EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE

by

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DECLARATION

I hereby declare that the work submitted here is the result of my own independent investigation. Where help was sought, it was acknowledged. I further declare that this work is submitted for the first time at this university/faculty towards a Magister degree in Health Professions Education and that it has never been submitted to any other university/faculty for the purpose of obtaining a degree.

……. ……

Mr M.W. Butler **Date**

I hereby cede copyright of this product in favour of the University of the Free State.

……. ……

Mr M.W. Butler **Date**

DEDICATION

I would like to dedicate this mini-dissertation to my wife and best friend, who has been my consistent inspiration, support and source of wisdom.
Without her love and sacrifice this work would never have been possible.

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LIST OF ACRONYMS

AEA	**:**	**Ambulance Emergency Assistant**
AED	**:**	**Automated External Defibrillators**
ALS	**:**	**Advanced Life Support**
ATCs	**:**	**Ambulance Training Colleges**
BAA	**:**	**Basic Ambulance Assistant**
B EMC	**:**	**Bachelor in Emergency Medical Care**
BP	**:**	**Blood Pressure**
BHS EMC	**:**	**Bachelor of Health Sciences in Emergency Medical Care**
B-Tech EMC	**:**	**Baccalareus Technologiae Emergency Medical Care**
BLS	**:**	**Basic Life Support**
BBMV	**:**	**Bag Mask Ventilation**
CCA	**:**	**Critical Care Assistant**
CDM	**:**	**Clinical Decision Making**
CHE	**:**	**Council on Higher Education**
DoA	**:**	**Dead on Arrival**
DoHET	**:**	**Department of Higher Education and Training**
ECG	**:**	**Electrocardiography**
ECT	**:**	**Emergency Care Technician**
EMC	**:**	**Emergency Medical Care**
EMS	**:**	**Emergency Medical Services**
ETI	**:**	**Endotracheal Intubation**
FS	**:**	**Free State**
FSDoH	**:**	**Free State Department of Health**
FSEMS	**:**	**Free State Emergency Medical Services**
HE	**:**	**Higher Education**
HEIs		**Higher Education Institutions**
HPCSA	**:**	**Health Professions Council of South Africa**
Hg	**:**	**Mercury**
ILS	**:**	**Intermediate Life Support**
IV	**:**	**Intravenous**
IVI	**:**	**Intravenous Infusion**
Kg	**:**	**Kilogram**
MDGs	**:**	**Millennium Development Goals**

ml	**:**	**Millilitres**
M Tech	**:**	**Magister Technologiae Emergency Medical Care**
N. Dip AET	**:**	**National Diploma Ambulance Emergency Technician**
N. Dip EMC	**:**	**National Diploma Emergency Medical Care**
NDoH	**:**	**National Department of Health**
MND	**:**	**Mediese Nooddiens**
NQF	**:**	**National Qualifications Framework**
O_2	**:**	**Oxygen**
SAQA	**:**	**South African Qualifications Authority**
SGB	**:**	**Standards Generating Body**
PALS	**:**	**Paediatric Advanced Life Support**
PEPP	**:**	**Paediatric Education for Pre-Hospital Providers**
PhD EMC	**:**	**Doctor of Philosophy Emergency Medical Care**
UFS	**:**	**University of the Free State**
USA	**:**	**United States of America**
VMND	**:**	**Vrystaatse Mediese Nooddienste**
WHO	**:**	**World Health Organization**

SUMMARY

Key terms: Emergency medical care; experiences; mortality and morbidity rate; paediatric; pre-hospital care; qualitative and quantitative data collection; questionnaire survey.

In this research project an in-depth study was done with a view to investigating the experiences of the Free State emergency medical care practitioners regarding paediatric pre-hospital care.

The purpose of the study was to render a contribution to the improvement of the operational readiness for paediatric emergency medical care and transportation. It is trusted that this will ensue in a lower mortality and morbidity rate within the Free State Emergency Medical Services (FSEMS). This study thus can serve as a directive for the development of high quality care for paediatric patients in the pre-hospital environment. It can also help solve deficiencies in this medical care environment.

The problem that was addressed in the study was the limited data and population-based information available in the pre-hospital environment with regard to paediatric patients, which might suggest that paediatric patients are underserved by the emergency medical care services. This can be contributed to or interpreted as due to a lack of proper size equipment and the limited ability, skills and knowledge of emergency medical personnel for dealing with paediatric patients. To address this problem it was endeavoured to determine what the experiences of emergency medical care practitioners in the Free State were with regard to paediatric pre-hospital care.

In order to address the problem stated, the following research questions were asked:

1. *How can emergency medical care practitioners' experiences regarding paediatric pre-hospital care be conceptualised and contextualised?*
2. *What are the Free State emergency medical practitioners' experiences and views regarding paediatric pre-hospital care?*
3. *What are the factors that influence the Free State emergency medical practitioners' experiences and views regarding paediatric pre-hospital care and how do these factors influence emergency medical care practitioners' experiences?*

4. *Can paediatric pre-hospital emergency medical care within the Free State emergency medical services be improved?*

The aim of the study was to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care. By doing this, deficiencies that may hamper effective paediatric pre-hospital care might be identified and reduced and/or eliminated.

A quantitative study was done with elements of qualitative feedback included in the questionnaire. The methods that were used to collect data and which formed the basis of the study comprised a literature review, followed by a questionnaire survey as empirical study. The purpose of the literature review was to gain a background and information on the experiences of emergency care medical practitioners working with paediatrics. The bulk of the literature comprised international sources as very little research has been done in South Africa on this ramification of medical care.

The questionnaire for the collection of empirical data was based on the findings of the literature review. The aim of the questionnaire was the investigation of the experiences of EMC personnel's experiences with paediatric patients. The population comprised EMC practitioners working in the Free State province, and a sample of 197 practitioners, selected by means of stratified random sampling, participated in the survey.

The quantitative data were analysed by a statistician, using frequencies and percentages, and the researcher analysed the qualitative data by reading the responses, summarising findings and categorising the findings in themes. These findings were compared with the findings of the literature review and used to make recommendations in an endeavour to improve the experiences of EMC practitioners in the Free State, and improve the mortality and morbidity rates of paediatric patients making use of emergency medical care facilities.

The recommendations of the study have a bearing on the following:

1. Standardisation of training for EMC practitioners to ensure that all practitioners are adequately trained.

2. More paediatric education and training initiatives should be taken to ensure that EMC practitioners understand the differences between paediatric patients and adult patients.
3. Practitioners who infrequently practise paediatric skills in the pre-hospital environment must be retrained and assessed regularly for safe practice (CPD).
4. Specialised paediatric equipment is the ideal, but not always affordable, therefore it is important to ensure that basic medical equipment are available and in a working condition. Creating quality service standards within the EMC services through consultation with patients and employees to understand each set of priorities better.
5. Improvement in the working conditions and remuneration of EMC practitioners to improve the standard, attitude and morale of personnel.
6. Retention of qualified EMC practitioners to enhance service and to improve the professional image of the emergency services.
7. Creating a forum where practitioners can articulate their feelings and challenges..
8. Educating the community about the emergency services available including paediatric care.
9. Creating interdisciplinary training opportunities for EMC practitioners and hospital personnel.
10. Creating interdisciplinary training opportunities for EMC practitioners and hospital personnel to learn effective communication skills and to highlight the importance of effective communication for quality patient care.

It is trusted that this research report and the recommendations will make a meaningful difference to paediatric care by EMC practitioners in the Free State.

OPSOMMING

Sleutelterme: Nood-mediese dienste; ervarings; sterftesyfer en morbiditeitskoers; pediatrie; sorg voor hospitalisering; kwalitatiewe en kwantitatiewe data-insameling; vraelysopname.

In hierdie navorsingsprojek is 'n diepgaande studie uitgevoer om die ervarings van praktisyns in die mediese nooddienste van die Vrystaat ten opsigte van pediatriese sorg voor hospitalisering te bepaal.

Die doel van die studie was om 'n bydrae te lewer tot die verbetering van die operasionele gereedheid vir pediatriese mediese noodsorg en vervoer. Ek vertrou dat dit sal lei tot 'n afname in die sterftesyfer en morbiditeitskoers binne die Vrystaatse Mediese Nooddienste (VMND). Dié studie kan dus dien as 'n aanwyser in die ontwikkeling van sorg van hoë gehalte vir pediatriese pasiënte in die voor-hospitaalomgewing. Dit mag ook help om leemtes in hierdie noodsorgomgewing aan te vul.

Die probleem wat in die studie aandag geniet het, was die beperkte data en populasie-gebaseerde inligting wat in die voor-hospitaalomgewing beskikbaar is ten opsigte van pediatriepasiënte, wat daarop mag dui dat hierdie pasiëntjies nie na behore bedien word deur die mediese nooddienste nie. Dit mag te wyte wees aan of geïnterpreteer word as die gebrek aan toerusting van toepaslike grootte en die beperkte vaardighede en kennis van die nooddienstepersoneel wat met pediatriepasiënte werk. Om hierdie probleem aan die orde te stel, is gepoog om te bepaal wat die ervarings van die nooddienstepersoneel met betrekking tot pediatriese voorhospitaalsorg in die Vrystaat is.

Ten einde die probleem wat gestel is, onder die loep te neem, is die volgende navorsingsvrae gestel:

1. *Hoe kan mediese nooddienspraktisyns se ervarings rakende pediatriese voorhospitaalsorg gekonseptualiseer en gekontekstualiseer word?*
2. *Wat is die ervarings en sienings van Vrystaatse nooddienspersoneel rakende pediatriese voorhospitaalsorg?*

3. *Watter faktore beïnvloed die Vrystaatse mediese nooddienspraktisyns se ervarings en sienings rakende pediatriese voorhospitaalsorg en hoe beïnvloed hierdie faktore mediese nooddienspraktisyns se ervarings?*
4. *Kan pediatriese voorhospitaal- mediese nooddienste in die Vrystaatse mediese nooddienste verbeter word?*

Die doelwit van die studie was om die ervarings rakende pediatriese voorhospitaalsorg van Vrystaatse mediese nooddienspraktisyns te ondersoek. Hierdeur mag tekortkominge wat effektiewe pediatriese voorhospitaalsorg belemmer, geïdentifiseer en gedeeltelik of geheel en al uitgeskakel word.

'n Kwantitatiewe studie is uitgevoer met elemente van kwalitatiewe terugvoer ingesluit in die vraelys. Die metodes wat vir datainsameling gebruik is, en wat die grondslag van die studie gevorm het, is 'n literatuuroorsig, gevolg deur 'n vraelysondersoek as empiriese studie. Die doel van die literatuuroorsig was om 'n agtergrond en inligting oor die ervarings van mediese nooddienspraktisyns wat met pediatriese pasiënte werk in te samel. Die grootste deel van die literatuur was internasionale bronne aangesien weinig navorsing nog in Suid-Afrika oor hierdie vertakking van mediese sorg uitgevoer is.

