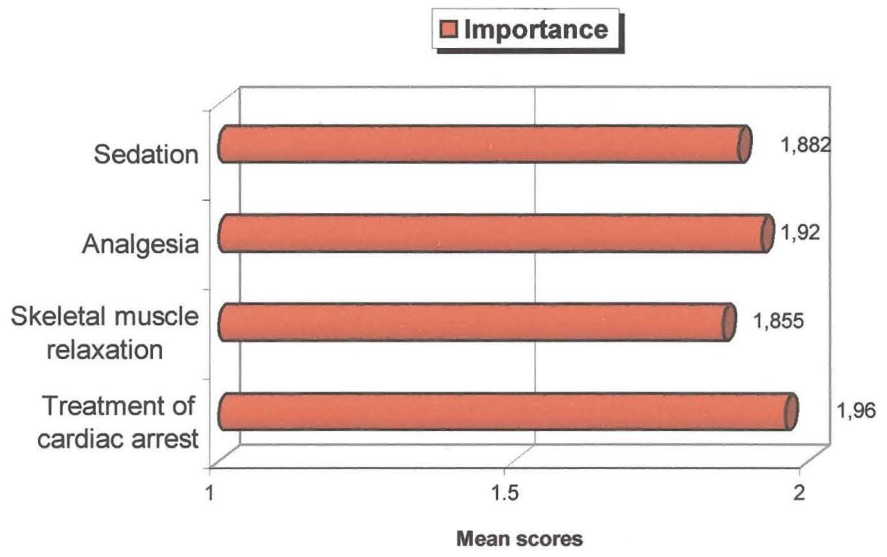

Figure 4.66 - Disability, differential diagnosis, defribrillation and drugs (Part 4)

Table 4.21 reflects the *frequency of performance* of advanced life-support skills pertaining to disability, differential diagnosis, defibrillation and drugs. Note that the majority of the respondents indicated that they frequently perform sedation and analgesia. Although the respondents indicated that they

frequently perform skeletal muscle relaxant (48,8%) and treatment of cardiac arrest (49,2%), these skills were performed throughout the continuum.

Table 4.22 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

e) Part 5 C7_85 to C7_89; D7_85 to D7_89

Part 5 provides the results and analysis of performance of the first five skills pertaining to disability, differential diagnosis, defibrillation and drugs: correction of hypoxia, positive inotropes, correction of metabolic acidosis, thrombolysis in acute myocardial infarction and treatment of acute pulmonary oedema.

Figures 4.67 and 4.68 illustrate the skills visually by indicating the mean score of each variable.

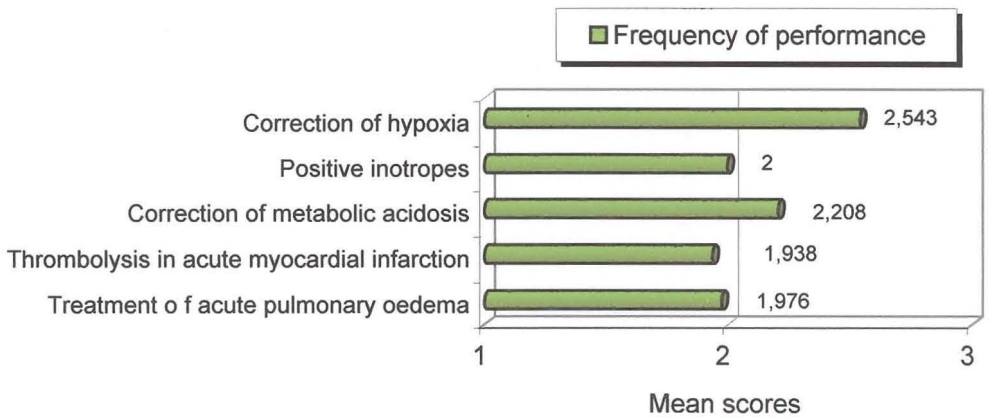

Figure 4.67 - Disability, differential diagnosis, defibrillation and drugs (Part 5)

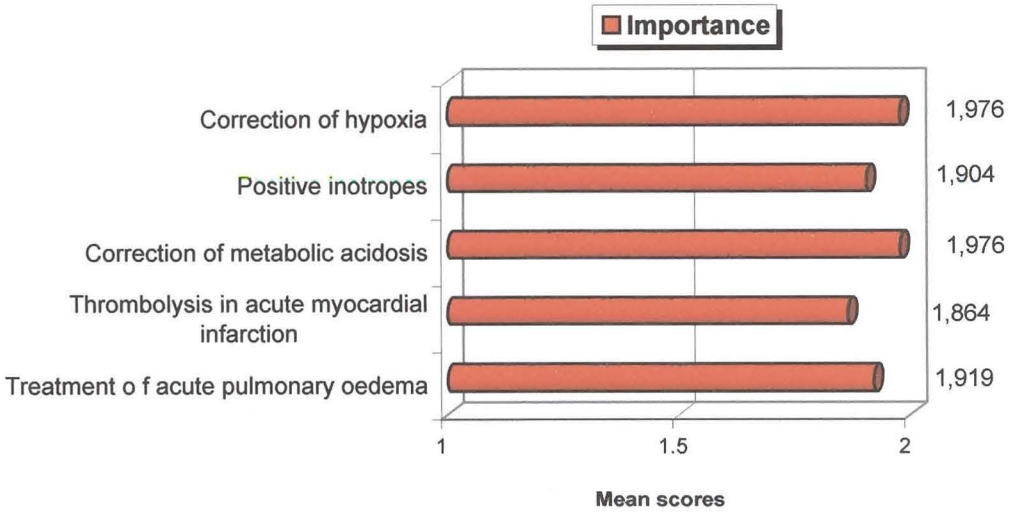

Figure 4.68 - Disability, differential diagnosis, defribrillation and drugs (Part 5)

Table 4.21 reflects the *frequency of performance* of advanced life-support skills pertaining to disability, differential diagnosis, defibrillation and drugs. Note that the majority of the respondents indicated that they frequently perform the skills correction of hypoxia and correction of metabolic acidosis. The skills positive inotropes, thrombolysis in acute myocardial infarction and treatment of acute pulmonary oedema varied throughout the continuum.

Table 4.22 reflects the *importance* of these skills to be included in the curriculum and the majority of respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- The AVPU scale indicated a highly significant Spearman correlation coefficient (r_s 0,623)
- The Glasgow coma scale indicated a significant Spearman correlation coefficient (r_s 0,178)

- Neonatal stress response indicated a significant Spearman correlation coefficient (r_s 0.216)
- External pacing indicated a highly significant Spearman correlation coefficient (r_s 0,284)
- Vagal manoeuvres indicated a significant Spearman correlation coefficient (r_s 0,209)
- Sedation indicated a highly significant Spearman correlation coefficient (r_s 0,455)
- Analgesia indicated a highly significant Spearman correlation coefficient (r_s 0,411)
- Skeletal muscle relaxant indicated a highly significant Spearman correlation coefficient (r_s 0,483)
- Treatment of cardiac arrest indicated a significant Spearman correlation coefficient (r_s 0,192)
- Correction of hypoxia indicated a highly significant Spearman correlation coefficient (r_s 0,242)
- Positive inotropes indicated a highly significant Spearman correlation coefficient (r_s 0,330)
- Correction of metabolic acidosis indicated a significant Spearman correlation coefficient (r_s 0,230)
- Thrombolysis in acute myocardial infarction indicated a highly significant Spearman correlation coefficient (r_s 0,523)
- Treatment of acute pulmonary oedema indicated a highly significant Spearman correlation coefficient (r_s 0,361)

Table 4.21– Frequency of performance of advanced life-support skills (%) C7_1 to C7_89

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Disability, differential diagnosis, defibrillation and drugs																				
Part 1																				
Monitoring patient's level of consciousness																				
AVPU scale	3	10,3	0	0,0	26	89,7	14	16,1	5	5,8	68	78,2	17	14,7	5	4,3	94	81,0	2,512	2
Glasgow coma scale	0	0,0	0	0,0	33	100,0	0	0,0	1	1,1	93	98,9	0	0,0	1	0,8	126	99,2	0,354	1
Neonatal stress response	15	48,4	5	16,1	11	35,5	64	69,6	16	17,4	12	13,0	79	64,2	21	17,1	23	18,7	7,885*	2
Part 2																				
Blood glucose monitoring	0	0,0	0	0,0	33	100,0	0	0,0	0	0,0	94	100,0	0	0,0	126	99,2	1	0,8	0,354	1
Differential diagnosis for cardiac arrest (correctable causes)	2	6,7	8	26,7	20	66,7	7	7,9	27	30,3	55	61,8	9	7,6	35	29,4	75	63,0	0,230	2
Defibrillation	11	33,3	10	30,3	12	36,4	24	25,8	41	44,1	28	30,1	35	27,8	51	40,5	40	31,8	1,940	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.21 – (continued)

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 3																				
Cardioversion	15	45,5	10	30,3	8	24,2	48	52,2	24	26,1	20	21,7	63	50,4	34	27,2	28	22,4	0,444	2
External pacing	22	66,7	5	15,2	6	18,2	63	67,7	18	19,4	12	12,9	85	67,5	23	18,3	18	14,3	0,715	2
Vagal manoeuvres	20	60,6	5	15,2	8	24,2	47	51,7	29	31,9	15	16,5	67	54,0	34	27,4	23	18,6	3,614	2
Part 4																				
Prescribe appropriate medication to facilitate																				
Sedation	10	32,3	4	12,9	17	54,8	25	27,2	9	9,8	58	63,0	35	28,5	13	10,6	75	61,0	0,680	2
Analgesia	8	25,8	2	6,5	21	67,7	20	21,7	6	6,5	66	71,7	28	22,8	8	6,5	87	70,7	0,221	2
Skeletal muscle relaxation	12	40,0	6	20,0	12	40,0	31	34,1	12	13,2	48	52,8	43	35,5	18	14,9	60	49,6	1,667	2
Treatment of cardiac arrest	11	35,5	4	12,9	16	51,6	22	24,2	26	28,6	43	47,3	33	27,1	30	24,6	59	48,4	3,493	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.21 – (continued)

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 5																				
Correction of hypoxia	4	12,5	5	15,6	23	71,9	13	14,3	17	18,7	61	67,0	17	13,8	22	17,9	84	68,3	0,260	2
Positive inotropes	16	50,0	2	6,3	14	43,8	36	40,0	14	15,6	40	44,4	52	42,6	16	13,1	54	44,3	2,115	2
Correction of metabolic acidosis	5	16,7	6	20,0	19	63,3	30	33,0	19	20,9	42	46,2	35	28,9	25	20,7	61	50,4	3,402	2
Thrombolysis in acute myocardial infarction	17	53,1	4	12,5	11	34,4	36	38,7	21	22,6	36	38,7	53	42,4	25	20,0	47	37,6	2,496	2
Treatment of acute pulmonary oedema	13	41,9	7	22,6	11	35,5	33	35,9	26	28,3	33	35,9	46	37,4	33	26,8	44	35,8	0,508	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.22 – Importance of advanced life-support skills (%) D7_1 to D7_89

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Disability, differential diagnosis, defibrillation and drugs														
Part 1														
Monitoring patient's level of consciousness														
AVPU scale	2	6,9	27	93,1	1	1,1	88	98,9	3	2,5	115	97,5	2,942	1
Glasgow coma scale	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1
Neonatal stress response	3	10,7	25	89,3	8	8,6	85	91,4	11	9,1	110	90,9	0,116	1
Part 2														
Blood glucose monitoring	1	3,3	29	96,7	0	0,0	93	100,0	1	0,8	122	99,2	3,125	1
Differential diagnosis for cardiac arrest (correctable causes)	1	3,5	28	96,6	0	0,0	92	100,0	1	0,8	120	99,2	3,199	1
Defibrillation	1	3,3	29	96,7	0		93	100,0	1	0,8	122	99,2	3,125	1
Part 3														
Cardioversion	4	13,3	26	86,7	1	1,1	92	98,9	5	4,1	118	95,9	8,740	1
External pacing	5	16,7	25	83,3	3	3,2	90	96,8	8	6,5	115	93,5	6,739	1
Vagal manoeuvres	3	10,0	27	90,0	3	3,2	90	96,8	6	4,9	117	95,1	2,243	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.22 – (continued)

Skills	State hospitals				Private hospitals				Total				χ^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Part 4														
Prescribe appropriate medication to facilitate														
Sedation	7	23,3	23	76,7	8	8,6	85	91,4	15	12,2	108	87,8	4,597	1
Analgesia	3	10,0	27	90,0	7	7,7	84	92,3	10	8,3	111	91,7	0,159	1
Skeletal muscle relaxation	6	20,0	24	80,0	12	13,3	78	86,7	18	15,0	102	85,0	0,784	1
Treatment of cardiac arrest	2	6,7	28	93,3	3	3,3	88	96,7	5	4,1	116	95,9	0,647	1
Part 5														
Correction of hypoxia	2	6,7	28	93,3	1	1,1	90	98,9	3	2,5	118	97,5	2,893	1
Positive inotropes	3	10,0	27	90,0	9	9,9	82	90,1	12	9,9	109	90,1	0,000	1
Correction of metabolic acidosis	2	6,9	27	93,1	1	1,1	89	98,9	3	2,5	116	97,5	2,987	1
Thrombolysis in acute myocardial infarction	6	20,0	24	80,0	10	11,0	81	89,0	16	13,2	105	86,8	1,597	1
Treatment of acute pulmonary oedema	4	13,3	26	86,7	6	6,7	83	93,3	10	8,4	109	91,6	1,267	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.8 *Exposure and environmental control C8_1 to C8_2; D8_1 to D8_3*

This part provides the results and analysis of performance of skills pertaining to exposure and environmental control: measures to reverse hypothermia and measures to reverse hyperthermia.

Figures 4.69 and 4.70 illustrate the skills visually by indicating the mean score for each variable.