Die vraelys vir die insameling van empiriese data is gebaseer op die bevindinge van die literatuuroorsig. Die vraelys was gerig op 'n ondersoek oor die ervarings van mediese nooddiens- (MND-) personeel rakende pediatriese pasiënte. Die populasie was MND-praktisyns wat in die Vrystaatprovinsie werk, en 'n steekproef van 197 praktisyns, geselekteer deur middel van gestratifiseerde ewekansige steekproeftrekking, het aan die studie deelgeneem.

Die kwantitatiewe data is deur 'n statistikus ontleed; frekwensies en persentasies is gebruik, en die navorser het die kwalitatiewe data ontleed deur die response te lees, en die bevindinge op te som en in temas te kategoriseer. Hierdie bevindinge is met die bevindinge van die literatuuroorsig vergelyk en aangewend om aanbevelings te formuleer in 'n poging om die ervarings van MND-praktisyns in die Vrystaat te verbeter, en die sterfte- en morbiditeitskoerse van pediatriese pasiënte wat van die mediese nooddiensfasiliteite gebruik maak, te verbeter.

Die aanbevelings van die studie hou met die volgende verband:

1. Die standaardisering van die opleiding van MND-personeel om te verseker dat alle praktisyns voldoende opleiding ontvang.
2. Meer inisiatiewe vir onderwys en opleiding moet geneem word, om te verseker dat NMD-praktisyns die verskille tussen die pediatriese pasiënte en volwasse pasiënte verstaan.
3. Praktisyns wat ongereeld pediatriese vaardighede in die voorhospitaalomgewing gebruik, moet heropgelei en geassesseer word om veilige praktyk te verseker (VPO).
4. Spesiale pediatriese toerusting is die ideaal, maar nie altyd bekostigbaar nie, daarom is dit belangrik om te verseker dat basiese mediese toerusting beskikbaar en in ’n werkende kondisie is.
5. Standaarde vir die lewering van kwaliteit diens in die MND moet daargestel word deur konsultasie met pasiënte en werkgewers om elke reeks prioriteite beter te begryp.
6. Die werkomstandighede en vergoeding van MND -personeel moet verbeter word om die standaarde, houdings en moraal van personeel te verbeter.
7. Gekwalifiseerde MND -praktisyns moet behou word om die diens te bevorder en die professionele beeld van nooddienste uit te bou.
8. ’n Forum moet geskep word waar praktisyns hul gevoelens en uitdagings kan verwoord.
9. Die gemeenskap moet opgevoed word rakende die nooddienste wat beskikbaar is, insluitend pediatriese sorg.
10. Interdissiplinêre opleidingsgeleenthede vir NMD-personeel en hospitaalpersoneel moet geskep word.

Ek vertrou dat hierdie navorsingsverslag en die aanbevelings ’n betekenisvolle verskil teweeg sal bring in die pediatriese sorg wat deur die MND-praktisyns in die Vrystaat gelewer word.

EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE

CHAPTER 1
ORIENTATION TO THE STUDY

1.1 INTRODUCTION

In this research project an in-depth study was done with a view to identifying the experiences of the Free State emergency medical care practitioners regarding paediatric pre-hospital care.

The American Academy of Pediatrics (1999:1-7) states that paediatric emergency medical care and transportation are one of the primary challenges that any pre-hospital emergency medical care provider can encounter. Between 5% and 10% of emergency calls in the pre-hospital environment are paediatric calls. The American Academy of Pediatrics (1999:1-7) also alludes that emergency medical services differ between rural and urban areas.

The research entailed an investigation into paediatric pre-hospital emergency medical care and transportation within the Free State emergency medical services with a view to improving the operational readiness for paediatric emergency medical care and transportation. This could lead to a lower mortality and morbidity rate within the Free State Emergency Medical Services (FSEMS).

This study can serve as a directive for the development of high quality care for paediatric patients in the pre-hospital environment. It can also help solve deficiencies in this medical care environment.

The aim of this first chapter is to orientate the reader to the study. It provides a background to the research problem, followed by the problem statement, including the research questions, the overall goal, aim and objectives of the study. These are followed by a succinct explication of the significance and value of the study.

Thereafter a brief overview of the research design and methods of investigation is presented. The chapter is concluded with a summary of the lay-out of the subsequent chapters and a short, summative conclusion.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

This study took place within the field of pre-hospital emergency medical care in the Free State Province. Every day, patients are at risk of harm in the healthcare system. Emergency Medical Services (EMS) personnel often care for patients in challenging and dynamic environments, leading to a milieu rife with potential patient safety hazards (Canadian Patient Safety Institute 2004:1-2).

Pre-hospital emergency medical care assessments of patients in the pre-hospital environment are performed differently than those in emergency and casualty departments. Paediatric emergency medical care and transportation are one of the primary challenges that any pre-hospital emergency medical care provider can encounter. According to Manish, Shah, Paul and Sirbaugh (2010:1-17), in an online article, appropriate pre-hospital assessment and management of paediatrics in the pre-hospital environment can be very challenging and this requires dedicated resources to ensure the best outcome (Manish *et al*. 2010:1-17).

According to Seid, Ramaiah and Grabinsky (2012:114), paediatric patients account for 5% -10% of the overall emergency medical calls. Pre-hospital paediatric care is an important component of the treatment of the injured child, as the pre-hospital practitioners are the first medical providers performing lifesaving and directed medical care (Seid *et al.* 2012:114).

Traumatic injuries are the leading cause of morbidity and mortality in the paediatric patient population. Nevertheless, for most pre-hospital providers it is a rare event to treat paediatric trauma patients and a gap exists between the quality of care for paediatric patients as compared to that of adults (Seid *et al.* 2012:114). The American Heart Association posits that it is compulsory for pre-hospital emergency medical care practitioners to develop and maintain expertise in assessment and care of infants and young children (AHA 2002:8).

In 2000 a total of 189 member countries of the United Nations committed themselves to eight goals in developing the wellbeing of their respective nations. The Millennium

Development Goals (MDGs), as these were called, aimed to reduce the high mortality rate in children younger than five years (Velaphi & Rhoda 2012:67-71).

1.3 PROBLEM STATEMENT AND RESEARCH QUESTIONS

The problem that was addressed in this study was to determine what the experiences of emergency medical care practitioners in the Free State were with regard to paediatric pre-hospital care. According to Suruda, Vernon, Reading, Cook, Nechodom, Leonard and Dean (1999:294-297), there are limited data and population-based information available in the pre-hospital environment with regard to paediatric patients, which might suggest that paediatrics is underserved by the emergency medical care services. This can be contributed to or interpreted as due to a lack of proper size equipment and the limited ability, and skills and knowledge by emergency medical personnel to deal with paediatric patients.

After a literature review, limited studies relating to a needs analysis for pre-hospital emergency care practitioners in South Africa regarding paediatric pre-hospital care could be traced. The researcher made use of a number of electronic databases using Google Scholar, Pub Med, Science Direct and the University of Free State library search engines. The result highlighted a lack of published literature on pre-hospital care and transportation of paediatric patients within the South Africa context.

Although one may only use the name **Emergency Care Practitioner** (ECP) if you are registered as such, and in order to do so, one would need to hold a Bachelor Degree in Emergency Medical Care. ECPs are not paramedics as the paramedic register is only for CCA's and N.Dips. A broad term, if one is looking for one, that described all cadres of pre-hospital workers would be **Emergency Care Provider**. However, in this study the term **Emergency Care Practitioner** was used as the broad term.

In order to address the problem stated, the following research questions were asked:

1. *How can emergency medical care practitioners' experiences regarding paediatric pre-hospital care be conceptualised and contextualised?*
2. *What are the Free State emergency medical practitioners' experiences and views regarding paediatric pre-hospital care?*

3. *What are the factors that influence the Free State emergency medical practitioners' experiences and views regarding paediatric pre-hospital care and how do these factors influence emergency medical care practitioners' experiences?*
4. *Can paediatric pre-hospital emergency medical care within the Free State emergency medical services be improved?*

1.4 OVERALL GOAL, AIM AND OBJECTIVES OF THE STUDY

In order to introduce the reader to this report, the goal, aim and objectives of the study need to be explicated first.

1.4.1 Overall goal of the study

The overall goal of the study was to make a contribution to the effectiveness of Free State emergency medical care practitioners regarding paediatric pre-hospital care by exploring their experiences and providing recommendations on how to improve the operational readiness regarding paediatric emergency medical care to reduce the mortality and morbidity rate within the Free State Emergency Medical Services (cf. also 1.4.3, Objective 5, to emphasise the linkage between emergency care and Health Professions Education).

1.4.2 Aim of the study

The aim of the study was to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care. By doing this, deficiencies that may hamper effective paediatric pre-hospital care might be identified and reduced and/or eliminated.

1.4.3 Objectives of the study

To achieve the aim, the following objectives were pursued:

1. Conceptualising and contextualising the experiences of emergency medical care practitioners regarding paediatric pre-hospital care with a view to form the theoretical framework for this study via a literature survey.
   This objective addresses research question 1.
2. Exploring the Free State emergency medical care practitioners' experiences regarding paediatric pre-hospital care via a questionnaire survey.
   This objective addresses research question 2.

3. Identifying the factors that influence Free State emergency medical care practitioners' experiences and views regarding paediatric pre-hospital care via a questionnaire survey.
   This objective addresses research question 3.
4. Determining how these factors have influenced the Free State emergency medical care practitioners' experiences and views regarding paediatric pre-hospital care in a questionnaire survey.
   This objective addresses research question 3.
5. Providing information and making recommendations to relevant stakeholders in the Free State Emergency Medical Services, including education role-players involved in education and training programmes, on how to improve paediatric pre-hospital emergency medical care.
   This objective addresses research question 4.

1.5 DEMARCATION OF THE FIELD AND SCOPE OF THE STUDY

Goddard and Melville (2001:12-16) note that proper demarcation of the research problem and a well-defined scope and boundaries are important to provide focus and direction to any proposed research activity.

This study was conducted within the field of Health Professions Education, and more specifically, dealt with the experiences of emergency care personnel regarding paediatric pre-hospital care. The study was confined to Emergency Medical Care (EMC) practitioners in the Free State Province, South Africa.

Due to the application of the study in the field of emergency medical care the study can be classified as being interdisciplinary and spanned across the disciplines of emergency medical care and paediatric health-care. The participants in the questionnaire survey in this study were emergency medical care practitioners registered with the Health Professions Council of South Africa (HPCSA), who all had different scopes of practice within the sphere of pre-hospital emergency care.

In a personal context, the researcher in this study is a qualified emergency medical care practitioner and a pre-hospital emergency care course co-ordinator at the Free State College of Emergency Care, and has been involved in the training of pre-hospital care practitioners for the past 17 years. In recent years, the researcher has found that there is a need for paediatric care in the pre-hospital environment. As far as the timeframe is

concerned, the study was conducted between January 2013 – January 2015, with the empirical research phase between February 2014 and July 2014.

1.6 SIGNIFICANCE AND VALUE OF THE STUDY

The value of this research will be found in ultimately creating an action plan on how to care for paediatric patients in the pre-hospital environment. The survival of critically ill and injured children is influenced by the provision of timely and appropriate paediatric emergency medical care in both pre-hospital and in hospital environments. The value of this study is pivotal to the development of high quality care for paediatric patients in the pre-hospital environment. For far too long, pre-hospital emergency medical care and transportation research on only adult patients has been conducted. But just because it works for adults, does not mean that it would work for paediatrics.

Although Wade (2013) done specifically a study on South African emergency medical care with regard to paediatric pre-hospital emergency medical care and transportation, this study, in addition, will add value by providing insight into the medical care practitioners' experiences and understanding of the concepts of paediatric pre-hospital emergency medical care and transportation in the Free State.

The significance of this study lies in the fact that the findings will provide a scientific body of evidence. The results of this study will be made available to all stakeholders in the emergency medical care environment in the Free State Province in order to provide recommendations on how to improve the operational readiness regarding paediatric emergency medical care and to reduce the mortality and morbidity rate within the Free State Emergency Medical Services. Recommendations will also be made available to improve the education and training programmes of emergency medical care with regard to paediatric pre-hospital emergency medical care and transportation.

1.7 RESEARCH DESIGN AND METHODS OF INVESTIGATION

The research design refers to the plan of the study, and the methods of investigation that will be described refer to the context of the study, the participants in the study and the methods of data collection.

1.7.1 Design of the study

A quantitative study was done with "large" elements of qualitative feedback included in the questionnaire.

The major difference between qualitative and quantitative research is in the way that knowledge is generated (Creswell & Plano Clark 2007:259). Quantitative research is summarised by McMillan and Schumacher (2001:15) as the presentation of statistical results presented in numbers. This is supported by Burns and Grove (1999:5), who define quantitative research as a formal, objective, systematic process in which numerical data are utilised to obtain information.

1.7.2 Methods of investigation

The methods that were used and which formed the basis of the study comprised a literature review and questionnaire survey as empirical study.

The research included a literature study that focused on paediatric pre-hospital emergency medical care. The literature study was followed up with a questionnaire survey, conducted among a number of emergency medical care practitioners in the Free State provincial emergency medical services that are registered with the Health Professions Council of South Africa (HPCSA) to explore their experiences with regard to paediatric pre-hospital care.

The detailed description of the population, sampling methods, data collection and techniques for data analysis and reporting, and ethical considerations are discussed in Chapter 3.

A schematic overview of the study is given in Figure 1.1.

FIGURE 1.1: A SCHEMATIC OVERVIEW OF THE STUDY

1.8 IMPLEMENTATION OF THE FINDINGS

This report, containing the findings of the research, will be brought to the attention of the Professional Board for Emergency Care of the HPCSA, and the Free State Department of Health (FSDoH). The research findings will be submitted to academic journals with a view to publication, as the researcher hopes to make a contribution that improves the experiences of the Free State emergency medical care practitioners regarding paediatric pre-hospital care.

1.9 ARRANGEMENT OF THE REPORT

The following section provides a brief outline of the study and layout of the mini-dissertation.

In this Chapter (Chapter 1), ***Orientation to the study***, the researcher provided the context of and background to the study, and the problem, including the research questions, was stated. The overall goal, aim and objectives were stated and the research design and methods that were employed were briefly discussed to give the reader an overview of what the report contains. It further demarcated the field of the study and explicated the significance of the study for health sciences education and emergency medical care.

Chapter 2, ***Paediatric pre-hospital emergency medical care,*** provides the theoretical orientation to the study and deals with a review of literature that describes the publications and knowledge regarding experiences of emergency care practitioners in respect of pre-hospital care. The literature review provides the theoretical framework underlying the research questions.

In Chapter 3; ***Research design and methodology***, the research design used for the study, and the methodology that was applied in this study will be explained. The theoretical aspects of the methods used will be discussed and the reasons for deciding on the approach and methods explained. Data collection is described with reference to the applicable literature, as well as the use of a questionnaire.

Chapter 4, ***Results and discussion of findings of the questionnaire survey***, reports on the results of the questionnaire and data collecting method employed in the study, and the findings will be discussed

Chapter 5, ***Experiences of Free State Emergency medical care practitioners regarding paediatric pre-hospital care,*** presents the analysis of the data, the findings, and the results of the questionnaire survey.

Chapter 6, ***Conclusion, recommendations and limitations of the study,*** is an overview of the study, together with the discussion of possible limitations of the study, and is concluded with some recommendations.

1.10 CONCLUSION

Chapter 1 provided the introduction and background to the research undertaken regarding the experiences of Free State emergency medical care practitioners (FSEMC) regarding pre-hospital care.

The next chapter, Chapter 2, entitled ***Paediatric pre -hospital emergency medical care,*** will be devoted to reporting on the study of relevant literature.

CHAPTER 2
PAEDIATRIC PRE-HOSPITAL EMERGENCY MEDICAL CARE

2.1 INTRODUCTION

Pre-hospital emergency medical care assessments of patients in the pre-hospital environment are performed differently than in emergency and casualty departments. Paediatric emergency medical care and transportation are one of the primary challenges that any pre-hospital emergency medical care provider can encounter.

According to Manish *et al*. (2010:1-17) in an online article, appropriate pre-hospital assessment and management of paediatrics in the pre-hospital environment can be very challenging and this requires dedicated resources, such as appropriate training, equipment and skilled human resources to ensure the best patient outcomes or achieving best practice standards.

This chapter will provide an overview of the experiences of emergency care practitioners in the Free State Department of Health (FSDoH) regarding pre-hospital emergency medical care of paediatric patients. This will be followed by a discussion on emergency medical care of South Africa, including (1) considerations when transporting paediatric patients, (2) staff development, and (3) epidemiology of paediatric emergencies. The aim of the literature review reported here was to serve as a theoretical framework for the study. For a schematic overview of the different aspects that will be discussed and that will constitute the theoretical framework of the study, see Figure 2.1.

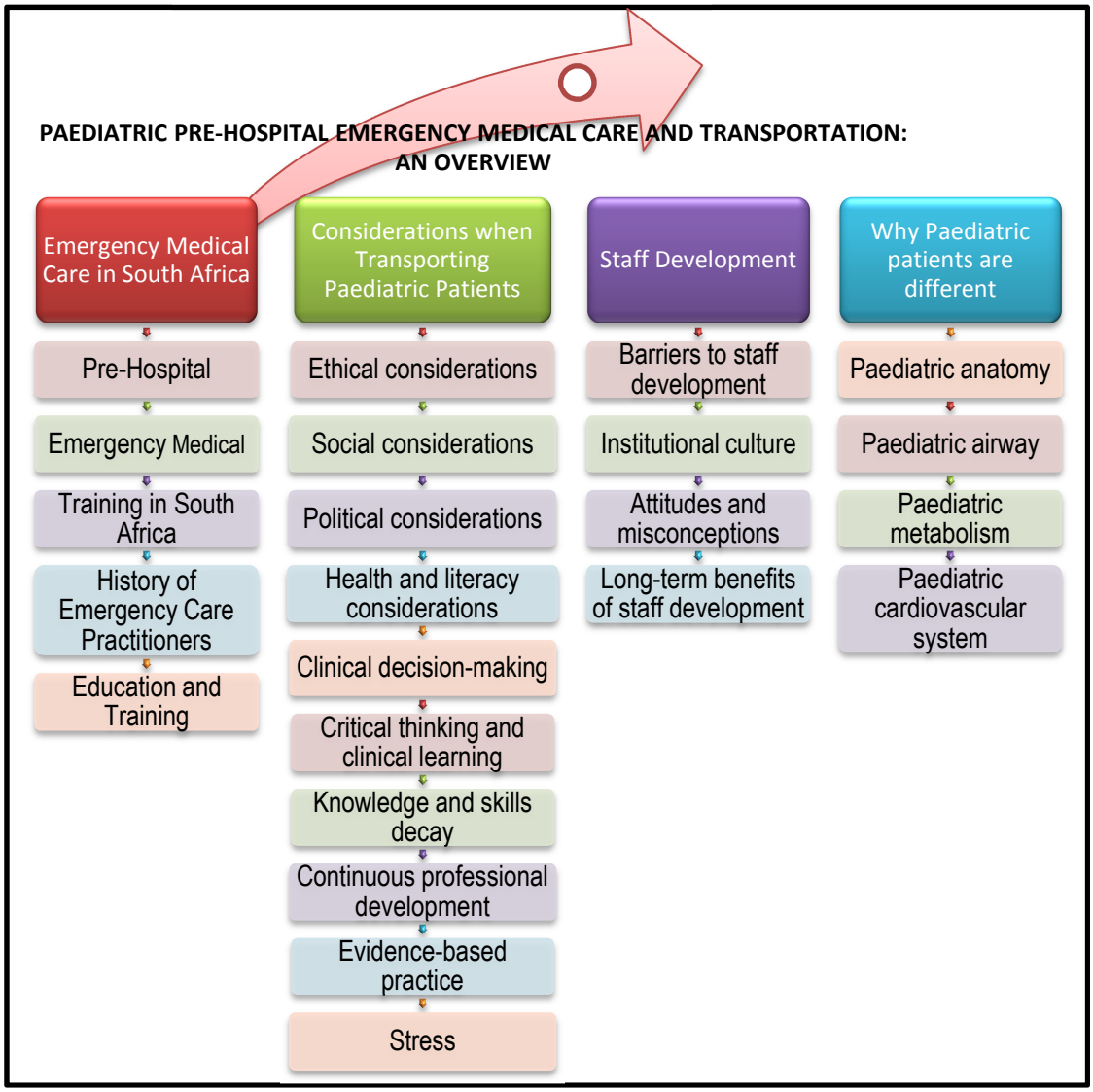

FIGURE 2.1: A DIAGRAMMATIC OVERVIEW OF THE DIFFERENT ASPECTS THAT WILL BE DISCUSSED IN CHAPTER 2

2.2 PAEDIATRIC PRE-HOSPITAL EMERGENCY MEDICAL CARE AND TRANSPORTATION: AN OVERVIEW

It is pivotal to examine the environment of paediatric pre-hospital emergency care in order to contextualise the current study. Brunet, Ponsford and Plain (2010:1-2) point out that in the pre-hospital environment emergencies involving paediatrics account for a very small percentage of ambulance calls and provide limited opportunities for pre-hospital personnel to develop and practise their skills in paediatric emergency medical care and transportation. However, for an EMS practitioner, regardless of the level or scope of practice, paediatric calls are very nerve-racking. The nervousness stems from a lack of experience in responding to paediatric calls which is and intensified by the emotional experience when treating a child (Brunet *et al.* 2010:2).

Unfortunately, very little local information in this area of pre-hospital emergency medical care has been published. In the United States of America (USA) this insufficiency in pre-hospital emergency medical care was identified more than a decade ago. For the purpose of this study, and in the efforts to improve the current situation, most of the published data are from the USA emergency medical care system.