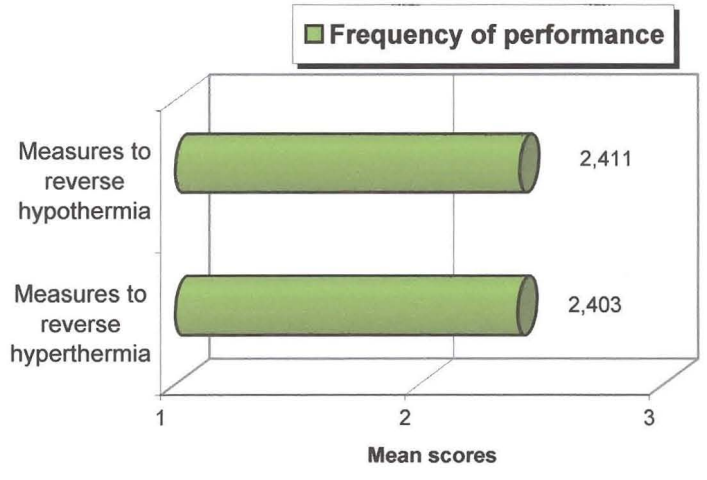

Figure 4.69 -Exposure and environmental control

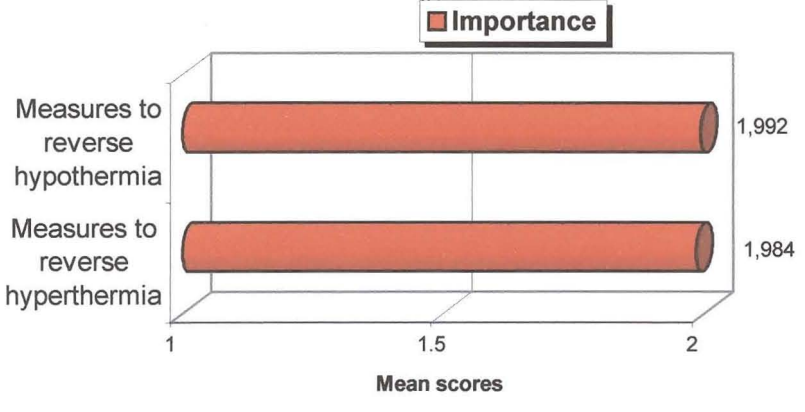

Figure 4.70 - Exposure and environmental control

Table 4.23 reflects the *frequency of performance* of advanced life-support skills pertaining to exposure and environmental control. Note that the majority of the respondents indicated that they frequently perform the skills.

Table 4.24 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Measures to reverse hypothermia indicated a significant Spearman correlation coefficient (r_s 0,218)
- Measures to reverse hyperthermia indicated a significant Spearman correlation coefficient (r_s 0,218)

Table 4.23 – Frequency of performance of advanced life-support skills (%) C8_1 to C8_3

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Exposure and environmental control																				
Measures to reverse hypothermia	4	12,1	7	21,2	22	66,7	14	15,2	29	31,5	49	53,3	18	14,4	36	28,8	71	56,8	1,827	2
Measures to reverse hyperthermia	5	15,2	8	24,2	20	60,6	19	20,7	17	18,5	56	60,9	24	19,2	25	20,0	76	60,8	0,787	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.24 – Importance of advanced life-support skills (%) D8_1 to D8_3

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Exposure and environmental control														
Measures to reverse hypothermia	1	3,3	29	96,7	0	0,0	90	100,0	1	0,8	119	99,2	3,025	1
Measures to reverse hyperthermia	2	6,7	28	93,3	0	0,0	90	100,0	2	1,7	118	98,3	6,102	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.9 Adjuncts C9_1 to C9_3; D9_1 to D9_3

This part provides the results and analysis of performance of skills pertaining to adjuncts: arterial line insertion, nasogastric tube insertion and urine catheter insertion.

Figures 4.71 and 4.72 illustrate the skills visually by indicating the mean score for each variable.

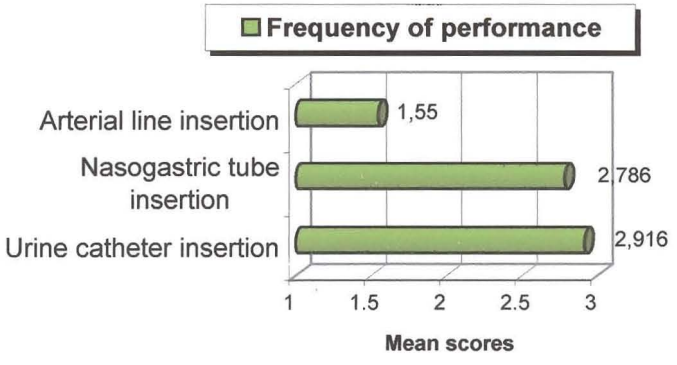

Figure 4.71 -Adjuncts

Figure 4.72 - Adjuncts

Table 4.25 reflects the *frequency of performance* of advanced life-support skills pertaining to adjuncts. Note that the majority of the respondents indicated that they perform the skill arterial line insertion seldom/never. The

skills nasogastric tube insertion and urine catheter insertion were indicated as frequently performed.

Table 4.26 reflects the *importance* of these skills to be included in the curriculum and the majority of respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Arterial line insertion indicated a highly significant Spearman correlation coefficient (r_s 0,406)
- Nasogastric tube insertion indicated a significant Spearman correlation coefficient (r_s 0,179)
- Urine catheter insertion indicated a significant Spearman correlation coefficient (r_s 0,208)

Table 4.25 – Frequency of performance of advanced life-support skills (%) C9_1 to C9_3

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Adjuncts																				
Arterial line insertion	23	71,9	1	3,1	8	25,0	63	67,7	10	10,8	20	21,5	86	68,8	11	8,8	28	22,4	1,763	2
Nasogastric tube insertion	0	0,0	1	3,0	32	97,0	0	0,0	26	27,7	68	72,3	0	0,0	27	21,3	100	78,7	8,851**	1
Urine catheter insertion	0	0,0	0	0,0	33	100,0	1	1,1	8	8,5	85	90,4	1	0,8	8	6,3	118	92,9	3,401	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.26 – Importance of advanced life-support skills (%) D9_1 to D9_3

Skills	State hospitals				Private hospitals				Total				χ^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Adjuncts														
Arterial line insertion	6	20,0	24	80,0	15	16,5	76	83,5	21	17,4	100	82,6	0,195	1
Nasogastric tube insertion	1	3,3	29	96,7	0	0,0	91	100,0	1	0,8	120	99,2	3,059	1
Urine catheter insertion	1	3,3	29	96,7	0	0,0	90	100,0	1	0,8	119	99,2	3,025	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.10 Special circumstances C10_1 to C10_5; D10_1 to D10_5

This question will be analysed in three separate parts because the actions are related to each other, and to simplify the figures.

a) Part 1 – C10_11 to C10_14; D10_11 to D10_14

Part 1 provides the results and analysis of performance of four skills pertaining to special circumstances: normal delivery, breach presentation, prolapsed cord and shoulder presentation.

Figures 4.73 and 4.74 reflects the skills visually by indicating the mean score for each variable.

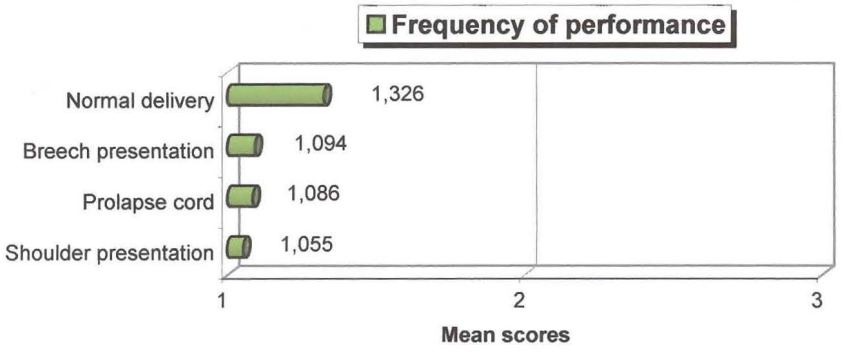

Figure 4.73 - Special circumstances (Part 1)

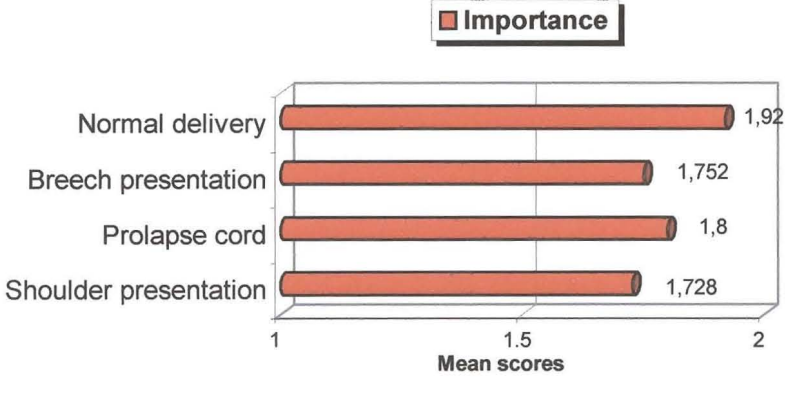

Figure 4.74 - Special circumstances (Part 1)

Table 4.27 reflects the *frequency of performance* of advanced life-support skills pertaining to special circumstances. Note that the majority of the respondents indicated that they perform the skills seldom/never.

Table 4.28 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

b) Part 2 – C10_15 to C10_18; D10_15 to D10_18

Part 2 provides the results and analysis of performance of four skills pertaining to special circumstances: multiple pregnancy, placenta abruptio, placenta previa and premature labour.

Figures 4.75 and 4.76 illustrate the skills visually by indicating the mean score for each variable.

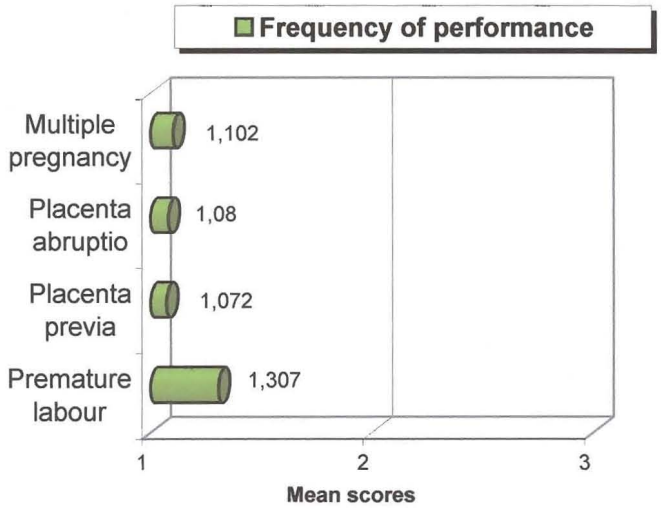

Figure 4.75 - Special cirucumstances (Part 2)

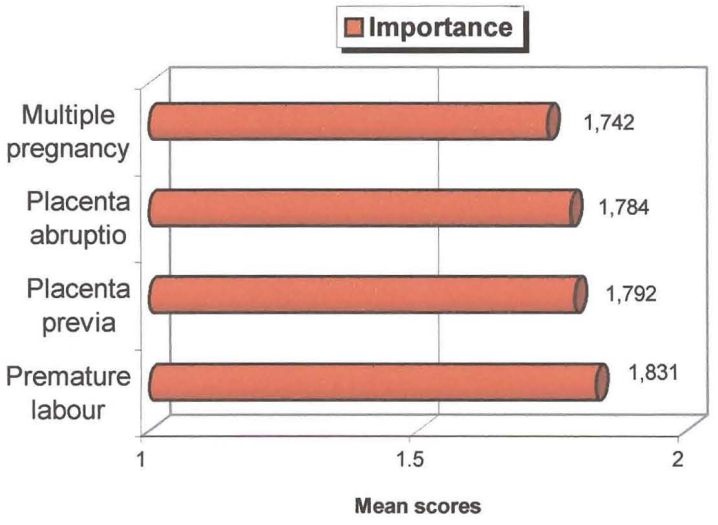

Figure 4.76 - Special circumstances (Part 2)

Table 4.27 reflects the *frequency of performance* of advanced life-support skills pertaining to special circumstances. Note that the majority of the respondents indicated that they perform the skills seldom/never.

Table 4.28 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

c) *Part 3 C10_2 to C10_5; D10_2 to D10_5*

Part 3 provides the results and analysis of performance of four skills pertaining to special circumstances: supporting the rape victim, collecting forensic evidence from the rape victim, neonatal stress management and selecting an appropriate transport mode for the critically ill or injured patient.

Figures 4.77 and 4.78 illustrate the skills visually by indicating the mean score for each variable.

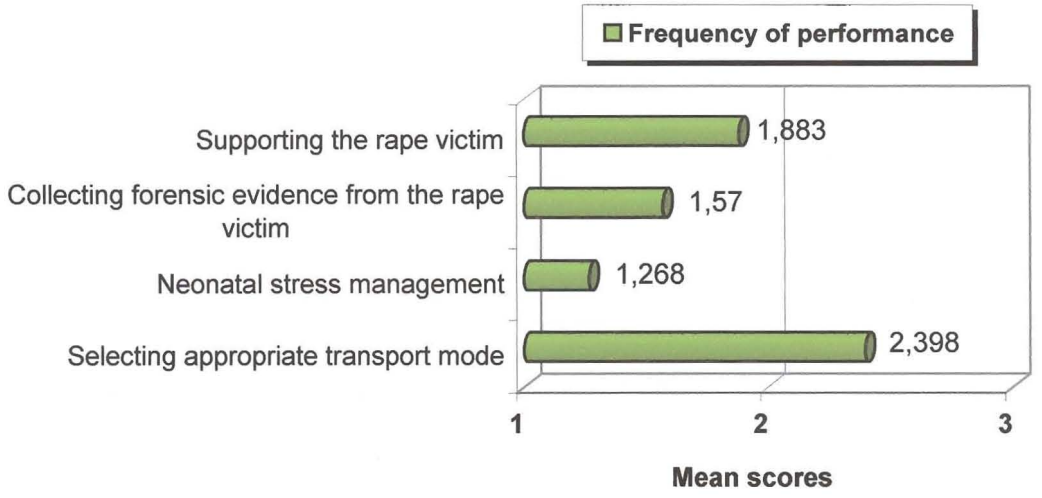

Figure 4.77 - Special circumstances (Part 3)

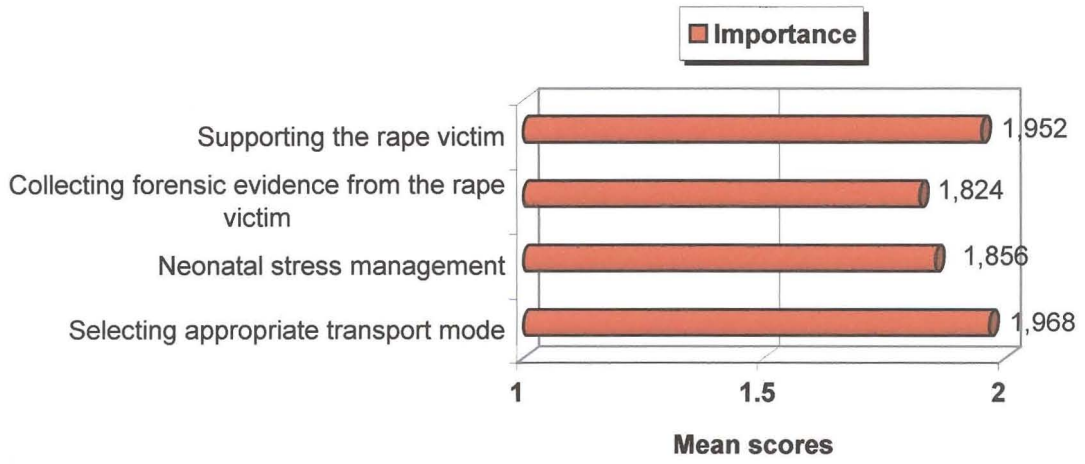

Figure 4.78 - Special circumstances (Part 3)

The majority of the respondents were either a midwife or an accoucheur (84,7%). It is not a prerequisite for all A&E nurse programmes in South Africa to be registered as a midwife or an accoucheur. The skills pertaining to supportive management for obstetric emergencies are, however, included in the curriculum of programmes for midwives and accoucheurs. These nurses have previously learnt these skills and should therefore be included in the curriculum.

The majority of the respondents were either a midwife or an accoucheur (84,7%). It is not a prerequisite for all A&E nurse programmes in South Africa to be registered as a midwife or an accoucheur. The skills pertaining to supportive management for obstetric emergencies are, however, included in the curriculum of programmes for midwives and accoucheurs. These nurses have previously learnt these skills and should therefore be included in the curriculum.

The reality is that these emergencies have to be dealt with in the emergency care environment within the SA context. To enable the researcher to determine whether the skills pertaining to supportive mangement for obstetric emergencies are considered to be of critical importance for the A&E nurse with pre-existing knoledge regarding these skills, and registered as midwife or accoucheur, it was essential to look at the perceptions of this group individually. See figure 4.79.

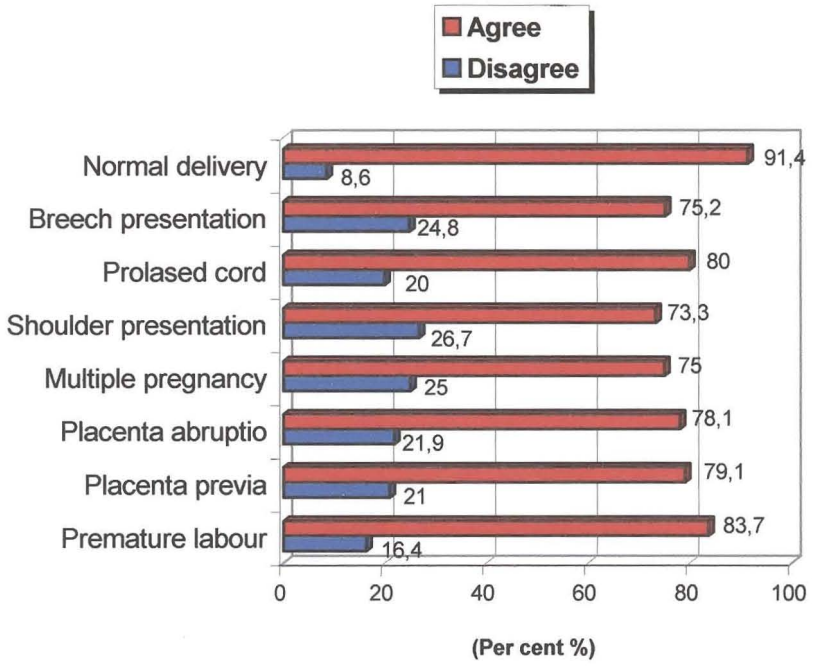

Figure 4.79 - Importance: Midwives and accoucheurs

It is evident from the above figure that the majority of midwives and accoucheurs perceive the skills pertaining to supportive management for obstetric emergencies important to include in the curriculum.

Table 4.27 reflects the *frequency of performance* of advanced life-support skills pertaining to special circumstances. Note that the mojarity of the respondents indicated that they frequently perform the skills. Supporting the rape victim and collecting forensic evidence from the rape victim were shown to be frequently performed by respondents.

Table 4.28 reflects the *importance* of these skills to be included in the curriculum and the majority of the respondents indicated that they agree that these skills are important and should be included in the curriculum.

The degree of relationship between the frequency of performance and importance of the skills to be included in the curriculum as indicated by the Spearman correlation (see Annexure D – Spearman correlation between the variables in Section C and Section D) illustrated the following:

- Normal delivery indicated a significant Spearman correlation coefficient (r_s 0,227)
- Collecting forensic evidence from the rape victim indicated a significant Spearman correlation coefficient (r_s 0,224)

Table 4.27 – Frequency of performance of advanced life-support skills (%) C10_1 to C_5

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Frequently		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Special circumstances																				
Part 1																				
Supportive management of obstetric emergencies																				
Normal delivery	17	51,5	8	24,2	8	24,2	78	84,8	11	12,0	3	3,3	95	76,0	19	15,2	11	8,8	18,099**	2
Breach presentation	28	87,5	1	3,1	3	9,4	88	96,7	1	1,1	2	2,2	116	94,3	2	1,6	5	4,1	3,810	2
Prolapsed cord	28	84,9	3	9,1	2	6,1	89	97,8	0	0,0	2	2,2	117	94,4	3	2,4	4	3,2	9,824	2
Shoulder presentation	30	93,8	1	3,1	1	3,1	89	97,8	0	0,0	2	2,2	119	96,8	1	0,8	3	2,4	2,967	2
Part 2																				
Multiple pregnancy	27	81,8	3	9,1	3	9,1	89	97,8	0	0,0	2	2,2	116	93,6	3	2,4	5	4,0	11,788	2
Placenta abruptio	27	90,0	1	3,3	2	6,7	88	96,7	1	1,1	2	2,2	115	95,0	2	1,7	4	3,3	2,151	2
Placenta previa	27	90,0	1	3,3	2	6,7	89	97,8	0	0,0	2	2,2	116	95,9	1	0,8	4	3,3	4,540	2
Premature labour	19	57,6	7	21,2	7	21,2	79	87,8	4	4,4	7	7,8	98	79,7	11	8,9	14	11,4	14,184	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.27 – (continued)

SKILLS	State hospitals						Private hospitals						Total						X^2	df†
	Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently		Seldom / Never		Periodically		Frequently			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Part 3																				
Supporting the rape victim	11	33,3	8	24,2	14	42,4	50	55,0	9	9,9	32	35,2	61	49,2	17	13,7	46	37,1	6,282*	2
Collecting forensic evidence from the rape victim	26	78,8	2	6,1	5	15,2	60	65,9	3	3,3	28	30,8	86	69,4	5	4,0	33	26,6	3,255	2
Neonatal stress management	20	62,5	7	21,9	5	15,6	79	86,8	7	7,7	5	5,5	99	80,5	14	11,4	10	8,1	8,911	2
Selecting an appropriate transport mode for the critically ill or injured patient	11	33,3	5	15,2	17	51,5	14	15,4	20	22,0	57	62,6	25	20,2	25	20,2	74	59,7	4,932	2

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.28 – Importance of advanced life-support skills (%) D10_1 to D_5

Skills	State hospitals				Private hospitals				Total				X^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Special circumstances														
Part 1														
Supportive management for obstetric emergencies														
Normal delivery	4	13,3	26	86,7	6	6,6	85	93,4	10	8,3	111	91,7	1,352	1
Breech presentation	7	23,3	23	76,7	21	23,1	70	76,9	28	23,1	93	76,9	0,001	1
Prolapsed cord	6	20,0	24	80,0	17	18,7	74	81,3	23	19,0	98	81,0	0,026	1
Shoulder presentation	8	26,7	22	73,3	23	25,3	68	74,7	31	25,6	90	74,4	0,023	1
Part 2														
Multiple pregnancy	8	27,6	21	72,4	21	23,1	70	76,9	29	24,2	91	75,8	0,244	1
Placenta abruptio	6	20,0	24	80,0	20	22,0	71	78,0	26	21,5	95	78,5	0,052	1
Placenta previa	6	20,0	24	80,0	19	20,9	72	79,1	25	20,7	96	79,3	0,011	1
Premature labour	5	17,2	24	82,8	15	16,5	76	83,5	20	16,7	100	83,3	0,009	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

Table 4.28 – (continued)

Skills	State hospitals				Private hospitals				Total				χ^2	df†
	Disagree		Agree		Disagree		Agree		Disagree		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Part 3														
Supporting the rape victim	3	10,0	27	90,0	3	3,3	88	96,7	6	5,0	115	95,0	2,151	1
Collecting forensic evidence from the rape victim	6	20,0	24	80,0	16	17,6	75	82,4	22	18,2	99	81,8	0,087	1
Neonatal stress management	5	16,7	25	83,3	12	13,2	79	86,8	17	14,1	104	86,0	0,226	1
Selecting an appropriate transport mode for the critically ill or injured patient	3	10,0	27	90,0	1	1,1	89	98,9	4	3,3	116	96,7	5,517	1

† Degrees of freedom
* $p < 0,05$
** $p < 0,01$

4.3.4.11 Do you have any remarks – C11

The following remarks were included:

- Due to the stressful situation A&E nurses work in, they need counselling at least once every three months.
- A&E nurses need to be credited for their dedication and perseverance.
- A&E nurses take more responsibility than they are credited for.
- Nobody really knows what we do and therefore we do not get the respect we deserve.
- There is a great need to have the A&E nurse's scope of practice clarified and defined.
- A great need exists to formulate an A&E nursing programme which is relevant to the South African context.

4.3.5 Section E

The aim of this section was to determine the attitudes and values of the A&E nurse as perceived by A&E nurses. The data is presented in Table 4.29

Table 4.29 – Attitudes and values of the A&E nurse (%) E1.1_1 to E1.1_14

Strongly disagree (SD)
Disagree (D)
Agree (A)
Strongly agree (SA)
Number of respondents (N)

A practising A&E nurse should:	SD		D		A		SA	
	N	%	N	%	N	%	N	%
• have self-respect (N = 126)	0	0,0	0	0,0	5	4,0	121	96,0
• respect others (N = 126)	0	0,0	1	0,8	5	4,0	120	95,2
• respect the professions of others (N = 126)	0	0,0	0	0,0	11	8,7	115	91,3

Table 4.29 (continued)

A practising A&E nurse should:	SD		D		A		SA	
	N	%	N	%	N	%	N	%
• respect the values of others (N = 125)	0	0,0	1	0,8	10	8,0	114	91,2
• respect the views of others (N = 126)	0	0,0	1	0,8	14	11,1	111	88,1
• respect the religious beliefs of others (N = 126)	1	0,8	1	0,8	16	12,7	108	85,7
• be aware of the need for the clinical specialist to have applicable knowledge, skills, attitudes and values (N = 126)	0	0,0	0	0,0	10	7,9	116	92,1
• accept accountability for his/her decisions (N = 126)	0	0,0	0	0,0	5	4,0	121	96,0
• accept accountability for his/her activities (N = 126)	0	0,0	0	0,0	6	4,8	120	95,2
• acknowledge his/her own limitations (N = 126)	0	0,0	0	0,0	7	5,6	119	94,4
• acknowledge the importance of applying knowledge correctly (N = 127)	0	0,0	0	0,0	6	4,7	121	95,3
• acknowledge the importance of applying skills correctly (N = 127)	0	0,0	0	0,0	6	4,7	121	95,3
• acknowledge the importance of applying attitudes correctly (N = 127)	0	0,0	0	0,0	12	9,6	115	90,6
• acknowledge the importance of applying values correctly (N = 127)	0	0,0	0	0,0	14	11,0	113	89,0

It is evident from Table 4.29 that the majority of A&E nurses strongly agreed with these values obtained from the experts during the FGI.

Other attitudes and values that were added included:

- Dedication and commitment
- Be reliable

4.3.6 Conclusion

Chapter 4 provided the research results and analysis. These findings will be discussed, conclusions will be made and recommendations formulated in Chapter 5.

CHAPTER 5

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter will conclude the research project by discussing and summarising the conclusions and recommendations following the data results and analyses. The limitations of the research will be identified and topics for future research will be mentioned.

5.2 RESEARCH AIM AND STUDY OBJECTIVES

The overall aim of this study was to investigate the core competencies needed by the A&E nurse in order to manage life-threatening situations in the emergency care environment.

In order to reach this aim the objectives were to –

- investigate the development of A&E nursing in South Africa and internationally – by interviewing SA nurses involved in this field over an extended period of time, and by consulting international literature on the subject
- describe the "emergency care environment" within which the A&E nurse practises – by using information obtained during the FGI and by the distribution of a questionnaire
- determine the core competencies required by the A&E nurse in life-threatening situations in the emergency care environment – by using information obtained form the FGI and by the implementation of a questionnaire
- make recommendations as to what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency care environment, and what core competencies should be included in a

curriculum for training these nurses. The data analysis of the questionnaire is reflected in this Chapter.

5.3 CONCLUSIONS AND RECOMMENDATIONS

Firstly, the distribution of the questionnaire and feedback of percentages will be discussed, followed by a discussion of the data obtained from the questionnaire. Each of the five sections included in the questionnaire will be discussed individually, except for Section C and Section D. These two sections will be combined. Where differences were noted between the data obtained from the experts (qualitative data) and the data obtained from the respondents (quantitative data) it will be reported.

With reference to the core competencies of the A&E nurse within the SA context, Section A will describe the demographical scenario of A&E nurses, whereas Section B will specifically describe the "emergency care environment" within which the A&E nurse practises. The data obtained from Sections C and D will be used to make recommendations as to what skills should be included in a curriculum for training A&E nurses. The recommendations will be tabulated and compared with the literature obtained during the analysis of the qualitative data (see Tables – 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10 and 5.11) and the current scope of practice as stipulated in Regulation R 2598 (Regulation R. 2598, 1984, Chapter 2).

5.3.1 Distribution and return of questionnaire

Three methods were used to distribute copies of the questionnaire – by mail, hand-delivered and group-administered. A total of 412 copies were distributed and 132 (32,0%) were returned (see Table 5.1 – Copies of the questionnaires distributed and returned). One should take the following into account:

- Some respondents received more than one copy of the questionnaire due to the fact that copies were posted as well as distributed by hand by the tutor/administrator.

- Of 184 trained A&E nurses registered with the SANC 93 (50,5%) trained A&E nurses returned the questionnaire.
- Of the 69 A&E nurse students that the researcher was able to trace, 33 (47,8%) returned the questionnaire.
- Of the six (6) A&E nursing lecturers currently involved in A&E nurse training programmes, 100,0% completed the questionnaire.
- Of the total number of 259 A&E nurses known to the researcher, 93 were registered A&E nurses, 33 were A&E nurse students and six (6) were lecturers.
- A total of 132 (51,0%) A&E nurses completed and returned the questionnaire.

Babbie and Mouton (2001: 261) indicated that a response rate of 50% is adequate for analysis and reporting and therefore the researcher accepted the response rate for this research, although it is considered to be only a rough guide. The statistician also indicated that the researcher should aim for a return of 100 copies of the questionnaire to ensure an acceptable amount of feedback to use for the interpretation and analysis. More than 100 copies were returned in this research project.