A study by Seidel, Horbein, Yoshiyama, Kuznets, Finklestein and St Geme (1984:769-772), one of the earliest studies in the USA, assessed factors determining the quality of paediatric pre-hospital emergency medical care. The finding that the mortality rates from accidental injury were higher amongst children than adults incited questions about whether the needs regarding paediatric pre-hospital emergency care were met at the time. In a report published two years later, Seidel (1986:808-812) specifically focused on the training and equipment for pre-hospital emergency care practitioners providing pre-hospital emergency medical care to sick and injured children.

Paediatric pre-hospital care in the earliest practice mainly focused on adult procedures. Breon, Yarris, Law and Meckler (2011:450-456) indicate that the knowledge gap in assessing and working with children who require emergency care and dealing with issues relating to communication with paediatric cases create emotional tension for pre-hospital care practitioners. As a result, pre-hospital emergency medical care practitioners experience a higher level of stress and anxiety when responding to a call involving a paediatric case than with the 'usual' adult cases (Brunet *et al*. 2010:1-2).

Studies conducted by Lavery, Tortella and Griffin (1992:9-12), as well as those of Lillis and Jaffe (1992:1430-1434) assessed various procedures carried out by Basic Life Support (BLS) and Advanced Life Support (ALS) paramedics in large urban settings. These studies involved the assessment of a group of 458 injured paediatric patients. They reported that the most commonly performed procedures were the most basic (splitting of fractures and the administration of supplementary oxygen). Intravenous (IV) access was attempted in 231 patients with a 97% success rate. Endotracheal intubation (ETI) was attempted rarely and had a much lower success rate of 79%. Medication (naloxone, adrenaline, atropine and sodium bicarbonate) was administered to 15 patients (3%). In Joyce, Brown and Nelson's (1996:180-187) group study of 61,132 paediatric patients the most basic procedures performed were oxygen administration, haemorrhage control and spinal immobilisation. Advanced life support (ALS) paramedics were present in 62% of the cases; 14% of the procedures performed were at ALS level. These

included IV access and fluid administration (8%), endotracheal intubation (2%), intraosseous infusion (1%), and needle thoracotomy (only 0.2%). Stein (2010:3-27) reported on a South African study and found that medication was administered to paediatric patients in only 5% of ALS callouts, with bronchodilators, adrenaline, atropine, diazepam and dextrose administration as most frequently used.

During the Virginia symposium held in the USA in 2011, retired paramedic David Edwards and Dr Theresa Guins indicated the reasons why paediatric patients posed a special challenge for emergency medical care personnel in the pre-hospital environment. According to these authors, paediatric patients have unique medical needs in comparison to adult patients. This may be due to the absence of a generally taught, accessible, comprehensive paediatric training curriculum, specifically designed for pre-hospital emergency medical care practitioners (Edwards & Guins 2011:online). In this regard Gilchrest (2009:7) maintains that the extent and scope of paediatric education and training are inadequate, and, to worsen this situation, the infrequency of encountering critically ill paediatric patients leads to swift erosion of both skills and confidence.

In South Africa, 90% of the paediatric calls usually are from the disadvantaged communities, that is, squatter camps (informal settlements) and townships, and it generally is here where pre-hospital care providers, 80% of which are basic life support (BLS) personnel, usually treat the sick child according to the guidelines suggested by Manish *et al.* (2010:1-17). A contributing factor in this situation that warrants mention is that parents from disadvantaged communities in South Africa very often are not well educated regarding issues pertaining to their children's health.

2.3 EMERGENCY MEDICAL CARE TRAINING IN SOUTH AFRICA

Prior to 1980 no professional qualifications were offered for emergency care providers, nor did a professional board for emergency care providers exist; emergency care training was fragmented and varied from province to province (RSA DoH 2011:20).

Although many outstanding emergency medical care practitioners have been educated during the past 30 years, the absence of a structured education system has resulted in considerable variations in EMS education and training in different provinces. A similar situation was reported in rural USA during the 1970s. Becknell (1997:45-48) reported that the absence of a formal EMS education system in rural America led to inconsistencies

among the various curricula and ensued in difficulties in the ability to advance from one level of education to another.

Basic Ambulance Assistant (BAA), Ambulance Emergency Assistant (AEA) and Critical Care Assistant (CCA) short courses were initially offered as a form of in-service training by the Provincial Ambulance Training Colleges (ATCs) in South Africa. The primary focus of these short courses was on clinical skills training. The scope of practice and functioning of emergency medical care staff who had completed these short-courses were linked to rigidly defined clinical protocols, and clinical control was provided by medical doctors. A need therefore was identified for formal higher education (HE) qualifications which would be recognised, regulated and registered by the Health Professions Council of South Africa as statutory body (HPCSA 2006:1-3).

In 1987 the first tertiary (higher education) qualification was introduced: a three-year National Diploma in Ambulance and Emergency Technology (N. Dip. AET). This diploma is a three-year, full-time, higher education qualification which empowers graduates to provide clinical care of an appropriate standard, but also aims at inculcating an appreciation for research and professional academic development and growth, and to nurture and guide the profession. From 2003 onwards a Bachelor of Technology Degree in Emergency Medical Care can be obtained by completing an additional two years of part-time study after having obtained the undergraduate three-year National Diploma qualification (RSA DoH 2011:48; SAQA 2009c:1).

2.3.1 Pre-hospital emergency medical care training in South Africa

The training and scope of practice of emergency medical care practitioners vary immensely among different countries and even districts within the same country. In South Africa emergency services were not always seen as a fully-evolved, self-regulating service. This resulted in the emergency medical and rescue services being placed under control of other, more broadly recognised sections/departments/services within in the public services, such as traffic control or fire services (RSA DoH 2011:21).

Although many changes have occurred in the pre-hospital emergency medical care environment in South Africa over the past 20 years, the link between fire-fighting, rescue and pre-hospital emergency medical care remains well established and a number of large 'combined' services still exist, that deliver these three functions both locally and abroad

(Christopher 2007:1-12). In 2000 the Free State Department of Health took over the emergency services from the local municipalities and fire departments in an endeavour to improve patient care and to increase accessibility of essential services within the province (FSDoH 2013:Online).

The World Health Organization (WHO) proclaims that emergency medical care worldwide forms a crucial and imperative part of any country's healthcare system (WHO 2008:16). Emergency Medical Care (EMC) systems and structures, although fundamentally similar, vary from country to country with respect to the level of education and training provided to emergency medical care practitioners. South Africa still provides short (non-NQF [National Qualifications Framework]) courses, for example, BAA/BLS, AEA/ILS and CCA/ALS, as well as N.Dip EMC, B-Tech EMC, M-Tech and PhD in EMC, which are tertiary emergency care courses offered by universities. Most First-World countries have phased out short courses. This was done due to the duration of the short courses and the scope of practice in emergency medical care not meeting the demands on emergency medical care to excel in patient care in the pre-hospital environment. Pre-hospital emergency care practitioners transport critically ill and injured patients that sometimes require advanced life support intervention and the short courses did not seem sufficient in equipping EMC practitioners for their mammoth task.

The different emergency medical care training opportunities, as described, result in personnel within these services having different levels of training and/or education, and subsequently they provide varying levels of paediatric patient care. It warrants mention here that the scope of practice and the associated clinical skills and/or procedures that define and demarcate basic, intermediate and advanced life support remain ill-defined and subjected to varied interpretation. Different levels of education and training lead to diversity in scope of practice and the professional status of emergency medical care practitioners; this may be harmful to patient outcome (Vincent-Lambert 2012:2).

2.3.2 History of emergency medical care practitioners (EMCP)

The word 'paramedic' literally means 'alongside medicine', that is a person whose task it is to assist and support doctors (The South African Oxford School Dictionary 1998:314). The need for a person specifically trained to provide immediate emergency medical care to the ill and injured patients in the pre-hospital environment was identified many years ago during the time of war. Injured soldiers on the frontline were attended to by 'medics', as

opposed to by medical doctors who were seen as too valuable and therefore it was too risky to place them in the frontlines. Research conducted on survival from those traumatic events initiated a movement to emphasise the important links between prompt medical intervention and survival (Vincent-Lambert 2012:23).

According to the opinion of the researcher, evidence-based medicine is changing the way in which people think about the practice of medicine in general; pre-hospital emergency medical care cannot be divorced from this practice. Pre-hospital personnel members are no longer using skills or providing treatment because people believe that skill or intervention is 'cool'. Patient care should be vested in what has been proven to make a difference in patient outcomes in the pre-hospital environment.

In the next section the levels of training for emergency medical care practitioners in South Africa are explained.

2.3.3 Education and training

The requirements of the South African Qualifications Authority (SAQA) Act provided an opportunity for the entire system of emergency care education and training to be reviewed and, in doing so, to succeed in meeting the needs of the National Department of Health (NDoH) and the Emergency Care Industry. The important matters of lifelong learning, academic progression, career-paths and placement, as well as further professional development received special attention throughout review processes.

In order to align the pre-hospital emergency medical care education and training to meet the requirements of SAQA, the Health Professions Council of South Africa (HPCSA), as Standards Generating Body (SGB), undertook a revision of the learning outcomes of the existing short courses. One of the results of this review and restructuring was the design of a formal, two-year, 240-credit NQF level 6 Emergency Care Technician (ECT) Qualification (HPCSA 2011:7-8). The NDoH views this ECT programme as the 'Mid-Level Worker' equivalent of the Emergency Care Profession (Vincent-Lambert 2012:23-31).

The three-year national diploma and one-year Bachelor Degree in Technology (BTech) were presented at higher education institutions. The programmes collapsed, however, and were then submitted to SAQA in the form of a single four-year, 480-credit, NQF level 8, and Professional Bachelor of Emergency Medical Care (B.EMC.) degree. The B EMC

allows for direct articulation into master's and doctoral programmes. The higher education institutions (HEIs) offering Emergency Medical Care programmes currently are in the process of phasing out the three-year National Diploma qualification and implementing the four-year Professional Degree (Vincent-Lambert 2012:23-31)

More recently, the Council on Higher Education (CHE) and the Department of Higher Education and Training (DoHET) of South Africa have recommended to higher education institutions the use of 'Health Sciences' as a designator in the naming of the new four-year qualification, making the new name a Bachelor of Health Sciences in Emergency Medical Care (BHS EMC) (PBEC 2010:15). Figure 2.2 is a schematic presentation of the different levels of short and tertiary courses in emergency medical care offered in South Africa.