Table 5.1 indicates the number of copies of the questionnaire distributed, versus the number of copies returned.

Table 5.1 – Copies of the questionnaire distributed and returned

	Distributed	Received
Mailed (registered with a post-basic A&E nursing qualification at the SANC):		
Eastern Cape	6	2
Free State	5	1
Gauteng	111	0
KwaZulu Natal	17	2
Limpopo (Northern Province)	19	1
Mpumalanga	6	0
Northern Cape	2	0
North-West	6	1
Western Cape	12	4
Sub-total	184	11
Hand-delivered:		
Gauteng	50	31
Subtotal	50	31
Distributed by hand (researcher or others):		
Eastern Cape	10	3
Free State	10	5
Gauteng	100	55
KwaZulu Natal	50	25
Limpopo (Northern Province)	0	0
Mpumalanga	8	2
Northern Cape	0	0
North-West	0	0
Western Cape	0	0
Eastern Cape	0	0
Subtotal	178	90
Total	412	132

5.3.2 Section A – Demographical information

The majority of the respondents that completed the questionnaire were female (87,9%) and between 30 and 44 years old (76,0%). The perception of the researcher that mainly the younger registered nurse was practising within the emergency care environment due to influencing factors such as burnout and

increased physical activities within this clinical speciality field, was therefore inaccurate, as 57,6% of the respondents were older than 34 years. In terms of the nursing population – with career profiles stretching from 22 to 60 or 65 years – the younger person did not fit this perception.

The respondents were mainly employed in Gauteng (65,2%) and KwaZulu-Natal (20,5%). This could be due to the fact that up till now A&E nurse training programmes were available only in these two provinces, while the Free State has only this year started a programme. The majority of the respondents (70,4%) were trained A&E nurses, 25,0% were student A&E nurses and 4,6% were A&E nursing lecturers. Two (2) respondents who completed the questionnaire indicated that they were critical care nurses. These two questionnaires were excluded from the research project.

The respondents had the amount of experience that was required for a study of this nature, as the majority of them had two to three years or more experience to their credit and were working 37 to 48 hours per week. Both these factors would increase the validity of the results.

The majority of the respondents worked in private hospitals (72,0%), some of them in a Level I or Level II hospital (82,3%). It was evident from the data that the majority of the respondents indicated that they managed all the types of patients listed in the questionnaire within their emergency care environment, including the following: cases of sexual assault, gynaecology and obstetric emergencies, surgical emergencies, aggressive patients and psychiatric emergencies. It is therefore evident that if a scope of practice is designed, it should include all these different types of patients.

From the data it was evident that the majority of the A&E nurses were making independent decisions (60,3%) at least once a shift. The perception that independent decisions are mainly made by A&E nurses working in state hospitals is therefore not true. A realistic conclusion would be that A&E nurses are frequently making independent decisions within the SA context.

The majority of A&E nurses were either a midwife or accoucheur (84,7%) and the mainstream of these respondents indicated that they thought it was important to include the skills pertaining to supportive management for obstetric emergencies in the curriculum for A&E nurses (see Figure 4.79 - Importance: midwives and accoucheurs).

Recommendations: In a sense the demographical information also served as a census of A&E nurses in the field. It became evident that there were not enough of these clinical specialists and a need existed to train more of them. This clinical field needs to be advertised and one could start with undergraduate students – adding value to their training by including some cornponents in their curriculum, and exposing them to the emergency care environment. Being a role model for these nurses could also be of value.

The majority of the A&E nurses are practising in Level I and Level II emergency care units. The training of A&E nurses working in Level III hospitals are of the utmost importance to improve patient care within these environments, thereby decreasing patient morbidity and mortality. If one takes into account the original aim with the A&E nurse programme – namely of upgrading patient care in peripheral hospitals in order to improve the situation of patient care prior to transfer to a tertiary hospital – the focus seems to be wrong. Should there not be more A&E nurses trained who can practise without support of doctors?

The A&E nursing programme should be more widely advertised to reach registered nurses practising in these hospitals. Marketing of the discipline is a must. Due to costs, it is often difficult for registered nurses to obtain study leave, and alternative education methods should be considered to accommodate these registered nurses and encourage them to further educate themselves within this speciality. The programme should therefore be made more attractive and bursaries could be an option.

Curricula for A&E nurses should not focus on trauma nursing per se, as it is evident that the majority of A&E nurses manage a vast spectrum of patients

within their "emergency care environment". The curriculum should meet the needs of these nurses. When training A&E nurses it is important to ensure that they will function independently after completion of the programme, as it is evident that they are frequently expected to make independent decisions. This too should be taken into consideration when planning the curriculum.

5.3.3 Section B – Context

It is evident that the "emergency care environment" within which the A&E nurse practices is no longer confined to the emergency care unit, but is a developing speciality in its own right. The clinical practice in which A&E nurses within the SA context work, includes the pre-hospital and hospital environment, management, education and research. All four categories in which nursing can be practised as described by Muller (1998: 1) are included in this context, although research within this clinical speciality is still lacking. Only four (4) respondents within this clinical speciality had a Master's degree and there were no respondents indicating that they had a Doctoral degree.

Recommendations: The need to train A&E nurses at a high level of clinical practice is of the utmost importance. In other countries A&E nurses with a Masters degree are referred to as clinical nurse specialists. The programmes must be made accessible to all registered nurses with an interest in this field.

To enable the A&E nurse within the SA context to form a scientific basis for his/her nursing practice; to demonstrate that high-quality patient care is delivered by A&E nurses and to develop nursing knowledge about situations, people and circumstances unique to the practice of the A&E nurse – these aspects should be elaborated and A&E nurses should be motivated to start research projects (ENA 2000: 733).

5.3.4 Section C and Section D

After analysing the results presented in Chapter 4, the researcher now presents the recommendations regarding the core competencies that are required by the A&E nurse in order to manage life-threatening situations in the emergency care environment. The researcher's ***recommendations*** are compared with literature studied regarding the inclusion of these skills in the curricula of A&E nurses in the USA and UK data (see Tables – 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10 and 5.11) – taking into account the current scope of practice that directs the clinical practice of the A&E nurse within the SA context.

The scope of practice of registered nurses (Regulation R.2598, 1984, Chapter 2) directs the clinical practice of the A&E nurse in SA. The following components involve all the skills mentioned for managing a life-threatening situation within the emergency care environment and will therefore be indicated by (*) in Table 5.2 to Table 5.11 – **a, b, c, e, k, n, o, p, q, r and s**. However, some components of the scope of practice are applicable to specific skills and will therefore be tabulated if applicable.

5.3.4.1 Assessment and recording

The nursing process includes a systematic collection of data concerning a patient's actual risk for health care problems and needs (ENA 2000: 21). Both assessment and recording form an essential part of the nursing process.

The primary assessment is the basis for all emergency interventions delivered in the care for patients within the emergency care environment (ENA 2000: 1) and is used to rapidly assess and intervene on behalf of the injured or critically ill patient in a life-threatening situation – resuscitation of vital functions (Proehl 1999: 2).

The secondary assessment that follows is aimed to rapidly and systematically discover all injuries or abnormalities (ENA 2000: 14; Proehl 1999: 4). History taking provides an account of medical and social occurrences in a patient's life and include environmental factors that may influence the patient's

condition. It is often essential to establish priorities in patient care during life-threatening situations (Sanders 2000: 430).

Recording, although it is seen as a component of standard nursing practice, here refers to extensive recording and is a legal document. Due to legal implications it is important to repeat this component within the context of the A&E nurse and the management of life-threatening situations.

All four skills should therefore be included in the curriculum (see Table 5.2)

Table 5.2 – Recommendations for inclusion of assessment and recording skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Assessment and recording						
Primary assessment	Yes			*	Yes	
Medical history taking	Yes			*	Yes	
Secondary (head-to-toe) assessment	Yes			*	Yes	
Recording	Yes			*	Yes	

5.3.4.2 Safety within the pre-hospital environment

Although all these components are not included in the core curriculum for emergency nursing (ENA 2000), some of them are discussed, although not in great detail, by American authors in a book prescribed specifically for trauma nurses (McQuillan et al. 2002: 94-105).

In SA rescue work and extrication, or removal of a trapped victim, is mainly done by experts from the fire department within the pre-hospital environment. This view is shared by American authors (McQuillan et al. 2002: 98).

Safety at the scene of an accident is one of the components lacking in the curriculum for A&E nurses within the SA context. This was also evident from the FGI with experts, held by the researcher, although the majority of the respondents indicated that these skills should be included in the curriculum. Due to the fact that safe practices are one of the most critical components of an emergency response system's success, and unsafe practices lead to further injuries, the researcher recommends that A&E nurses complete a separate module regarding safety before working within this environment (McQuillan 2000: 97).

Hazmat precautions within the pre-hospital environment are also seen as a speciality in its own right within the SA context. This skill, pertaining specifically to the pre-hospital environment, will therefore not be included in the curriculum.

The last six (6) skills mentioned correlate with the skills listed under safety within the hospital environment. If an A&E nurse can perform these skills within the hospital environment, as indicated in the data obtained, he/she should be able to apply the same skills within the pre-hospital environment. These skills, which A&E nurses refine in the emergency care unit, are transferable to the pre-hospital arena and are not context-bound. Respondents also indicated that they perform these skills within the pre-hospital environment. These skills should therefore be included in the curriculum (see Table 5.3)

Table 5.3 – Recommendations for inclusion of safety within pre-hospital environment skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Safety within pre-hospital environment						
Rescue work			Uncertain	*		No
Extrication			Uncertain	*		No
Scene safety			Uncertain	*		No
Hazmat precautions			Uncertain	*		No
Prioritisation of patient management			Uncertain	*	Yes	
Use of extrication devices			Uncertain	*	Yes	
Crisis intervention			Uncertain	*	Yes	
Conflict management			Uncertain	*	Yes	
Debriefing			Uncertain	(d)*	Yes	
Counselling skills			Uncertain	(d)*	Yes	

5.3.4.3 Safety within hospital environment

Safety within the hospital environment included much more than was perceived by the researcher. It not only included a safe hospital environment and universal precautions for the personnel, but also psychological safety.

All the skills listed under safety were used by the respondents within the hospital environment. It was also evident that these skills were described in the literature reviewed by the researcher, except for crisis management. Crisis management is one of the most important skills necessary when working within the emergency care environment, and although the researcher could not determine whether this skill is emphasised by the ENA, the respondents indicated that they frequently use this skill and therefore the researcher decided to include this skill (see Table 5.4).

Table 5.4 – Recommendations for inclusion of safety within hospital environment skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Safety within hospital environment						
Hazmat precautions	Yes			*	Yes	
Prioritisation of patient management	Yes			*	Yes	
Use of extrication devices	Yes			*	Yes	
Crisis intervention	Yes			*	Yes	
Conflict management			Uncertain	*	Yes	
Debriefing	Yes			(d)*	Yes	
Counselling skills	Yes			(d)*	Yes	

5.3.4.4 Airway and cervical spine control

The absence of an adequate airway is one of the major causes of preventable death and cardiopulmonary complications in both the trauma and medical patient (Sanders 2000: 360). Airway management and specific skills pertaining to airway control are therefore important aspects of the core competencies required by A&E nurses to manage life-threatening situations.

During the FGI the experts agreed that A&E nurses should be able to open, maintain and protect a patient's airway by using appropriate skills that do not include technical surgical interventions. Although 57,0% of the respondents indicated that they agree that the surgical tracheostomy should be included in the curriculum, the researcher decided not to include this skill under recommendations (see Table 5.5).

Table 5.5 – Recommendations for inclusion of airway and cervical spine control skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Airway and cervical spine control						
Foreign body removal: upper airway	Yes			(h)*	Yes	
Oropharyngeal airway insertion	Yes			(h)*	Yes	
Nasopharyngeal airway	Yes			(h)*	Yes	
Cricoid pressure technique (Sellick's manoeuvre)	Yes			(h)*	Yes	
Airway intubation:						
Laryngeal mask airway		No		(h)*	Yes	
Oesophageal-tracheal combitube airway (Combitube)	Yes			(h)*	Yes	
Orotracheal intubation	Yes			(h)*	Yes	
Nasotracheal intubation		No		(h)*	Yes	
Blind endotracheal intubation			Uncertain	(h)*	Yes	
Retrograde intubation		No		(h)*	Yes	
Percutaneous transtracheal ventilation			Uncertain	(h)*	Yes	
Needle cricothyroidotomy	Yes			(h)*	Yes	
Surgical cricothyroidotomy		No		*	Yes	
Surgical tracheostomy			Uncertain	(h)*		No
Endotracheal suctioning	Yes			(h)*	Yes	
Spinal immobilisation	Yes			(g)*	Yes	

Table 5.5 – (continued)

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Immobilisation devices:						
Cervical collars	Yes			(g)*	Yes	
Head immobilising device (HID/Ferno blocks)	Yes			(g)*	Yes	
Spine board	Yes			(g)*	Yes	
Scoop stretcher	Yes			(g)*	Yes	
Vacuum splints	Yes			(g)*	Yes	
Log-rolling	Yes			(g)*	Yes	
Cervical spine X-ray			Uncertain	(g)*	Yes	

5.3.4.5 Breathing and ventilation

Ineffective breathing is another major cause of preventable death and cardiopulmonary complications in both the medical and trauma patient (Sanders 2000: 360). Both the experts and respondents indicated that they agree that these skills should all be included in the curriculum, as they are all used within the emergency care environment within the SA context (see Table 5. 6).

Despite various opinions regarding the skills performed by A&E nurses pertaining to the insertion of underwater drains for a patient with a tension pneumothorax, pneumothorax or haemothorax, it is now evident that these skills are performed by A&E nurses within the SA context and are therefore important to include in the curriculum.

Although interpretation of the chest X-ray is recommended to be included in the curriculum, it is not within the A&E nurse's scope of practice to exclude spinal injuries (see Table 5.5).

Table 5.6 – Recommendations for inclusion of breathing and ventilation skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Breathing and ventilation						
Initiate appropriate oxygen therapy	Yes			(h)*	Yes	
Nebulisation therapy	Yes			(h)*	Yes	
Bag-valve-mask ventilation	Yes			(h)*	Yes	
Anaesthesia bag ventilation (Boyles machine)	Yes			(h)*	Yes	
Confirmation of proper advanced airway placement	Yes			(h)*	Yes	
Oxygen and ventilation monitoring						
Peripheral saturation monitoring	Yes			(h)*	Yes	
Arterial blood gas monitoring	Yes			(h)*	Yes	
Exhaled or end-tidal CO2 monitoring (capnograph)	Yes			(h)*	Yes	
Peak expiratory flow monitoring (e.g. asthma patients)	Yes			(h)*	Yes	
Non-invasive mechanical ventilation	Yes			(h)*	Yes	
Mechanical ventilation	Yes			(h)*	Yes	
Drawing an arterial blood gas (ABG) sample	Yes			(g)*	Yes	
Interpretation of arterial blood gas (ABG)	Yes			(h), (i) *	Yes	
Manipulation of treatment according to arterial blood gas (ABG)	Yes			(h), (i) *	Yes	

Table 5.6 – (continued)

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Occlusive dressing for open pneumothorax (tape only three sides)	Yes			(h) *	Yes	
Emergency needle decompression of tension pneumothorax	Yes			(h) *	Yes	
Emergency placement of an underwater drain for the treatment of a tension pneumothorax		No		(h) *	Yes	
Emergency placement of an underwater drain for the treatment of a pneumothorax and/or haemothorax		No		(h) *	Yes	
Chest drainage system management	Yes			(h) *	Yes	
Chest X-ray			Uncertain	(h) *	Yes	

5.3.4.6 Circulation with haemorrhage control

The skills pertaining to circulation with haemorrhage control were all recommended except for peripheral vein cutdown. During the FGI the experts decided that not all surgical procedures should be included in the curriculum of the A&E nurse.

Although the skills pertaining to the paediatric patient within this category seem to be used less often within the emergency care environment by the A&E nurse, this could be due to the fact that these patients are less often managed within this environment than the adult patient. These skills were therefore still recommended (see Table 5.7).

Table 5.7 – Recommendations for inclusion of circulation with haemorrhage control skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Circulation with haemorrhage control						
Haemodynamic monitoring of the critically ill patient	Yes			(c), (m) *	Yes	
Analyse 12-lead ECG: myocardial infarction	Yes			(c) *	Yes	
Analyse ECG strips: lethal rhythms	Yes			(c) *	Yes	
Analyse ECG strips: non-lethal rhythms	Yes			(c) *	Yes	
Control external bleeding	Yes			(c) *	Yes	
Suturing of skin lacerations	Yes			(j) *	Yes	
Administration of resuscitation fluids	Yes			(i) *	Yes	
MAST suit application	Yes			(i) *	Yes	
Intravenous access	Yes			(i) *	Yes	
Peripheral line access	Yes			(i) *	Yes	
Internal jugular venous access		No		(i) *	Yes	
External jugular venous access		No		(i) *	Yes	
Femoral venous access		No		(i) *	Yes	
Intraosseous access	Yes			(i) *	Yes	
Central line access		No		(i) *	Yes	
Peripheral vein cutdown		No		(i) *		No
Umbilical venous access			Uncertain	(i) *	Yes	
Umbilical arterial access			Uncertain	(i) *	Yes	

Table 5.7 – (continued)

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Emergency pericardiocentesis for treatment of a pericardial tamponade		No		*	Yes	
Effective performance of CPR (ventilations and compressions)	Yes			*	Yes	
Splinting of limbs	Yes			(g), (j) *	Yes	
Splinting of pelvis	Yes			(g), (j) *	Yes	
Limb X-ray interpretation			Uncertain	(j) *	Yes	
Pelvic X-ray interpretation			Uncertain	(j) *	Yes	

5.3.4.7 Disability, differential diagnosis, defibrillation and drugs

All the skills listed in this section are recommended to be included in the curriculum. A much debated issue has developed around the fact that A&E nurses are not allowed to prescribe drugs, but in **life-threatening situation** it is evident that A&E nurses within the SA context are in a position where they are forced to prescribe drugs and they agree that these skills should be included in the curriculum (see Table 5.8).

Table 5.8– Recommendations for inclusion of disability, differential diagnosis, defibrillation and drug skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Disability, differential diagnosis, defibrillation and drugs						
Monitoring patient's level of consciousness						
AVPU scale	Yes			*	Yes	
Glasgow coma scale	Yes			*	Yes	
Neonatal stress response	Yes			*	Yes	
Blood glucose monitoring	Yes			(l) *	Yes	
Differential diagnosis for cardiac arrest (correctable causes)	Yes			*	Yes	
Defibrillation	Yes			*	Yes	
Cardioversion	Yes			*	Yes	
External pacing	Yes			*	Yes	
Vagal manoeuvres	Yes			*	Yes	
Prescribing appropriate medication to facilitate:						
Sedation	Yes			(c) *	Yes	
Analgesia			Uncertain	(c) *	Yes	
Skeletal muscle relaxant			Uncertain	(c) *	Yes	
Treatment of cardiac arrest	Yes			(c) *	Yes	
Correction of hypoxia	Yes			(c), (h) *	Yes	
Positive inotropes			Uncertain	(c) *	Yes	
Correction of metabolic acidosis	Yes			(c), (i) *	Yes	
Thrombolysis in acute myocardial infarction	Yes			(c) *	Yes	
Treatment of acute pulmonary oedema		□		(c), (h) *	Yes	

5.3.4.8 Exposure and environmental control

Internationally and within the SA context both these skills are regarded as essential skills within the emergency care environment (see Table 5.9).

Table 5.9 – Recommendations for inclusion of exposure and environmental control skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Exposure and environmental control						
Measures to reverse hypothermia	Yes			*	Yes	
Measures to reverse hyperthermia	Yes			*	Yes	

5.3.4.9 Adjuncts

Although these three skills were indicated as important skills to be included in the curriculum by both the experts and respondents, the researcher decided that only the insertion of the arterial line should be recommended. The insertion of a nasogastric tube and urine catheter are regarded as components of standard nursing practice (existing knowledge) and therefore it seems unnecessary to repeat these skills during the post-basic programme (see Table 5.10).

Table 5.10 – Recommendations for inclusion of adjunct skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Adjuncts						
Arterial line insertion	Yes			(g) *	Yes	
Nasogastric tube insertion	Yes			(h) *		Yes
Urine catheter insertion	Yes			(m) *		Yes

5.3.4.10 Special circumstances

The skills pertaining to special circumstances are all recommended to be included in the curriculum. After analysing the data it became evident that all these skills are used within the emergency care environment by A&E nurses within the SA context and that the majority of the respondents indicated that they agree to the inclusion of these skills.

The only reason for the inclusion of the obstetric emergencies within the curriculum of the A&E nurse was to enable these nurses to perform the procedures mentioned in Table 5.11 within the emergency care environment, and not to educate these nurses to become registered midwives. The majority of the A&E nurses registered as either a midwife or accoucheur indicated that they agree to the inclusion of these skills in the curriculum and therefore the researcher recommends to include these skills (see Table 5.11).

Table 5.11 – Recommendations for inclusion of special circumstance skills in curriculum

	Inclusion in curriculum: USA and UK			Scope of practice: SA (R.2598)	Recommendations for inclusion in curriculum: SA context	
	Yes	No	Uncertain		Yes	No
Special circumstances						
Supportive management for obstetric emergencies						
Normal delivery	Yes			*	Yes	
Breech presentation			Uncertain	*	Yes	
Prolapsed cord			Uncertain	*	Yes	
Shoulder presentation			Uncertain	*	Yes	
Multiple pregnancy			Uncertain	*	Yes	
Placenta abruptio	Yes			*	Yes	
Placenta previa	Yes			*	Yes	
Premature labour			Uncertain	*	Yes	
Supporting the rape victim	Yes			(d) *	Yes	
Collecting forensic evidence from the rape victim	Yes			(d) *	Yes	
Neonatal stress management	Yes			(c) *	Yes	
Selecting an appropriate transport mode for the critically ill or injured patient	Yes			*	Yes	

5.3.5 Section E – Attitudes and values of the A&E nurse

The majority of the respondents indicated that an A&E nurse should have all the attitudes and values listed.

Recommendations: The following recommendations are made pertaining to the attitudes and values of A&E nurses:

- Management should take note of what this clinical speciality entails and acknowledge it as a speciality field. Registered nurses wanting to specialise in this field should be given the options and allowed to work within the environment if they choose to.
- Management should implement debriefing strategies for A&E nurses, as this was a very strong suggestion that came forward from the experts during the FGI as well as from the respondents. There is a definite need for this type of intervention.
- Forensic nursing is a new speciality field in SA. It became evident, however, that this area has been neglected in the curriculum and needs to be addressed. A&E nurses are expected to perform these skills within the clinical setting, especially collecting forensic evidence from the rape victim.
- The SANC should change its perceptions regarding the role of A&E nurses.

5.4 FURTHER RECOMMENDATIONS

The emergency care environment within which the A&E nurse practises is considerably more extensive than originally perceived by the researcher. It is now evident that it is a multifaceted environment and a clinical speciality field in its own right.

This information should be integrated when compiling a curriculum to ensure that A&E nurses are trained for the purpose they are used for within this environment and to ensure that these nurses meet the demands of both the health services and the community. Such a curriculum should therefore relate to the needs of the A&E nurse's clinical practice.

Identifying the skills performed by A&E nurses in the emergency care environment and obtaining the perceptions of these nurses regarding the inclusion of these skills in the curriculum, were useful for the following reasons:

- When developing a programme for A&E nurses one can use the knowledge, skills, values and attitudes identified in this research to add value to the curriculum.
- Empirical evidence regarding the skills performed by A&E nurses within the SA context is now available and this could help to improve the professional status of these nurses within the emergency care environment.
- These skills could guide activities for continuing educational courses for A&E nurses practising within the emergency care environment.
- An extended scope of practice for A&E nurses pertaining to life-threatening situations could be formulated, based on the evidence gathered in this research.

The existing scope of practice (Regulation R.2598, 1984, Chapter 2) is broad and non-specific. This places the A&E nurse in a very difficult position, as he/she is not legally covered when performing skills during life-threatening situations. This is a serious issue when taking into account that the A&E nurse and the SANC have not reached an agreement on this matter, as previously discussed. Another dilemma is that if other professional health care workers do not realise what core competencies the A&E nurse possesses to manage life-threatening situations, the A&E nurse will not be valued for his/her specialised contribution or be credited for hard work within the emergency care environment. It is therefore of crucial importance to extend the scope of practice of the A&E nurse in order to ensure the professional well-being of this speciality.

Due to the fact that A&E nursing in SA is not represented by a professional organisation dedicated to the speciality by defining standards, providing continuing education and promoting the profession, A&E nursing is not regarded as a clinical speciality in its own right. It is therefore imperative for A&E nurses to start such an organisation to take care of their specific needs.

However, the A&E nurse also has a commitment to accept responsibility and to provide competent, safe and effective management to all patients during

life-threatening situations in accordance with high ethical and professional standards required of him/her.

The A&E nurse will have to stay competent within this clinical speciality field. To measure competency, standards must exist for assessing his/her skills in practice (Proehl 2002: 98). Standards already exist for A&E nurses, but are not used widely throughout the country. A&E nurses will have to assess A&E nurses, using these standards and upgrading them if necessary to ensure competency of the A&E nurse practising within the environment. Continuous education will have to be implemented to ensure high standards of nursing care within this clinical speciality.

The following was stated at the quadrennial meeting of the International Council of Nurses held in Mexico in 1973 concerning what nursing – and therefore including A&E nursing – is all about (Masson 1985: 160):
"Nursing is concerned with caring for people throughout the span of life, and at all points on the continuum between sickness and health. Nursing is a profession in its own right. As such it has the right and responsibility to govern its own practice and professional affairs, and accepts a commitment to society in accordance with professional ethics."

5.5 RECOMMENDATIONS FOR FURTHER RESEARCH

The researcher believes that further research in the field of A&E nursing is justified. Topics should include:

- Research into the content and structure of the A&E nursing education programme to ensure competence of A&E nurses working within the emergency care environment
- How well are we preparing A&E nurses to be competent practitioners, and who are fit to practise as required from the emergency care environment – measurement of outcome
- A comparative study including A&E nursing in other countries

- A study on perceptions of other professionals of what the field of A&E nursing involves
- A study on what should be included in pre-registration programmes regarding this field and will it be enough?
- A study on the community role of the A&E nurse in the prevention of injuries within the SA context
- Design a scope of practice based on this research and test if it is broad enough
- A qualitative study elaborating on values and attitudes relevant within this context
- A study on how perceptions of A&E nurses can be changed

5.6 LIMITATIONS

Mainly two limitations can be identified with reference to this research. Firstly, the view of other professionals regarding A&E nurses were not included and secondly, this research is context-bound. As the title indicates, it can be generalised for SA, but not in a world-wide context.

5.7 TO CONCLUDE

The research has shown that A&E nursing within the SA context is a relatively new clinical speciality field, originating in Cape Town in the late 1970s. The scope within which these nurses practise is not limited to clinical practice within the hospital environment, but offers an extensive, multifaceted environment, including the pre-hospital environment, education, management and research.

When evaluating the core competencies performed by the A&E nurse within the emergency care environment it is evident that he/she is performing advanced life-support skills when managing life-threatening situations, and plays an important role as part of the multidisciplinary team within this

environment. These nurses should therefore be welcomed and valued by other members of the team.

The researcher envisions that this research will provide substantial proof to influence the future of A&E nurses in SA, that the number of A&E nurses will continue to increase, and that they will attain greater authority within their own speciality. A&E nurses should be respected for their role in the emergency care environment and should feel proud of themselves, and confident about their knowledge, skills, values and attitudes.

"I would rather be ashes than dust!

I would rather that my spark should burn out in a brilliant blaze than it should be stifled by dryrot.

I would rather be a superb meteor, every atom of me in magnificent glow, than a sleepy and permanent planet.

The proper function of man is to live, not to exist.

I shall not waste my days in trying to prolong them.

I shall use my time." -

Jack London (1876 – 1916)

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Annexure A

Permission for conducting this research

University of Pretoria

Faculty of Health Sciences Research Ethics Committee
University of Pretoria
Tel (012) 339 8612
Fax (012) 339 8587
E Mail manda@med.up.ac.za
Soutpansberg Road | Private Bag x 385
MRC-Building | Pretoria
Level 2 | 0001
Room 19

Date: 19/9/2002

Number	:	**205/ 2002**
Title	:	Core competencies of the A & E (accident and emergency) nurse in life-threatening situations in the emergency care environment
Investigator	:	Tanya Heyns, Department of Nursing Science, University of Pretoria
Sponsor	:	**None**

This Protocol has been considered by the Faculty of Health Sciences Research Ethics Committee, University of Pretoria on 18/09/2002 and found to be acceptable.