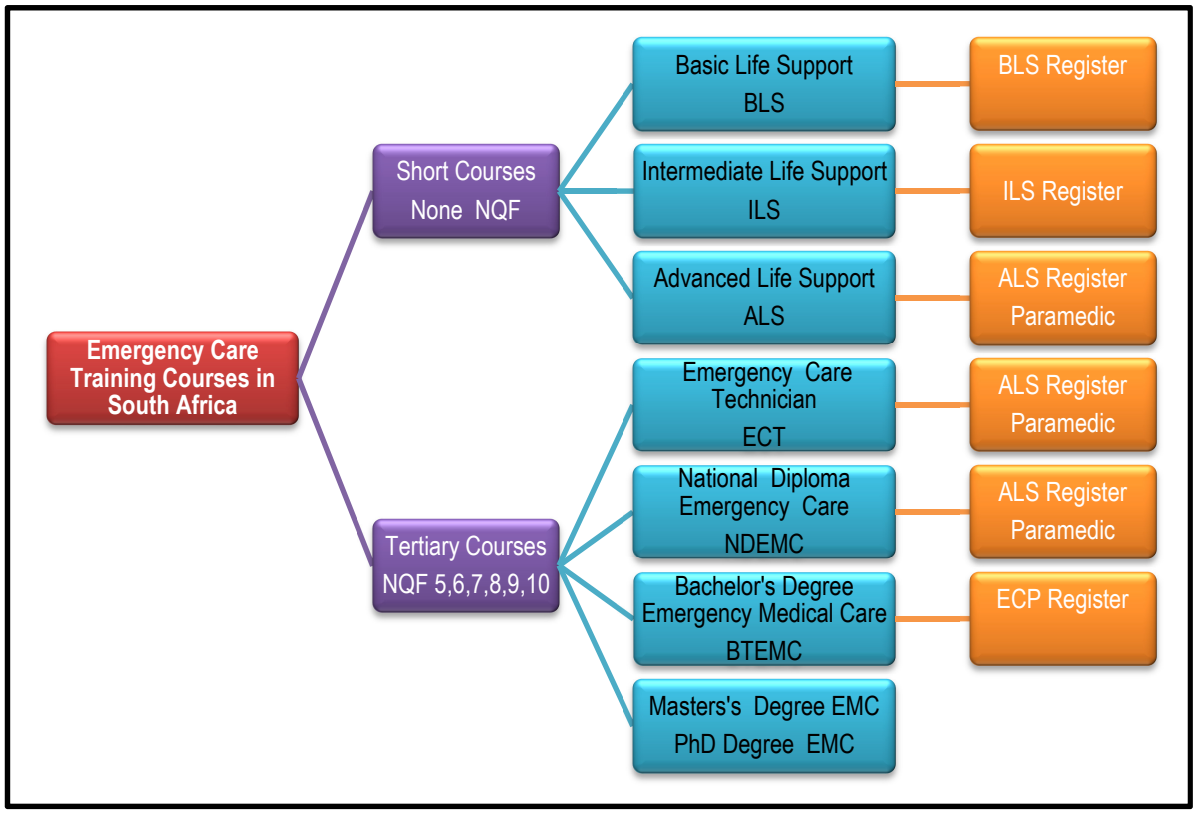

FIGURE 2.2: EMERGENCY CARE TRAINING COURSES IN SOUTH AFRICA

2.3.3.1 *Pre-hospital emergency care training levels*

Emergency medical services education and training in South Africa historically comprised a number of 'short courses' offered alongside formal higher education (HE) diplomas and degrees. These short courses ranged from a four-week Basic Ambulance Attendant (BAA) Course and a 12-week Ambulance Emergency Assistant (AEA) course to a nine- to twelve-

month Critical Care Assistant (CCA) course (HPCSA 1999a:4, HPCSA 1999b:4, HPCSA 1999c:5).

Basic Ambulance Practitioner (BAA/BLS)

To obtain a Basic Ambulance Attendance Qualification, completion of an accredited three-week, 160-hours short course which is not NQF aligned (HPCSA 1999c:5). This is the minimum qualification to be an emergency care practitioner and to be registered by the HPCSA in South Africa. The course content of the BAA/BLS comprises lectures and practical simulations.

The lectures cover basic anatomy and physiology, basic life support including CPR, emergency care and the use of basic ambulance equipment, for example, wire and traction splints, and manual and hand suction units. The use of Automated External Defibrillators (AED) recently has been included, as well as various medico-legal issues (HPCSA 1999c:49).

Ambulance Emergency Assistant (AEA/ILS)

To qualify as an AEA, or Ambulance Emergency Assistant, an accredited 12-week course is required. To be accepted for the Intermediate Life Support (ILS) course, the candidate must have a minimum of a 1000 hours' practical experience as a BAA/BLS at a registered emergency medical services provider. Training at this level consists of 470 hours, entailing 240 hours of lectures and practical simulations, and 230 hours of experiential training. AEAs are qualified to practise various invasive procedures according to their protocol, such as intravenous fluid therapy (IVI), needle cricothyroidotomy (the inserting of a needle into the trachea to create an alternative airway) and needle thoracecentesis (the inserting of a needle into the pleural space accumulated air), as well as electrocardiogram (ECG) interpretation, manual external defibrillation, and administration of various drugs (HPCSA 1999a,b,or c:45-46).

Critical Care Assistant (CCA/ALS)

CCA or Critical Care Assistant studies comprise a nine- to twelve-month course. The candidates must complete a 1,200-hour course to qualify as a CCA in addition to prior competence of the BAA and AEA qualifications. This is the highest qualification in the short course hierarchy (HPCSA 1999a:4).

National Diploma in Emergency Medical Care (NDEMC)

The National Diploma in Emergency Medical Care requires three-year, full-time study at a university. CCA and NDEMC qualified practitioners (provider) both are registered as a Paramedic with the Health Professions Council of South Africa.

Emergency Care Technician (ECT)

The Emergency Care Technician (ECT) course is a two-year course at NQF level 6. After completion of the course the student is eligible to register as an ECT. The scope of practice of an ECT is at the level of an advanced life support provider.

Baccalaureus Technologiae Emergency Medical Care (BTech EMC)

After the completion of the NDEMC the student can complete an additional one year to obtain their BTech degree. The advantage of the BTech qualification is that it is a university qualification that is consistent with the international industry trend (RSA DoH 2011:48).

2.4 CONSIDERATIONS WHEN TRANSPORTING PAEDIATRIC PATIENTS

Health and social services professionals often provide services to individuals who are socially and economically marginalised because of age, race and/or the presence of some form of physical, mental, or emotional impairment (Greenfield 2007:14-21). Matters related to services rendered to these special patients warrant elucidation.

Ethical, social, political and educational considerations are paramount in and pose ever-increasing dilemmas, in everyday pre-hospital emergency medical care practice, particularly when paediatric patients, who are unable to make their own decisions, are involved. Paediatric ethics is a branch of bioethics that analyses moral aspects of decisions made relating to the health care of children. In general terms, the autonomy-driven framework of adult medical ethics is said to be replaced by a beneficent paternalism (or parentalism) in paediatrics (Greenfield 2007:14-21).

Paediatric ethics is distinctive and requires to be taken into account in a discussion of the services of any health care practitioner. The paediatric clinician or other health care practitioner has an 'independent fiduciary obligation' or finds him-/herself in a position of

trust to act in a younger child's best interest that takes moral precedence over the wishes of the child's parent(s). For older children, the concept of assent requires that patient's wish must be heard. These factors create the possibility of conflict among child, parent, and clinician. The approach to the ethical questions that may emerge in paediatric practice, should include respect for parental responsibility and authority, balanced with a child's developing capacity and autonomy (Greenfield 2007:14-21).

2.4.1 Ethical considerations

Beauchamp and Childress (1994:34) identify four principles of medical ethics, namely respect for autonomy, beneficence, non-maleficence and justice. These four prima facie principles address most of the moral issues that arise in health care, and are mainly applicable to individual patients' health care. 'Prima facie' is a term that was coined by the English philosopher W.D. Ross, and means that the principle is binding, unless it conflicts with other moral principles (Gillon, Lloyd & Williams 1994:184-188).

Respect for autonomy means respecting peoples' thoughts, will, intentions and actions. In health care these prima facie implications of respect for others' autonomy inter alia require of health care workers to involve patients in decision-making and to gain permission before taking any action (Gillon *et al*. 1994:184-188). Pre-hospital care practitioners should be especially careful of ethical and legal predicaments with regard to young patients. To prevent this good communication is required to fully inform people about their conditions and possible interventions, and to obtain informed consent for such proposed interventions (Morgan, Smedts, Campbell, Sager, Lowe & Strasser 2009:1-20).

Since people's needs are best expressed by themselves, continuous attempts are put into action to bring that goal into reality, by, for example, active involvement of communities in primary health and health professions education (Morgan *et al.* 2009:1-20).

Gillon *et al.* (1994:184-188) maintains that the traditional moral obligation of medicine contained in the Hippocratic oath is to offer medical aid to patients with minimal harm - that is "beneficence with non-maleficence". According to these authors, this means that health care workers should receive accurate, effective and relevant education and training, before they embark on a career or enter a profession, and during their full working lives as health care practitioners.

The fourth prima facie moral principle is justice. Justice is subdivided into three subcategories, namely fair distribution of scarce resources (disruptive justice), respect for peoples' rights (rights-based justice) and respect for morally acceptable laws (legal justice). In truth, it has been found that this moral principle has been not properly applied in many health systems over the world, with large variations in health service systems within geographical areas in both developed and developing countries (Magzoub & Schmidt 2000:32).

2.4.2 Social and cultural considerations

According to Magzoub and Schmidt (2000:32) the WHO defines health "as a complete physical, mental and social well-being and not merely absence of disease or infirmity". The social considerations of health are captured in this definition. The association between health and social issues is well-established and the differentiation in health services coverage among different social and ethic strata is found all over the world.

Cultural factors also play a significant role in health services utilisation and shaping the behaviour and attitudes of people towards health interventions. In every community certain indigenous culture forces influence behaviour and attitudes towards choices on the available health services including self, traditional and modern health services (Hunt, Bonham & Jones 2011: 246; Magzoub & Schmidt 2000:33).

2.4.3 Political considerations

Ezzat (1995:46) explains that there has been a movement towards recognition of people's rights in basic social services, including health, over the past few decades. The empowerment of human rights and the democratic changes in developing countries gave rise to drastic social and political changes.

2.4.4 Health and literacy considerations

Health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and the services needed to make appropriate health decisions"' (Institute of Medicine 2004:1). Many challenges inherent to health communication contribute to the communication gaps and misunderstandings in health communication, among which a lack of health literacy, cultural diversity,

contradicting / confusing health information and the lack of properly trained health care providers.

According to Ross (2007:220-222), patients with a lack of health and general literacy skills may suffer of poorer health, run into higher expenses for health care, risk a high rate of hospitalisations, do not practise effective and appropriate preventive care, and fail to comply with treatment regimens. Regardless of their socio-economic status, some people may have had years of education and be functionally literate (in terms of reading, writing and numeracy skills), but their health literacy skills may still be limited (Williams, Baker, Parker & Nurss 1998:166-172).