*Prof P Carstens	BLC LLB LLD (Pret) Faculty of Law
Prof S.V. Grey	(female) BSc (Hons); MSc; DSc: Deputy Dean
Prof C B Ijsselmuiden	MD; DTM & H; DPH ;FFCH (CM); MPH; School of Health Systems and Public Health
*Dr V.O.L. Karusseit	MBChB; MFGP (SA); M.Med (Chir); FCS (SA): Surgeon
Dr M E Kenoshi	MB,CHB; DTM & H (Wits); C.E.O. of the Pretoria Academic Hospital
Prof M Kruger	(female) MB.ChB.(Pret); Mmed.Paed.(Pret); PhDd. (Leuven)
Dr N K Likibi	MB.BCh.; Med.Adviser (Gauteng Dept.of Health)
*Miss B Mullins	(female) BscHons; Teachers Diploma;
*Snr Sr J. Phatoli	(female) BCur (Et.Al) Senior Nursing-Sister
*Prof H.W. Pretorius	MBChB; M.Med (Psych) MD: Psychiatrist
Prof P. Rheeder	MBChB; M.Med (Int); LKI (SA); MSc (CLIN.EPI): Specialist Physician
Reverent P Richards	B.Th. (UNISA), M.Sc. (Applied Biology) (Knights), M.Sc (Med) (Wits), TechRMS, DipRMS
*Dr L Schoeman	(female) Bpharm, BA Hons (Psy), PhD
Dr C F Slabber	BSc (Med) MB BCh, FCP (SA) Acting Head; Dept Medical Oncology
*Prof J.R. Snyman	MBChB, M.Pharm.Med: MD: Pharmacologist
*Prof De K.Sommers	BChB; HDD; MBChB; MD: Pharmacologist
*Dr R Sommers	(female) MBChB; M.Med (Int); MPhar.Med;
*Dr TJP Swart	BChD, MSc (Odont), MChD (Oral Path) Senior Specialist; Oral Pathology
Dr S.J.C.Christa v/d Walt	(female) D. Cur, M.Ed, Department of Nursing,

DR R SOMMERS; MBChB; M.Med (Int); MPhar.Med.
SECRETARIAT of the Faculty of Health Sciences Research Ethics Committee - University of Pretoria

* = Members attended the meeting on 18/09/2002.

Annexure B

A letter of invitation to participate in the focus group interview

School of Health Care Sciences
Department of Nursing Science
PO Box 667
Pretoria
0001

Dear participant

RESEARCH TOPIC: Core competencies of the A&E (accident and emergency) nurse in life-threatening situations in the emergency care environment in South Africa

Thank you for your willingness to participate in the focus group interview regarding the above-mentioned topic on _____ at the Netcare Gauteng West Regional Office, Johannesburg. The total time scheduled for this group interview is two hours, starting at 13:30.

I am presently studying for the M Cur Clinical degree (specialising in trauma and emergency care) at the University of Pretoria.

The scope of practice of the A&E nurse in the emergency care environment has over the last few years become one of the most frequently debated issues. Apart from numerous oral discussions, little has, however, been written on the subject so far. The role and also the range of practice of the A&E nurse have expanded considerably and continuous advancement is taking place within the profession. Although curricula exist for the purpose of training A&E nurses, there is no concurrence regarding the core competencies in life-threatening situations. It has therefore become essential for us, as A&E nurses, to clarify our scope of practice.

To reach the aim of the research the following objectives were set:

- Describe the "emergency care environment" within which the A&E nurse practises
- Determine the core competencies required of the A&E nurse in life-threatening situations in the emergency care environment
- Make recommendations as to what core competencies are required by the A&E nurse in order to manage life-threatening situations in the emergency environment – in other words, what core competencies should be included in a curriculum for training these nurses

The researcher aims, with your help, to compile a questionnaire which will be distributed nationally. Your expertise and insights regarding the research topic are truly valued. Your participation will help to ensure that A&E nursing is seen as a highly esteemed profession and that the A&E nurse is accepted as an important role player in the emergency environment.

Permission for conducting this research has been granted by the relevant authorities. Your participation in this focus group is voluntary and you can refuse to participate or stop at any time without stating a reason. Attending and participating in the focus group imply that informed consent has been obtained from you. Data that may be reported in scientific journals will not include any information that identifies you as a participant in this study. As all information or data is anonymous, you must understand that you will not be able to recall your consent, as your information will not be traceable. All information supplied during the course of this research will remain strictly confidential.

If you have any questions, please do not hesitate to approach me.

Kind regards

Tanya Heyns

Annexure C

A sample of the transcribed focus group interview

A sample of the transcribed focus group interview

Facilitator: "What in your opinion is the context within which the A&E nurse can practise? That is the accident and emergency nurse. What do you think is the context or the environment that he/she can practise in? Who would like to start?"

Participant: "That is asking the most controversial question first, isn't it?"

Group confirmation: "Yes."

Participant: "In my opinion the A&E nurse can practise in whatever context she is comfortable with. There is no such a thing as an environment, if she is comfortable in that environment, as far as I am concerned she can work and operate in that environment."

Participant: "That should include the pre-hospital environment."

Group confirmation: "Yes...definitely."

Participant: "But with what she has available to her...as well. She can be limited if she doesn't have the correct equipment."

Facilitator: "What specific equipment would that be?"

Participant: "Well...you can't administer oxygen if you haven't got an oxygen bottle and a...mask to give it. You can't for circulation...you know it's basic stuff...you can't expect...every nurse can only work within well...their acts and omissions and scope of practice, depending on what they've got available. So whether they're got an emergency backup with everything or whether they've got nothing, because somebody who's out in a rural place would have to improvise, use sticks to splint or...so."

Facilitator: "Uh...uh...so it depends on the equipment you have?"

Participant: "Yes"

Participant: "Even in that situation though...to be able to phone...or activate the correct emergency services...you know...then do what you can while she is waiting. I don't think it is limited to one specific environment. I think that she should be able to care for any client or patient under any circumstance."

Facilitator: "Uhm...you talk about circumstances...and..."

Participant: "Pre-hospital, in-hospital...and...those are the...inter-transfers"

Participant: "Especially from rural areas...I mean you must be able to transfer the patient to a place where they can help her. So..."

Participant: "I think pre-hospital and inter-hospital is a very wide area you can actually work in. With pre-hospital we don't mean just the road…that can include the rural areas. So if you are alone in a rural area…"

Participant: "Such as a clinic for example"

Participant: "Such as a clinic somewhere where…the doctors are millions of miles away. You should be able to…"

Participant: "Occupational health"

Participant: "Occupational health is another one, yes"

Facilitator: "So pre-hospital…a few contexts…occupational health, clinics, the road…where else?"

Participant: "Aviation medicine"

Group confirmation: "Yes"

Participant: "Primary health care…services"

Group confirmation: "Yes, absolutely"

Participant: "In the air…in the air up there"

Participant: "I think also working…uhm…in the paramedical services, if they are either volunteering or they are working there as part of the staff, any…situation like that."

Facilitator: "Uhm…any specific context that you can name that you did not mention?"

Participant: "We haven't mentioned maybe that military forces…and that, that certainly there is a role for nurses there as well"

Facilitator: "Umh…any other context?"

Participant: "Industry, which falls under occupational health"

Participant: "Disaster management"

Facilitator: "Uhm"

Participant: "and education"

Participant: "I would also like to add that…uhm…they can also work in management…disaster management…uhm…cities…the management of…metro…uhm…metropolitan areas…things like that"

Annexure D

Questionnaire

Faculty of Health Sciences
Department of Nursing Science
PO Box 667
Pretoria
0001

Dear Colleague

RESEARCH QUESTIONNAIRE: Core competencies of the A&E (accident and emergency) nurse in life-threatening situations in the emergency care environment in South Africa

The scope of practice of the accident and emergency (A&E) nurse in the emergency care environment has over the last few years become one of the most frequently debated issues. Apart from numerous oral discussions, little has, however, been written on the subject so far. The role and also the range of practice of the A&E nurse have expanded considerably and continuous advancement is taking place within the profession. Although curricula exist for the purpose of training A&E nurses, there is no concurrence regarding the core competencies in order to manage in life-threatening situations. It has therefore become essential for us, as A&E nurses, to clarify our scope of practice.

This questionnaire will focus on the core competencies required by the A&E nurse to manage life-threatening situations. The researcher aims, with your help, to describe the emergency care environment within which the A&E nurse works, and to identify and determine the core competencies required by the A&E nurse to manage life-threatening situations. The data will be used to make recommendations regarding the core competencies to be included in the curriculum for the training of A&E nurses.

Registered nurses who are lecturing, studying or have completed one or more of the following additional qualifications, can participate in the research project:

- Medical and surgical nursing science: Critical care nursing (general surgery and trauma)
- Medical and surgical nursing science: Critical care nursing (trauma)
- Medical and surgical nursing science: Trauma and emergency nursing
- Certificate in traumatology for nursing
- Any other relevant post-basic programme relating to A&E nursing

Permission for conducting this research has been granted by the relevant authorities. Your participation in this research is voluntary and you can refuse to participate or stop at any time without stating a reason. The implication of completing the questionnaire is that informed consent has been obtained from you. Data that may be reported in scientific journals will not include any information that identifies you as participant in this study. As all information or data is anonymous, you must understand that you will not be able to recall your consent, as your information will not be traceable. All information supplied during the course of this research will remain strictly confidential.

Thank you for your participation. Your experience and insights regarding the core competencies required by the A&E nurse are truly valued. If you have any questions, please do not hesitate to approach me.

Kind regards

.....
Tanya Heyns
Researcher

.....
Dr ADH Botha
Supervisor

Instructions for completing the questionnaire

1. In this questionnaire the abbreviation A&E nurse refers to the **Accident and Emergency Nurse**.

2. Answer each question by indicating your chosen option with a cross (✖) in the appropriate box or fill in the information asked for in the space provided. **Remember that your recommendations and suggestions are important.**

3. **PLEASE WRITE CLEARLY, USING CAPITAL LETTERS**.

4. You are welcome to include comments at the end of the questionnaire.

5. If you require any assistance regarding this questionnaire, you are most welcome to contact Ms T Heyns at (012) 354 2125 or 083 287 3929.

6 It will take approximately 45 minutes to complete the questionnaire.

7. The questionnaire consists of the following five (5) sections and you are required to complete ***all*** the sections:

   Section A – Demographical information

   Section B – Context

   Section C – Advanced life-support **skills performed** by A&E nurses in life-threatening situations

   Section D – Advanced **skills essential** for A&E nurses in life-threatening situations to be included **in curricula**

   Section E – Attitudes and values of the A&E nurse

Please continue >

Questionnaire: Core competencies of the A&E nurse

For office use only

Section A – Demographical information

Please tell us about yourself

a1 What is your **gender?**

a1_1	• Female	1
a1_2	• Male	2

a2 What is your **age?**

a2_1	• Younger than 25 years	1
a2_2	• 25 – 29 years	2
a2_3	• 30 – 34 years	3
a2_4	• 35 – 39 years	4
a2_5	• 40 – 44 years	5
a2_6	• 45 years or older	6

a3 In which **province** are you currently employed?

a3_1	• Eastern Cape	1
a3_2	• Free state	2
a3_3	• Gauteng	3
a3_4	• KwaZulu-Natal	4
a3_5	• Limpopo (Northern Province)	5
a3_6	• Mpumalanga	6
a3_7	• Northern Cape	7
a3_8	• North-West	8
a3_9	• Western Cape	9

a4 Indicate your **present professional status**

a4_1	• A&E nurse (trained)	1
a4_2	• A&E nurse (student)	2
a4_3	• A&E nurse (lecturer)	3
a4_4	• Other (please specify)	4

a5 How many years' **experience** do you have in the emergency care environment?

a5_1	• Less than 2 years	1
a5_2	• 2 – 3 years	2
a5_3	• 4 – 5 years	3
a5_4	• 6 – 7 years	4
a5_5	• 8 – 9 years	5
a5_6	• 10 years or more	6

a6 Indicate how many **hours on average per week** you work in an emergency care environment

a6_1	• Not applicable	1
a6_2	• Up to 12 hours/week	2
a6_3	• 13 to 24 hours/week	3
a6_4	• 25 to 36 hours/week	4
a6_5	• 37 to 48 hours/week	5
a6_6	• More than 48 hours/week	6

1 - 3

1 4

5

6

7

8

9

10

a7 In which **type of hospital** are you currently working?

			For office use only
a7_1	• Not applicable	1	
a7_2	• Provincial hospital	2	
a7_3	• Private hospital/clinic	3	
a7_4	• Military hospital	4	
a7_5	• Other (please specify)	5	
	.....		11

a8 On what **accredited level** is the emergency care unit that you are currently working in?

a8_1	• Not applicable	1	
a8_2	• Level I (highest)	2	
a8_3	• Level II	3	
a8_4	• Level III (lowest)	4	
a8_5	• Do not know	5	
a8_6	• Other (please specify)	6	
	.....		12

a9 Which **types of patients** are managed in your emergency care environment? (Cross either the "Yes" or "No" box in each case.)

	Types of patients	**Yes**	**No**	
a9_1	• Patients involved in accidents / trauma	**1**	**2**	13
a9_2	• Patients with medical emergencies	**1**	**2**	14
a9_3	• Paediatric emergencies	**1**	**2**	15
a9_4	• Primary health care patients	**1**	**2**	16
a9_5	• Occupational emergencies	**1**	**2**	17
a9_6	• Other (please specify)	**1**	**2**	18
	.....			

a10 How often do you make **independent decisions** in the absence of a doctor in your emergency care environment?

a10_1	• Never	1	
a10_2	• At least once/year	2	
a10_3	• At least once/six months	3	
a10_4	• At least once/month	4	
a10_5	• At least once/week	5	
a10_6	• At least once/shift	6	19

a11 Are you registered as a **midwife or accoucheur?**

a11_1	• Yes	1	
a11_2	• No	2	20

Section B – Context

This section focuses on your current and previous clinical and non-clinical professional experience

State which of the following areas you are currently working in, or have worked in previously. Mark the appropriate box with a cross (✕) in each instance.

b1	**Clinical practice within pre-hospital environment**	**Yes**	**No**	
b1_1	• Primary response (ambulance)	**1**	**2**	21
b1_2	• Inter-hospital transfers of the critically ill patient (ambulance)	**1**	**2**	22
b1_3	• Aviation medicine: primary response (helicopter)	**1**	**2**	23

	Clinical practice within pre-hospital environment (continued)	Yes	No	use only
b1_4	• Aviation medicine: secondary response (helicopter)	1	2	24
b1_5	• Aviation medicine: secondary response (fixed-wing aircraft)	1	2	25
b1_6	• Field hospital	1	2	26
b1_7	• Disaster management	1	2	27
b1_8	• Sports events	1	2	28
b1_9	• Primary health care clinics	1	2	29
b1_10	• Occupational health	1	2	30
b1_11	• Other (please specify)	1	2	31

b2	Clinical practice within hospital environment	Yes	No	
b2_1	• Provincial hospital: accident and emergency unit	1	2	32
b2_2	• Private hospital/clinic: accident and emergency unit	1	2	33
b2_3	• Military hospital: accident and emergency unit	1	2	34
b2_4	• Outpatients department	1	2	35
b2_5	• Other (please specify)	1	2	36

b3	Management	Yes	No	
b3_1	• Consultant	1	2	37
b3_2	• Managing a crisis centre	1	2	38
b3_3	• Disaster planning and management	1	2	39
b3_4	• Event management (e.g. sports events)	1	2	40
b3_5	• Liaison management	1	2	41
b3_6	• Managing an ambulance service	1	2	42
b3_7	• Marketing	1	2	43
b3_8	• Risk management	1	2	44
b3_9	• Telephone triage	1	2	45
b3_10	• Other (please specify)	1	2	46

b4	Education	Yes	No	
b4_1	• Lecturing within the EMS (emergency medical service)	1	2	47
b4_2	• Lecturing A&E nurses	1	2	48
b4_3	• Educating community regarding health needs	1	2	49
b4_4	• Injury prevention campaign	1	2	50
b4_5	• Other (please specify)	1	2	51

b5	Research	Yes	No	
b5_1	• Honours degree (research for report)	1	2	52
b5_2	• Master's degree (research for dissertation)	1	2	53
b5_3	• Doctoral degree (research for thesis)	1	2	54
b5_4	• Research projects (other than the three above)	1	2	55
b5_5	• Project development	1	2	56
b5_6	• Other (please specify)	1	2	57

Section C – Advanced life-support skills performed by A&E nurses in life-threatening situations

The following skills pertain to trauma and medical life-threatening emergencies of the neonatal, infant, paediatric, adult, elderly and pregnant patient managed by A&E nurses within the emergency care environment.