2.4.5 Clinical decision-making

Clinical decision-making is an essential component of any health care system, as the ability to make effective clinical decisions is of utmost importance to ensure quality health care. Clinical decision-making (CDM) (also known as clinical reasoning or clinical judgment) has been defined for the purposes of and formally studied in medicine for a number of decades now (Norman 2005:418-427). Other health professions, such as nursing, have also investigated decision-making in their disciplines (Aitken 2003:476-483). To date, however, very little research on CDM has been conducted in pre-hospital care. It speaks for itself that poor CDM skills ensue in clinical errors, which are prevalent in healthcare and compromise patient safety (Kohn, Corrigan & Molla 1999:1-34).

CDM thus is regarded an essential component of the body of research on patient safety, also in terms of emergency medical services (EMS). The care that patients receive outside the hospital setting, most probably will have important consequences on the clinical outcome and the patient's safety. Patient assessment and treatment sometimes vary substantially, from basic pre-hospital calls that require decisive decision-making, and actions taken by the paramedic staff. Many factors may influence the outcome, including the acuteness of the patient's injury or illness, the location of the patient, the wants and needs of the patient and his/her family, the resources available to the paramedics, the level of care provided by practitioners, and the number, complexity and time dependence of interventions required, both on scene and during transport to the hospital.

The scope of practice of paramedics is continually expanding and the sophistication of EMS systems keep evolving; therefore it is essential to evaluate and expand the current state of knowledge on paramedic (CDM).

Clinical decision making skills which result in well-informed clinical decisions will enhance the competency and self-confidence levels of pre-hospital emergency care practitioners when dealing with paediatric patients.

2.4.6 Critical thinking and clinical learning

Critical thinking is described as an 'attitude', or some experts call it a 'habit of mind', that is "a special way of handling information that calls upon all of one's resources: intellect, knowledge, creativity, experience, intuition, and reasoning" (Scheffer & Rubenfield 2000:352-60). Evidence-based practice is very much dependent upon synthesising evidence from a variety of sources, and by employing critical thinking, applying it appropriately to the care needs of the patient. Paediatric treatment in the pre-hospital environment requires special reflection and critical thinking due to these patients' unique, special medical needs.

Professional expertise in pre-hospital care develops over time. With the limited exposure to paediatric calls in the pre-hospital environment, pre-hospital emergency care practitioners have limited opportunities to gain experience in how to apply critical thinking processes to attain the best outcome for the patient (Scheffer & Rubenfield 2000:352-60).

The goal of clinical learning is to grant students the opportunity to learn in the clinical practice environment, and this contributes to the development of knowledge and clinical reasoning abilities. Knowledge is an essential ingredient of and prerequisite for clinical reasoning, making the two entities interdependent (Higgs & Titchen 2000:23-32).

Higgs and Titchen (2000:23-32) divided knowledge into two types: propositional (knowing that) and non-propositional (knowing how). Non-propositional knowledge is experienced-based knowledge, and includes professional craft knowledge and personal knowledge. Professional craft knowledge is embedded in practice, can be tacit (implied, understood, inferred) and includes both general professional knowledge gained from experience, and specific knowledge related to a particular patient and situation, as outlined in Figure 2.3. This knowledge is acquired from a variety of experiences, listening to patients, learning

and implementing clinical skills, reflection and clinical reasoning, and peer affiliation and mentorship (Higgs & Titchen 2000:23-32).

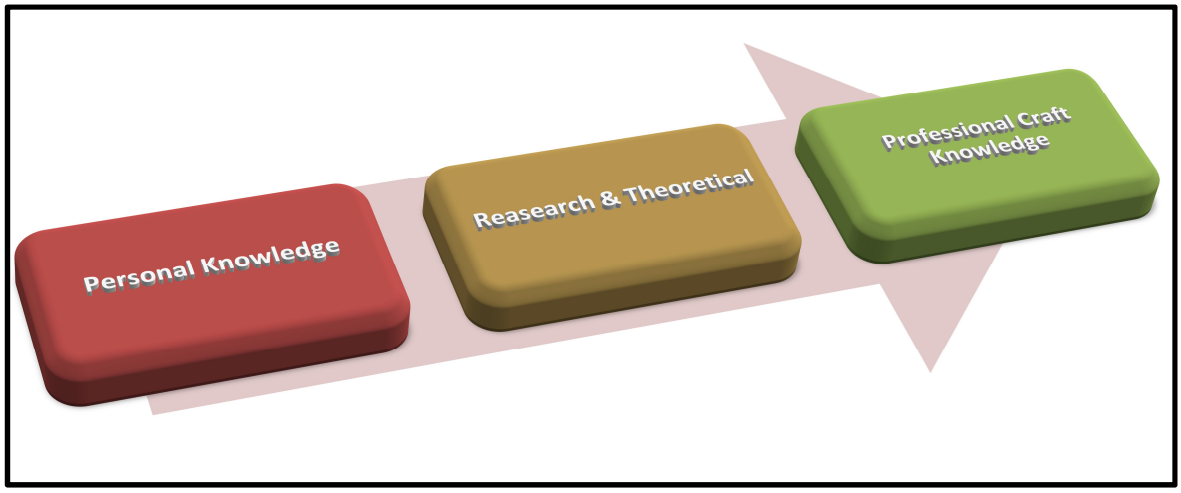

FIGURE 2.3: DEVELOPMENT FROM PERSONAL KNOWLEDGE TO PROFESSIONAL CRAFT KNOWLEDGE

Personal knowledge is shaped by one's individual life experiences and therefore is unique to every practitioner; it will include the collective knowledge of the individual practitioner's community and culture and one's personal values, assumptions, beliefs and attitudes, and may facilitate or hinder the provision of optimal care. Personal knowledge creates the basis for one's interpersonal interactions (Higgs & Titchen 2000:23-32).

> *Our presence as clinicians, the way we bring ourselves into connection with those for whom we care, is a crucial factor in supporting healing* (Siegel 2010:5).

This brief review of knowledge, critical thinking and clinical learning supports the concept that critical thinking and clinical learning form an essential part of the global learning approach in any health care environment.

2.4.7 Knowledge and skills decay

Pre-hospital emergency medical care practice necessitates competency in complex procedural skills that may be used only rarely in daily operations. One of the most complex skills in the pre-hospital environment is the appropriate management of a paediatric airway (Tibbals & Kinney 2006:308-310).

Respiratory failure is the predominant cause of paediatric arrest in epidemiologic studies, and paediatric airway management skills are a critical component of any emergency care

practitioner's skill-set (Tibballs & Kinney 2006:308-310). In order to contextualise the knowledge and skills backlog in and decay of skills of pre-hospital emergency care practitioners, literature from the USA were studied (cf. Mulcaster, Mills, Hung, MacQuarrie, Law, Pytka, Imrie & Field 2003:23-27).

In a study of Mulcaster *et al.* (2003:23-27), aimed at determining the effects of paediatric airway management training on paramedic self-efficacy and skills performance, and to determine which of several retraining methods was superior, a total of 2 520 paramedics were trained to proficiency in paediatric bag-mask ventilation (BVM) and endotracheal intubation (ETI) on mannequins. Paramedics from low-call volumes areas reported a lower self-efficacy and derived a larger increase in proficiency with training, but also experienced the most observable decline between training events. BVM and ETI were measured at 66% and 88% respectively compared to urban setting paramedics (Mulcaster *et al.* 2003:27).

In a questionnaire survey done in the state of Oregon (USA) (Fleischman, Yarris, Curry, Yuen, Breon & Meckler 2011:1130-1135) on paramedics' past experiences, present needs, barriers and desired methods of training for urban and rural emergency care technicians (EMTs), a response rate of 70% was achieved in the questionnaire survey. Regarding their past experience with paediatric training and transport, the American Heart Association Paediatric Advanced Life Support (PALS) programme was the most commonly conducted training programme used in the USA. Respondents highest comfort rating was with airway management due to the PALS programme being conducted on a regular basis. The finding was not significantly different for urban and rural emergency care providers. Over three-quarters of the participants reported spending more time on their continuing education on paediatric topics than other topics.

Perhaps the most significant development in paediatric pre-hospital emergency care education in the USA occurred in 1995 with the introduction of a new course designed specifically for the pre-hospital environment, namely Pediatric Education for Pre-hospital Providers (PEPP). Having been developed by the American Academy of Pediatrics, PEPP comprised thirteen hours' didactic and skills training time covering a wide range of emergency care topics, directly relevant to the pre-hospital environment.

PEPP was a step forward in pre-hospital emergency care training in terms of focus, but the course contains no clinical learning component and no assessment of performance

(Committee on the Future of Emergency Care in the United States Health System 2007:187-198).

Although the development in paramedical education and training in the USA has been described as a highly organised and purposeful development process, it still was regarded to be incomplete in terms of the progress in the field of paediatrics, and the amount and complexity of effort required in future, with many paramedics still relying on continuing education activities for their paediatric emergency care knowledge and skills (Committee on the Future of Emergency Care in the United States Health System, 2007:187-198; Glaeser, Linzer, Tunik, Henderson & Ball 2000:33-38; Zaveri & Agrawal 2006:114-120).

In the discussion above, various deficiencies in the preparation of paramedical staff dealing with paediatric cases were addressed. Staff development and well-being that will ensure that practitioners develop their knowledge and understanding, skills, capabilities, and attributes, which will prevent knowledge and skills decay thus warrant elucidation. These measures to improve paediatric patient outcomes according to best practice deserve careful consideration, as will now be discussed.

2.4.8 Continuous Professional Development

The increasing need for contextually relevant education in the light of the current knowledge explosion has ensued in the manifestation of continuing professional development (CPD) as an approach to counter some of the shortcomings of traditional continuing medical education (Mann 2005:546-557). Global advances in information technology and healthcare systems have resulted in better-informed health care consumers with far-reaching effects for medical and health care *per se* practice, and health systems worldwide (Sachdeva 2005:264-269). CPD refers to any learning outside of formal undergraduate or postgraduate education and training that supports health care practitioners in maintaining and improving their performance. CPD covers the development of knowledge, skills, attitudes and behaviours across all areas of health care practitioners' professional practice. It includes both formal and informal learning and training activities (Mann 2005:546-557)

According to Knox, Cullen, Collins and Dunne (2013:29-35) CPD does not only involve educational activities to enhance (medical) competence in medical (and other health care) skills and knowledge, but also in management, team building, professionalism,

interpersonal communication, technology, teaching and accountability. The constant changes in the pre-hospital healthcare environment have resulted in the need for pre-hospital health care practitioners also to continually look for education and training opportunities in order to maintain and improve their competence (Knox *et al.* 2013:29-35).

2.4.9 Evidence-based practice

Health care is increasingly driven by demands for evidence of clinical effectiveness and cost-effectiveness, as well as systematic assessment of actual health outcomes, the conscientious use of current best evidence and best practice in making decisions about the care of patients or the delivery of an effective health care service (Magers 2013:34-42). Current best practice evidence is up-to-date information from relevant, valid research about the outcomes of a variety of types of health care, to decision-making in which the practitioners use the best evidence available, in consultation with the patient, to decide on the option which will be most effective and advantageous for a specific patient. The practice of evidence-based medicine (health care) means integrating individual clinical expertise with the best available external clinical evidence from systematic research (Magers 2013:34-42).

2.4.10 Stress

The context of pre-hospital emergency care is characterised by decision-making in an unstable, hostile environment, sometimes long distances from definitive care, a high level of acuity, a lack of training and education, equipment and clinical information, and a wide range of clinical conditions, which cause emergency care practitioners to be vulnerable to stress related to paediatric incidences (Price, Bendall, Patterson & Middleton 2012:583-8). Due to the evolvement of pre-hospital emergency care, as well as the education and training of pre-hospital emergency practitioners, these providers increasingly have to make more demanding decisions about patients' health outcomes that previously were done at definitive care level. As this decision-making process has been moved gradually to the pre-hospital environment, the pre-hospital practitioners, due to a lack of proper clinical knowledge and skills have come under enormous pressure to make the right decisions regarding the paediatric patient outcomes. This situation is leading to an on-going, increasingly stress-related environment (Leblanc, Regehr, Tavares, Scott, Macdonald & King 2012:369-374).

2.5 STAFF DEVELOPMENT

Pre-hospital emergency medical care offers opportunities for pre-hospital care practitioners to save lives and improve patient outcomes by providing advanced clinical care in incidents in which time delays could be critical.

This care encompasses assessment, diagnosis, resuscitation, and initial interventions, right through to packaging for transport or finalising treatment at the scene. Clinicians attend to incidents ranging from minor illness and injury to life-threatening emergencies. Management therefore extends from basic to advanced emergency procedures and pre-hospital sedation and intubation (Hearns & Morris 2001:399-442).

Well-qualified emergency care personnel are the biggest asset that any emergency care service may wish for. Such staff members enhance the professional status of emergency care services responsible for pre-hospital patient care and transportation. Motivated, capable, efficient staff will save any service money and ensure enhanced patient care outcome. Well-equipped personnel will add value to the service. Training and professional development therefore can serve as a motivational tool, together with team building, as well as providing the essential tools needed to perform their profession effectively. For this reason it is of utmost importance that the teaching staff responsible for the education and training of emergency care personnel also should be proficient and capable, and informed of the latest trends and best practice in teaching and training. Having said that, the academic staff development of the providers of CPD to EMC staff warrants brief elucidation.

There are a vast number of reasons for any institution to embark on staff development. It should be noted that staff development may take many forms and the purposes listed here are just a few.

In a study reported on by McLean, Cilliers and Van Wyk (2008:569-570) five reasons at different levels were identified:

- The orientation of new staff into the academic culture of the faculty or institution.
- Developing a skill which may be required at the institution or faculty at a specific point in time; an example of this could be training provided to help with the creation of an online course.

- The professionalization of teaching through enhancing and extending the educational practice of academics.
- The development of educational scholarship, by providing needed support of individuals who will extend the field of medical education research.
- The development and support of educational leadership, by supporting faculty members who wish to serve on educational committees and take a leading role in the creation of policies.

These reasons of course are aimed at academic staff development at HEIs, but in principle they can be adapted and made applicable to the development of EMC personnel too.

McLean *et al.* (2008:570) adapted these levels from Benor's (2000) 2020 vision of multiphase faculty development and teacher accreditation, in which he proposed that there are four phases of staff development, ranging from the orientation, the basic and specific instructional skills up to the development of educational leaders which can be made applicable in EMC staff development as follows: orientation, basic and specific emergency care skills, and the development of an EMC staff member to comply with the demands of the latest developments in emergency care and the applicable system, and to become a lifelong learner.

2.5.1 Barriers to staff development

Many factors may influence the effectiveness of staff development. Among the factors that have a negative influence on any development actions planned for staff members, count unsupportive leadership, a resistance to change and an unwillingness on the side of staff to acknowledge the need for the development of their abilities, their knowledge and skills (Hitchcock *et al.* 1993:304; Steinert 2005:44-50). Skeff *et al.* (1997b:S60) and others identified three major barriers that may impact on staff development, namely:

The institutional culture will affect the value ascribed to staff development - factors like leadership and appropriate rewards within the institution (Healey 2000:170; Knight & Trowler 2000:69-73; Norton, Richardson, Hartley, Newstead & Mayes 2005:538-571; Richardson 2005:673-668;).

The pre-hospital environment is quite challenging due to the constant changes to the physical environment, the new development in academic qualifications and the continuously developing the scope of practice for emergency medical care. This may result in different clinical decision-making processes among various levels of practitioners (cf. Edward 2003:21-24).

Attitudes and misconceptions. Pre-hospital emergency medical practitioners often may have misconceptions about their profession and this may reduce their willingness to participate in staff development. If these perceptions are combined with uncooperative attitudes, this may emanate in not responding positively to developmental endeavours (Skeff *et al*. 1997b:S56-S563). They may underestimate, or sometimes overestimate their ability and may not acknowledge the benefits of development, or may fail to even recognise the link between development and clinical skills.

Long-term benefits of staff development. There is a definite lack of published research on the success of institutional development programmes (Guskey 2003:748-750; Skeff, Stratos, Mygdal, DeWitt, Manfred, Quirk, Roberts, Greenberg 1997a:252-257).

It is a challenging task to report on the long-term effects that staff development has on practitioners in this field. It may be easy to measure satisfaction if it is self-reported, but it proves to be a more complex task to measure practitioners' learning or enhanced patient care over a longer period.

To conclude, Figure 2.4 outlines the important aspects of staff development as these interlink with each other in the working environment.

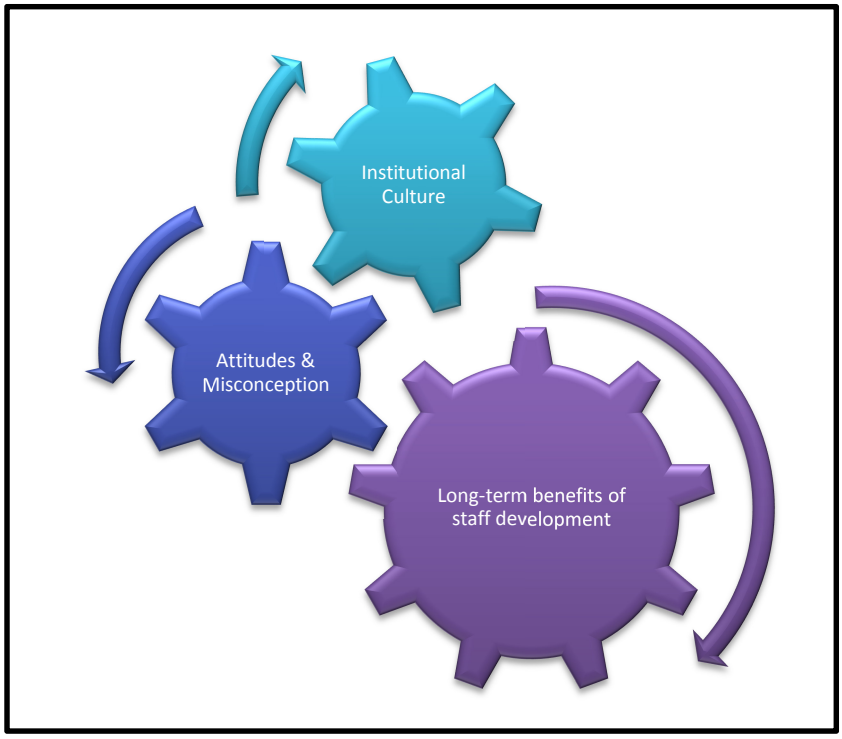

FIGURE 2.4: STAFF DEVELOPMENT INTERLINK

2.6 WHY ARE PAEDIATRIC PATIENTS DIFFERENT?

The disease processes of paediatric patients differ from those of adults, they require assessment methods of another kind, and it is essential that health care practitioners treating them, should have age-, weight-, and size-specific knowledge of vital signs and drug dosages. Paediatric patients are not 'little adults' - this assumption sometimes made by pre-hospital emergency care practitioners may have disastrous consequences. Trauma is the most common cause of mortality and morbidity in the pre-hospital emergency medical care environment and special care is required in this respect when the incident concerns paediatric patients (Scribano, Baker, Holmes & Shaw 2000:745-750).

Knowledge and skills decay among emergency care (EC) staff in this field is accelerated by the lack of on-going practical experiences. The current exposure of pre-hospital emergency care personnel to paediatric emergencies is insufficient to retain their knowledge and skills (Joyce *et al.* 1996:180-187).

Many pre-hospital emergency medical care practitioners can attest that their time spent on paediatric education during their training is far from ideal and/or sufficient (Scribano *et al.* 2000:745-750).

It was only from the mid-1970s that specialised pre-hospital and hospital-based emergency medical care needs for children were addressed in the healthcare system (Robert, Ponsford & Plain 2010:1-3). Paediatric patients require the same kind of invasive procedures as adult patients, but due to the difference in size and anatomy, many of these procedures are more difficult to perform, and the lack of specific paediatric training makes these procedures even more challenging (Robert *et al*. 2010:1-3). Early recognition and treatment of paediatric injuries or illness is important to ensure the best outcome.

2.6.1 Paediatric anatomy

According to Kliegman (2011:1-147) the head of an infant constitutes a higher percentage of total body mass compared to the adult, and the neck muscles do not support this relatively larger head as effectively. Children have more flexible interspinous ligaments and joint capsules, their vertebral bodies are wedged anteriorly and tend to slide forward with flexion, and their facet joints are flat. All these cause a predisposition towards injuries of both the bones and soft tissues of the cervical spine. The skull of the infant also is soft and the closure of fontanels and sutures is not completed until age three (3).

The child's body makes it susceptible to different injury patterns than adults. Simply as a result of their size, more force per square inch of body surface is experienced than with adults. In children, the abdomen begins at the level of the nipple and both the supple rib cage and underdeveloped abdominal muscles afford little protection to internal organs. This makes children vulnerable to injury, and as a result multi-organ injuries occur more frequently. Untrained practitioners may even cause such injuries during CPR (Kliegman 2011:89).

Since a child's bones are more flexible than those of an adult, it is possible for a child to have serious internal injuries without fracture of bone (Kliegman 2011:89). Lack of detailed knowledge of, or knowledge deterioration regarding paediatric anatomy, and the lack of clinical and critical decision-making abilities may ensue in a poor prognosis of the paediatric patient’s condition.

2.6.2 Paediatric airway

As is the case with adult patients, airway control is a priority in paediatric resuscitation and is often required in paediatric emergency trauma care (Seidel 1986:129-33).

Cardiac problems are the leading cause of cardiac arrest in adult patients, but the cause of childhood cardiac arrest commonly is hypoxia secondary to respiratory arrest. Early and aggressive airway management therefore is recommended and most often absolutely essential. Unfortunately, as a result of the lack of training and related opportunities to hone their skills and update their knowledge, most pre-hospital emergency care providers have only limited experience in managing the paediatric airway (Kliegman 2011:1-147). This is a cause for concern; Campbell and Campbell (2010:135-137), for example, affirmed that 80% of pre-hospital emergency medical care practitioners in South Africa were only equipped with BLS knowledge and skills. This is a precarious situation for EMC and can have a negative outcome on the paediatric patient that requires invasive airway intervention.