*The list includes **advanced life-support skills** that you might have **had to perform** in life-threatening situations in the emergency care environment.*

Indicate how often you perform/performed these skills in your professional practice as A&E nurse by using the following five-point scale:

(1): Never
(2): At least once a year
(3): At least once a month
(4): At least once a week
(5): At least once a shift

	Skills	Never	Once a year	Once a month	Once a week	Once a shift	For office use only
c1	**Assessment and recording**						
c1_1	• Primary assessment (ABCDE)	1	2	3	4	5	58
c1_2	• Medical history taking	1	2	3	4	5	59
c1_3	• Secondary (head-to-toe) assessment	1	2	3	4	5	60
c1_4	• Recording	1	2	3	4	5	61
c2	**Safety within pre-hospital environment**						
c2_1	• Rescue work	1	2	3	4	5	62
c2_2	• Extrication	1	2	3	4	5	63
c2_3	• Scene safety	1	2	3	4	5	64
c2_4	• Hazmat precautions	1	2	3	4	5	65
c2_5	• Prioritisation of patient management	1	2	3	4	5	66
c2_6	• Use of extrication devices	1	2	3	4	5	67
c2_7	• Crisis intervention	1	2	3	4	5	68
c2_8	• Conflict management	1	2	3	4	5	69
c2_9	• Debriefing	1	2	3	4	5	70
c2_10	• Counselling skills	1	2	3	4	5	71
c3	**Safety within hospital environment**						1 - 3
c3_1	• Hazmat precautions	1	2	3	4	5	2 4
c3_2	• Prioritisation of patient management	1	2	3	4	5	5
c3_3	• Use of extrication devices	1	2	3	4	5	6
c3_4	• Crisis intervention	1	2	3	4	5	7
c3_5	• Conflict management	1	2	3	4	5	8
c3_6	• Debriefing	1	2	3	4	5	9
c3_7	• Counselling skills	1	2	3	4	5	10
							11

	Skills	Never	Once a year	Once a month	Once a week	Once a shift	For office use only
c4	**Airway and cervical spine control**						
c4_1	• Foreign body removal: upper airway	1	2	3	4	5	12
c4_2	• Oropharyngeal airway insertion	1	2	3	4	5	13
c4_3	• Nasopharyngeal airway insertion	1	2	3	4	5	14
c4_4	• Cricoid pressure technique (Sellick's manoeuvre)	1	2	3	4	5	15
c4_5	• Airway intubation:						16
c4_51	Laryngeal mask airway	1	2	3	4	5	17
c4_52	Oesophageal-tracheal combitube airway (Combitube)	1	2	3	4	5	18
c4_53	Ortotracheal intubation	1	2	3	4	5	19
c4_54	Nasotracheal intubation	1	2	3	4	5	20
c4_55	Blind endotracheal intubation	1	2	3	4	5	21
c4_56	Retrograde intubation	1	2	3	4	5	22
c4_6	• Percutaneous transtracheal ventilation	1	2	3	4	5	23
c4_7	• Needle cricothyroidotomy	1	2	3	4	5	24
c4_8	• Surgical cricothyroidotomy	1	2	3	4	5	25
c4_9	• Surgical tracheostomy	1	2	3	4	5	26
c4_10	• Endotracheal suctioning	1	2	3	4	5	27
c4_11	• Spinal immobilisation	1	2	3	4	5	
c4_12	• Immobilisation devices:						
c4_121	Cervical collars	1	2	3	4	5	28
c4_122	Head immobilising device (HID/Ferno blocks)	1	2	3	4	5	29
c4_123	Spine board	1	2	3	4	5	30
c4_124	Scoop stretcher	1	2	3	4	5	31
c4_125	Vacuum splints	1	2	3	4	5	32
c4_13	• Log-rolling	1	2	3	4	5	33
c4_14	• Cervical spine X-ray interpretation	1	2	3	4	5	34
c5	**Breathing and ventilation**						
c5_1	• Initiate appropriate oxygen therapy	1	2	3	4	5	35
c5_2	• Nebulisation therapy	1	2	3	4	5	36
c5_3	• Bag-valve-mask ventilation	1	2	3	4	5	37
c5_4	• Anaesthesia bag ventilation (Boyles machine)	1	2	3	4	5	38
c5_5	• Confirmation of proper advanced airway placement	1	2	3	4	5	39
c5_6	• Oxygenation and ventilation monitoring:						
c5_61	Peripheral saturation monitoring	1	2	3	4	5	40
c5_62	Arterial blood gas (ABG) monitoring	1	2	3	4	5	41
c5_63	Exhaled or end-tidal CO_2 monitoring (capnograph)	1	2	3	4	5	42
c5_64	Peak expiratory flow monitoring (e.g. asthma patients)	1	2	3	4	5	43
c5_7	• Non-invasive mechanical ventilation	1	2	3	4	5	44
c5_8	• Mechanical ventilation	1	2	3	4	5	45
c5_9	• Drawing an arterial blood gas (ABG) sample	1	2	3	4	5	46
c5_10	• Interpretation of arterial blood gas (ABG)	1	2	3	4	5	47
c5_11	• Manipulation of treatment according to arterial blood gas (ABG)	1	2	3	4	5	48
c5_12	• Occlusive dressing for open pneumothorax (tape only three sides)	1	2	3	4	5	49

	Skills	Never	Once a year	Once a month	Once a week	Once a shift	For office use only
	Breathing and ventilation (continued)						
c5_13	• Emergency needle decompression of tension pneumothorax	1	2	3	4	5	50
c5_14	• Emergency placement of an underwater drain for treatment of a tension pneumothorax	1	2	3	4	5	51
c5_15	• Emergency placement of an underwater drain for treatment of a pneumothorax and/or haemothorax	1	2	3	4	5	52
c5_16	• Chest drainage system management	1	2	3	4	5	53
c5_17	• Chest X-ray interpretation	1	2	3	4	5	54
c6	**Circulation with haemorrhage control**						
c6_1	• Haemodynamic monitoring of the critically ill patient	1	2	3	4	5	55
c6_2	• Analyse 12-lead ECG: myocardial infarction	1	2	3	4	5	56
c6_3	• Analyse ECG strips: lethal rhythms	1	2	3	4	5	57
c6_4	• Analyse ECG strips: non-lethal rhythms	1	2	3	4	5	58
c6_5	• Control external bleeding	1	2	3	4	5	59
c6_6	• Suturing of skin lacerations	1	2	3	4	5	60
c6_7	• Administration of resuscitation fluids	1	2	3	4	5	61
c6_8	• MAST suit application	1	2	3	4	5	62
c6_9	• Intravenous access:						
c6_91	Peripheral line access	1	2	3	4	5	63
c6_92	Internal jugular venous access	1	2	3	4	5	64
c6_93	External jugular venous access	1	2	3	4	5	65
c6_94	Femoral venous access	1	2	3	4	5	66
c6_95	Intraosseous access	1	2	3	4	5	67
c6_96	Central line access	1	2	3	4	5	68
c6_97	Peripheral vein cutdown	1	2	3	4	5	69
c6_98	Umbilical venous access	1	2	3	4	5	70
c6_99	Umbilical arterial access	1	2	3	4	5	71
c6_10	• Emergency pericardiocentesis for treatment of a pericardial tamponade	1	2	3	4	5	72
c6_11	• Effective performance of CPR (ventilation and compression)	1	2	3	4	5	73
c6_12	• Splinting of limbs	1	2	3	4	5	74
c6_13	• Splinting of pelvis	1	2	3	4	5	75
c6_14	• Limb X-ray interpretation	1	2	3	4	5	76
c6_15	• Pelvic X-ray interpretation	1	2	3	4	5	77
c7	**Disability, differential diagnosis, defibrillation and drugs**						1 - 3
c7_1	• Monitoring patient's level of consciousness:	1	2	3	4	5	3 4
c7_11	AVPU scale	1	2	3	4	5	5
c7_12	Glasgow coma scale	1	2	3	4	5	6
c7_13	Neonatal stress response	1	2	3	4	5	7
c7_2	• Blood glucose monitoring	1	2	3	4	5	8
c7_3	• Differential diagnosis for cardiac arrest(correctable causes)	1	2	3	4	5	9
c7_4	• Defibrillation	1	2	3	4	5	10
c7_5	• Cardioversion	1	2	3	4	5	11

	Skills	Never	Once a year	Once a month	Once a week	Once a shift	For office use only
	Disability, differential diagnosis, defibrillation and drugs (continued)						
c7_6	• External pacing	1	2	3	4	5	12
c7_7	• Vagal manoeuvres	1	2	3	4	5	13
c7_8	• Prescribe appropriate medication to facilitate:						
c7_81	Sedation	1	2	3	4	5	14
c7_82	Analgesia	1	2	3	4	5	15
c7_83	Skeletal muscle relaxation	1	2	3	4	5	16
c7_84	Treatment of cardiac arrest	1	2	3	4	5	17
c7_85	Correction of hypoxia	1	2	3	4	5	18
c7_86	Increased cardiac output with the use of positive inotropes	1	2	3	4	5	19
c7_87	Correction of metabolic acidosis	1	2	3	4	5	20
c7_88	Thrombolysis in acute myocardial infarction	1	2	3	4	5	21
c7_89	Treatment of acute pulmonary oedema	1	2	3	4	5	22
c8	**Exposure and environmental control**						
c8_1	• Measures to reverse hypothermia	1	2	3	4	5	23
c8_2	• Measures to reverse hyperthermia	1	2	3	4	5	24
c9	**Adjuncts**						
c9_1	• Arterial line insertion	1	2	3	4	5	25
c9_2	• Nasogastric tube insertion	1	2	3	4	5	26
c9_3	• Urine catheter insertion	1	2	3	4	5	27
c10	**Special circumstances**						
c10_1	• Supportive management for obstetric emergencies:						
c10_11	Normal delivery	1	2	3	4	5	28
c10_12	Breech presentation	1	2	3	4	5	29
c10_13	Prolapsed cord	1	2	3	4	5	30
c10_14	Shoulder presentation	1	2	3	4	5	31
c10_15	Multiple pregnancy	1	2	3	4	5	32
c10_16	Placenta abruptio	1	2	3	4	5	33
c10_17	Placenta previa	1	2	3	4	5	34
c10_18	Premature labour	1	2	3	4	5	35
c10_2	• Supporting the rape victim	1	2	3	4	5	36
c10_3	• Collecting forensic evidence from the rape victim	1	2	3	4	5	37
c10_4	• Neonatal stress management	1	2	3	4	5	38
c10_5	• Selecting an appropriate transport mode for the critically ill or injured patient	1	2	3	4	5	39

c11	**Do you have any remarks to add?** ....

Section D – Advanced skills essential for A&E nurses in life-threatening situations to be included in curricula

*The following list includes **possible advanced life-support skills** the A&E nurse **might be able to apply** in life-threatening situations in the emergency care environment.*

Indicate to what extent you personally agree or disagree with the inclusion of the following skills as core competencies with regard to the A&E nurse by using the following four-point scale:

(1): Strongly disagree (SD)
(2): Disagree (D)
(3): Agree (A)
(4): Strongly agree (SA)

	Skills	SD	D	A	SA	For office use only
d1	**Assessment and recording**					
d1_1	• Primary assessment (ABCDE)	1	2	3	4	40
d1_2	• Medical history taking	1	2	3	4	41
d1_3	• Secondary (head-to-toe) assessment	1	2	3	4	42
d1_4	• Recording	1	2	3	4	43
d2	**Safety within pre-hospital environment**					
d2_1	• Rescue work	1	2	3	4	44
d2_2	• Extrication	1	2	3	4	45
d2_3	• Scene safety	1	2	3	4	46
d2_4	• Hazmat precautions	1	2	3	4	47
d2_5	• Prioritisation of patient management	1	2	3	4	48
d2_6	• Use of extrication devices	1	2	3	4	49
d2_7	• Crisis intervention	1	2	3	4	50
d2_8	• Conflict management	1	2	3	4	51
d2_9	• Debriefing	1	2	3	4	52
d2_10	• Counselling skills	1	2	3	4	53
d3	**Safety within hospital environment**					
d3_1	• Hazmat precautions	1	2	3	4	54
d3_2	• Prioritisation of patient management	1	2	3	4	55
d3_3	• Use of extrication devices	1	2	3	4	56
d3_4	• Crisis intervention	1	2	3	4	57
d3_5	• Conflict management	1	2	3	4	58
d3_6	• Debriefing	1	2	3	4	59
d3_7	• Counselling skills	1	2	3	4	60
						1 - 3
d4	**Airway and cervical spine control**					4 4
d4_1	• Foreign body removal: upper airway	1	2	3	4	5
d4_2	• Oropharyngeal airway insertion	1	2	3	4	6
d4_3	• Nasopharyngeal airway insertion	1	2	3	4	7
d4_4	• Cricoid pressure technique (Sellick's manoeuvre)	1	2	3	4	8
d4_5	• Airway intubation:					
d4_51	Laryngeal mask airway	1	2	3	4	9
d4_52	Oesophageal-tracheal combitube airway (Combitube)	1	2	3	4	10
d4_53	Ortotracheal intubation	1	2	3	4	11
d4_54	Nasotracheal intubation	1	2	3	4	12
d4_55	Blind endotracheal intubation	1	2	3	4	13
d4_56	Retrograde intubation	1	2	3	4	14

	Skills	SD	D	A	SA	For office use only
	Airway intubation (continued)					
d4_6	• Percutaneous transtracheal ventilation	1	2	3	4	15
d4_7	• Needle cricothyroidotomy	1	2	3	4	16
d4_8	• Surgical cricothyroidotomy	1	2	3	4	17
d4_9	• Surgical tracheostomy	1	2	3	4	18
d4_10	• Endotracheal suctioning	1	2	3	4	19
d4_11	• Spinal immobilisation	1	2	3	4	20
d4_12	• Immobilisation devices:					
d4_121	Cervical collars	1	2	3	4	21
d4_122	Head immobilising device (HID/Ferno blocks)	1	2	3	4	22
d4_123	Spine board	1	2	3	4	23
d4_124	Scoop stretcher	1	2	3	4	24
d4_125	Vacuum splints	1	2	3	4	25
d4_13	• Log-rolling	1	2	3	4	26
d4_14	• Cervical spine X-ray interpretation	1	2	3	4	27
d5	**Breathing and ventilation**					
d5_1	• Initiate appropriate oxygen therapy	1	2	3	4	28
d5_2	• Nebulisation therapy	1	2	3	4	29
d5_3	• Bag-valve-mask ventilation	1	2	3	4	30
d5_4	• Anaesthesia bag ventilation (Boyles machine)	1	2	3	4	31
d5_5	• Confirmation of proper advanced airway placement	1	2	3	4	32
d5_6	• Oxygenation and ventilation monitoring:					
d5_61	Peripheral saturation monitoring	1	2	3	4	33
d5_62	Arterial blood gas (ABG) monitoring	1	2	3	4	34
d5_63	Exhaled or end-tidal CO_2 monitoring (capnograph)	1	2	3	4	35
d5_64	Peak expiratory flow monitoring (e.g. asthma patients)	1	2	3	4	36
d5_7	• Non-invasive mechanical ventilation	1	2	3	4	37
d5_8	• Mechanical ventilation	1	2	3	4	38
d5_9	• Drawing an arterial blood gas (ABG) sample	1	2	3	4	39
d5_10	• Interpretation of arterial blood gas (ABG)	1	2	3	4	40
d5_11	• Manipulation of treatment according to arterial blood gas (ABG)	1	2	3	4	41
d5_12	• Occlusive dressing for open pneumothorax (tape only three sides)	1	2	3	4	42
d5_13	• Emergency needle decompression of tension pneumothorax	1	2	3	4	43
d5_14	• Emergency placement of an underwater drain for treatment of a tension pneumothorax	1	2	3	4	44
d5_15	• Emergency placement of an underwater drain for treatment of a pneumothorax and/or haemothorax	1	2	3	4	45
d5_16	• Chest drainage system management	1	2	3	4	46
d5_17	• Chest X-ray interpretation	1	2	3	4	47
d6	**Circulation with haemorrhage control**					
d6_1	• Haemodynamic monitoring of the critically ill patient	1	2	3	4	48
d6_2	• Analyse 12-lead ECG: myocardial infarction	1	2	3	4	49
d6_3	• Analyse ECG strips: lethal rhythms	1	2	3	4	50
d6_4	• Analyse ECG strips: non-lethal rhythms	1	2	3	4	51
d6_5	• Control external bleeding	1	2	3	4	52
d6_6	• Suturing of skin lacerations	1	2	3	4	53
d6_7	• Administration of resuscitation fluids	1	2	3	4	54
d6_8	• MAST suit application	1	2	3	4	55

	Skills	SD	D	A	SA	For office use only
d6_9	• Intravenous access:					
d6_91	Peripheral line access	1	2	3	4	56
d6_92	Internal jugular venous access	1	2	3	4	57
d6_93	External jugular venous access	1	2	3	4	58
d6_94	Femoral venous access	1	2	3	4	59
d6_95	Intraosseous access	1	2	3	4	60
d6_96	Central line access	1	2	3	4	61
d6_97	Peripheral vein cutdown	1	2	3	4	62
d6_98	Umbilical venous access	1	2	3	4	63
d6_99	Umbilical arterial access	1	2	3	4	64
d6_10	• Emergency pericardiocentesis for treatment of a pericardial tamponade	1	2	3	4	65
d6_11	• Effective performance of CPR (ventilation and compression)	1	2	3	4	66
d6_12	• Splinting of limbs	1	2	3	4	67
d6_13	• Splinting of pelvis	1	2	3	4	68
d6_14	• Limb X-ray interpretation	1	2	3	4	69
d6_15	• Pelvic X-ray interpretation	1	2	3	4	70
d7	**Disability, differential diagnosis, defibrillation and drugs**					1 - 3
d7_1	• Monitoring patient's level of consciousness:	1	2	3	4	5 4
d7_11	AVPU scale	1	2	3	4	5
d7_12	Glasgow coma scale	1	2	3	4	6
d7_13	Neonatal stress response	1	2	3	4	7
d7_2	• Blood glucose monitoring	1	2	3	4	8
d7_3	• Differential diagnosis for cardiac arrest (correctable causes)	1	2	3	4	9
d7_4	• Defibrillation	1	2	3	4	10
d7_5	• Cardioversion	1	2	3	4	11
d7_6	• External pacing	1	2	3	4	12
d7_7	• Vagal manoeuvres	1	2	3	4	13
d7_8	• Prescribe appropriate medication to facilitate:					
d7_81	Sedation	1	2	3	4	14
d7_82	Analgesia	1	2	3	4	15
d7_83	Skeletal muscle relaxation	1	2	3	4	16
d7_84	Treatment of cardiac arrest	1	2	3	4	17
d7_85	Correction of hypoxia	1	2	3	4	18
d7_86	Increased cardiac output with the use of positive inotropes	1	2	3	4	19
d7_87	Correction of metabolic acidosis	1	2	3	4	20
d7_88	Thrombolysis in acute myocardial infarction	1	2	3	4	21
d7_89	Treatment of acute pulmonary oedema	1	2	3	4	22
d8	**Exposure and environmental control**					
d8_1	• Measures to reverse hypothermia	1	2	3	4	23
d8_2	• Measures to reverse hyperthermia	1	2	3	4	24
d9	**Adjuncts**					
d9_1	• Arterial line insertion	1	2	3	4	25
d9_2	• Nasogastric tube insertion	1	2	3	4	26
d9_3	• Urine catheter insertion	1	2	3	4	27

	Skills	SD	D	A	SA	For office use only
d10	**Special circumstances**					
d10_1	• Supportive management for obstetric emergencies:					
d10_11	Normal delivery	1	2	3	4	28
d10_12	Breech presentation	1	2	3	4	29
d10_13	Prolapsed cord	1	2	3	4	30
d10_14	Shoulder presentation	1	2	3	4	31
d10_15	Multiple pregnancy	1	2	3	4	32
d10_16	Placenta abruptio	1	2	3	4	33
d10_17	Placenta previa	1	2	3	4	34
d10_18	Premature labour	1	2	3	4	35
d10_2	• Supporting the rape victim	1	2	3	4	36
d10_3	• Collecting forensic evidence from the rape victim	1	2	3	4	37
d10_4	• Neonatal stress management	1	2	3	4	38
d10_5	• Selecting an appropriate transport mode for the critically ill or injured patient	1	2	3	4	39

d11	**Do you have any remarks to add?** ....

Section E – Attitudes and values of the A&E nurse

1.1 Indicate to what extent you personally agree or disagree with the following statements relating to the A&E nurse by using the following four-point scale:

(1): Strongly disagree (SD)
(2): Disagree (D)
(3): Agree (A)
(4): Strongly agree (SA)

	A practising A&E nurse should:	SD	D	A	SA	
e1.1_1	• have self-respect	1	2	3	4	40
e1.1_2	• respect others	1	2	3	4	41
e1.1_3	• respect the possessions of others	1	2	3	4	42
e1.1_4	• respect the values of others	1	2	3	4	43
e1.1_5	• respect the views of others	1	2	3	4	44
e1.1_6	• respect the religious beliefs of others	1	2	3	4	45
e1.1_7	• be aware of the need for the clinical specialist to have applicable knowledge, skills, attitudes and values	1	2	3	4	46
e1.1_8	• accept accountability for his/her decisions	1	2	3	4	47
e1.1_9	• accept accountability for his/her activities	1	2	3	4	48
e1.1_10	• acknowledge his/her own limitations	1	2	3	4	49
e1.1_11	• acknowledge the importance of knowledge	1	2	3	4	50
e1.1_12	• acknowledge the importance of skills	1	2	3	4	51
e1.1_13	• acknowledge the importance of attitudes	1	2	3	4	52
e1.1_14	• acknowledge the importance of values	1	2	3	4	53

For office use only

e 1.2 If you would like to add an attitude and/or value not stipulated in the above list, please specify and indicate to what extent the A&E nurse should have it:

A practising A&E nurse should:	SD	D	A	SA
•	1	2	3	4
•	1	2	3	4
•	1	2	3	4
•	1	2	3	4

e2	**Other suggestions and/or comments will be appreciated**
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Thank you for your participation!

Annexure E

Spearman correlation between the variables in Section C and Section D

Spearman correlation between the variables in Section C and Section D

Pair	N (number of paired ranked scores)	r_s
C1_1 : D1_1	128	0.233**
C1_2 : D1_2	128	-0.033
C1_3 : D1_3	128	0.211*
C1_4 : D1_4	128	-0.020
C2_1 : D2_1	119	0.245**
C2_2 : D2_2	114	0.324**
C2_3 : D2_3	117	0.303**
C2_4: D2_4	109	0.383**
C2_5 : D2_5	117	0.332**
C2_6 : D2_6	113	0.271**
C2_7 : D2_7	115	0.126
C2_8 : D2_8	115	0.243**
C2_9 : D2_9	118	0.299**
C2_10 : D2_10	118	0.293**
C3_1 : D3_1	107	0.538**
C3_2 : D3_2	124	0.188*
C3_3 : D3_3	116	0.297**
C3_4 : D3_4	121	0.221*
C3_5 : D3_5	123	0.291**
C3_6 : D3_6	123	0.131
C3_7 : D3_7	122	0.231*
C4_1 : D4_1	125	0.196*
C4_2 : D4_2	126	0.139
C4_3 : D4_3	125	0.152
C4_4 : D4_4	127	0.096
C4_51 : D4_51	122	0.257**
C4_52 : D4_52	117	0.292**
C4_53 : D4_53	122	0.140
C4_54 : D4_54	125	0.293**
C4_55 : D4_55	122	0.291**
C4_56 : D4_56	116	0.342**
C4_6 : D4_6	109	0.155
C4_7 : D4_7	122	0.218*
C4_8 : D4_8	120	0.249**
C4_9 : D4_9	124	0.384**
C4_10 : D4_10	127	0.003
C4_11 : D4_11	124	0.031
C4_121 : D4_121	128	0.200*
C4_122 : D4_122	127	0.185*
C4_123 : D4_123	128	0.212*
C4_124 : D4_124	126	0.191*
C4_125 : D4_125	120	0.333**
C4_13 : D4_13	128	0.175*

Spearman correlation – (continued)

Pair	N (number of paired ranked scores)	r_s
C4_14 : D4_14	124	0.291**
C5_1 : D5_1	128	0.296**
C5_2 : D5_2	128	0.162
C5_3 : D5_3	127	0.190*
C5_4 : D5_4	122	0.458**
C5_5 : D5_5	122	0.383**
C5_61 : D5_61	126	0.316**
C5_62 : D5_62	125	0.304**
C5_63 : D5_63	125	0.412**
C5_64 : D5_64	127	0.347**
C5_7 : D5_7	120	0.250**
C5_8 : D5_8	124	0.240**
C5_9 : D5_9	125	0.192*
C5_10 : D5_10	129	0.198*
C5_11 : D5_11	127	0.343**
C5_12 : D5_12	126	0.230**
C5_13 : D5_13	128	0.042
C5_14 : D5_14	128	0.323**
C5_15 : D5_15	125	0.359**
C5_16 : D5_16	127	0.138
C5_17 : D5_17	128	0.153
C6_1 : D6_1	129	0.103
C6_2 : D6_2	128	0.011
C6_3 : D6_3	125	0.139
C6_4 : D6_4	122	0.111
C6_5 : D6_5	129	0.168
C6_6 : D6_6	129	0.151
C6_7 : D6_7	127	0.091
C6_8 : D6_8	121	0.299**
C6_91 : D6_91	126	0.170
C6_92 : D6_92	123	0.183*
C6_93 : D6_93	124	0.338**
C6_94 : D6_94	125	0.378**
C6_95 : D6_95	123	0.319**
C6_96 : D6_96	126	0.384**
C6_97 : D6_97	121	0.343**
C6_98 : D6_98	125	0.376**
C6_99 : D6_99	125	0.275**
C6_10 : D6_10	121	0.242**
C6_11 : D6_11	127	0.015
C6_12 : D6_12	126	0.250**
C6_13 : D6_13	125	0.221*
C6_14 : D6_14	126	0.228*

Spearman correlation – (continued)

Pair	N (number of paired ranked scores)	r_s
C6_15 : D6_15	126	0.174
C7_11 : D7_11	114	0.623**
C7_12 : D7_12	127	0.178*
C7_13 : D7_13	122	0.216*
C7_2 : D7_2	127	0.058
C7_3 : D7_3	117	0.047
C7_4 : D7_4	126	0.151
C7_5 : D7_5	125	0.168
C7_6 : D7_6	126	0.284**
C7_7 : D7_7	124	0.209*
C7_81 : D7_81	123	0.455**
C7_82 : D7_82	121	0.411**
C7_83 : D7_83	119	0.483**
C7_84 : D7_84	120	0.192*
C7_85 : D7_85	121	0.242**
C7_86 : D7_86	121	0.330**
C7_87 : D7_87	117	0.230*
C7_88 : D7_88	123	0.523**
C7_89 : D7_89	119	0.361**
C8_1 : D8_1	122	0.218*
C8_2 : D8_2	122	0.218*
C9_1 : D9_1	123	0.406**
C9_2 : D9_2	125	0.179*
C9_3 : D9_3	124	0.208*
C10_11 : D10_11	123	0.227*
C10_12 : D10_12	121	0.078
C10_13 : D10_13	122	0.149
C10_14 : D10_14	121	0.059
C10_15 : D10_15	121	0.100
C10_16 : D10_16	119	0.173
C10_17 : D10_17	119	0.134
C10_18 : D10_18	120	0.164
C10_2 : D10_2	122	0.144
C10_3 : D10_3	122	0.224*
C10_4 : D10_4	121	0.011
C10_5 : D10_5	121	0.170

* $p < 0.05$:Significant Spearman correlation coefficient

** $p < 0.01$: Highly significant Spearman correlation coefficient