The paediatric airway anatomically differs from that of an adult. An infant' tongue is quite large relative to the oropharynx, and this increases the likelihood of airway obstruction and problems during laryngoscopy. The small child's larynx is anterior and more cephalic in the neck, the epiglottis is shorter, omega shaped and angled over the laryngeal inlet, thus control with the laryngoscope blade is more difficult. As the vocal cords are angled, a 'blindly' passed endotracheal tube may easily lodge in the anterior commissure, rather than slide into the trachea. Another important feature of the infant's airway which need to be considered during an intervention is that the infant larynx is funnel shaped, with the narrowest portion occurring at the cricoid cartilage (Ehrlich, Seidman, Atallah, Haque, & Helmkamp 2004:1376-80).

Children have a shorter neck and a larger head in relation to the body than is the case in adults; therefore it is a challenging task to position a child ideally for a laryngoscopy (namely in the sniffing position), especially when the child is in full spine precautions with a rigid cervical stabilisation collar. The large occiput of the child tends to force the neck into flexion while lying flat and the airway tends to buckle and obstruct. To counter this, the EMC worker should be aware that a towel or blanket should be put between the shoulders to bring the child into a more anatomically neutral position (Kliegman 2011:91-92).

From this discussion it is clear the EMC practitioners require detailed training and education in paediatric care to ensure effective, efficient and safe care of paediatric patients.

2.6.3 Paediatric metabolism

Another very critical difference between paediatric patients and adult patients of which many EMC practitioners should be aware has a bearing on the child's metabolism. The paediatric metabolism differs in distinctive ways from that of adults and these differences should be taken into consideration when caring for paediatric trauma patients. Healthy children have an increased metabolism and therefore a higher O_2 (oxygen) consumption than adults. Because of the larger body surface area to size ratio, hypothermia commonly occur in injured children. It is very important to avoid hypothermia at all times. Hypothermia induces shivering and catecholamine release, causing an even higher oxygen consumption that may result in lactic acidosis (Kliegman 2011:90).

Hypothermia and the resulting acidosis affect the coagulation system and can cause or exacerbate coagulopathy resulting in further bleeding, and this may lead to a vicious cycle of hypothermia, coagulopathy, increased bleeding. Rapid (cold) fluid administration will lead to further hypothermia. It is therefore crucial to pay close attention to maintaining euthermia in the pre-hospital setting (Smith, Keseg, Manley & Standeford 1988:491-495).

2.6.4 Paediatric cardiovascular system

Abnormally low blood pressure or hypotension, in children is defined as systolic blood pressure below the fifth percentile for age, or by clinical signs of shock. As this is an important indicator of a patient's condition, especially a trauma patient, EMC practitioners should be aware of these signs. The ranges given may be difficult to remember, especially if they are used infrequently. However, in order to diagnose possible problems with regard to paediatric blood pressure, several standard principles apply: (1) no child's respiratory rate should be >60 breaths/min for a sustained period; (2) normal heart rate is roughly 2-3 times the normal respiratory rate for age; and (3) a simple guide for paediatric blood pressure (BP) is that the lower limit of systolic BP should be >60 mm Hg for neonates; >70 mm Hg for 1 month–1year olds; >70 mm Hg + (2 × age) for 1-10 year olds; and >90 mm Hg for any child older than 10 years (Gerein, Osmond, Stiell, Nesbitt, Burns & Group 2006:653-658).

Due to their intermittent experiences with such cases, EMC practitioners may find it difficult and stressful to manage paediatric patients if their knowledge and skills are not updated regularly. For appropriate care to be provided to paediatric patients, it therefore

must be emphasised that in children, blood pressure is often maintained until late in shock because of their vigorous sympathetic and vasoconstrictive response. Thus, appropriate fluid resuscitation must start early, and EMC practitioners should be aware of the differences between what happens during shock in the cardiovascular system of a paediatric patient as compared with the adult patient.

Because of their small blood volume, children can lose a small amount of blood, but a large percentage of their volume. A rough estimate of blood volume can be made based on the child's weight. Blood volume is approximately 100 to 120 mℓ/kg for a pre-term infant, 90 mℓ/kg for a full-term infant, 80 mℓ/kg for a child 3 to 12 months old, and 70 mℓ/kg for a child older than 1 year (#5). The lower limit of systolic blood pressure (5th percentile) for age may be estimated by the formula: 70 mm Hg + (2× age in years) Reisdorff, Howell, Saul, Williams, Thakur and Shah (1998:180-183) explicated the importance of this information for personnel responsible for pre-hospital care of small children.

Gerein *et al.* reported on a study on out-of-hospital paediatric cadiopulmonary arrest cases in Canada, and pointed out the following important factors and facts of which pre-hospital medical care practitioners should take heed. Median (50th percentile), systolic blood pressure for children older than one (1) year may be estimated by the formula: 90 + (2× age in years). The initial fluid bolus should be 20 mℓ/kg of isotonic crystalloid and the Paediatric Advanced Life Support guidelines recommend up to 60 mℓ/kg for initial resuscitation. Clinical circumstances, such as the mechanism of injury or burn, and vital signs should dictate this. As the paediatric patient runs a risk for hypothermia, all intravenous fluid should be warmed. While isotonic crystalloid solution offers a temporary measure to maintain blood pressure, the administration of or large amounts of crystalloids may cause further complications in trauma patients by worsening bleeding, hypothermia and coagulopathy. For this reason the crystalloids in the pre-hospital trauma care should be used carefully (Gerein *et al*. 2006:653-658).

To expect of EMC practitioners to successfully assess and manage paediatric patients based merely on their initial training and/or experience with adult patients is unfair and holds serious risks for quality and life-saving care.

2.7 CONCLUSION

This chapter has been devoted to a report on the literature studied in an endeavour to create the context for a study of EMC in South Africa. The findings of the literature review provided a background to the study by clarifying the nature and structure of pre-hospital emergency care, and in particular the paediatric pre-hospital emergency care environment. In order to contextualise the international data presented, the structure of South African pre-hospital emergency care qualifications has been outlined as has been the nature of paediatric pre-hospital emergency medical care in South Africa.

Employee training and development also came under scrutiny as it may ensure organisational and cultural enhancement, and the maintenance and honing of knowledge and skills, benefiting patient care and outcome in the pre-hospital context. Critical thinking and clinical reasoning have been discussed and identified as pivotal to the pre-hospital sphere as such skills are required for improved patient care, and teamwork brings new ideas and promotes options in a multi-viable environment.

In the next chapter, Chapter 3, the research design, methodology and procedures followed in this research study will be discussed.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter is devoted to a discussion of the research design and research methodology applied in the study. In the first place, theoretical perspectives on the research design are provided. Thereafter, a discussion follows of the process of data collection, sample selection, the pilot study and the data analysis. Finally, issues of trustworthiness, reliability and validity, as well as ethical considerations are discussed.

Goddard and Melville (2001:1) state that "research is not just a process of gathering information, as is sometimes suggested. Rather, it is about answering unanswered questions or creating that which does not currently exist". According to Leedy (1989:5), research is the "procedure by which we attempt to find systematically, and with the support of demonstrable fact, the answers to a question or the resolution of a problem". These descriptions of research form the basis of this study; as part of the study involved a number of selected questions being asked of the pre-hospital emergency care practitioners in order to obtain some level of understanding of their experiences regarding pre-hospital paediatric care.

3.2 THEORETICAL PERSPECTIVES ON THE RESEARCH DESIGN

Theory building, strategy of inquiry and types of design will be discussed.

3.2.1 Theory building

Lynham (2002:244) states that theory building may be seen as a continuous theory research cycle consisting of two parts, the first part being theoretical, and the second part being the operational side of the cycle. In the first part, the concepts represent variables the interactions of which constitute the essence of theory. After identifying the units or concepts of theory, the next step in theory building is to specify how the units interact and relate to each other (Lynham 2002:244).

In this study, the conceptual or theoretical framework relies on the literature as discussed in Chapter 2. The second part, namely the operational side of the cycle, includes the empirical study and the findings and interpretation thereof.

3.2.2 Types of methods

In this study, a quantitative research method was used due to the large population in the pre-hospital emergency care environment. According to Marshall and Jonker (2010:e1-e7), quantitative research examines the individuals for their opinions in a structured way so the findings can produce hard facts and statistics to guide the researcher. To get reliable statistical results, it was important for the researcher to survey a fairly large population in the pre-hospital emergency care environment to make sure they were an impartially, representative sample, in size and across the scope of practice.

Descriptive statistics are the best to use with such a large population, and they are useful to summarise data and provide a description of large populations (Marshall & Jonker 2010:e1-e7).

3.2.3 The research design of this study

In the study a quantitative design was used in order to collect data to answer the research questions. The data were collected by means of a structured questionnaire, with closed questions as well as a number of open-ended questions to provide a better understanding of the research problem, as well as to enhance the interpretability of the research findings.

Babbie and Mouton (2001:49) point out that the quantitative paradigm brings a number of related themes to mind, which could include an emphasis on the qualification of construct – which is assigning numbers to the perceived qualities of things. Alternatively, quantitative research can also be defined as "a formal, objective, systematic process in which numerical data are utilised to obtain information" (Burns & Grove 1999:5). McMillan and Schumacher (2001:15) summarise this approach by making the following statement: "Quantitative research presents statistical results represented by numbers".

3.3 RESEARCH METHODS

The methods that were used and which formed the basis of this research comprised a literature review and a questionnaire.

3.3.1 Literature review

A literature overview may not be regarded as a collection of texts, but it represents a body of accumulated scholarship. The aim of a literature review is to conceptualise a research problem and to locate it in a body of theory. It also serves to put the researcher's efforts into perspective, situating the topic in a larger knowledge pool, creating a foundation based on existing, related knowledge (De Vos *et al.* 2005:134-135).

Bowen (2005:210) suggests that the researcher should read extensively in order to ensure that a complete overview is gained of the existing literature and approaches to the particular topic. This will assist the researcher to identify knowledge gaps and areas where further research might be required. Literature reviews ensure the researcher of a background to the topic and establish a link between the research project and the existing knowledge in that field (Bowen 2005:210).

A literature review was done on the experiences of emergency medical care practitioners regarding paediatric pre-hospital care. The findings informed the researcher with the necessary background knowledge required for a study aimed at finding solutions for the stated research problem. This literature review also provided a basis for the identification of the research questions that were included in the questionnaire.

3.3.2 The questionnaire survey

In quantitative studies the data collection methods usually comprise measuring instruments, one of which is the questionnaire survey (Delport in De Vos *et al.* 2005:165).

3.3.2.1 *Theoretical aspects*

Goddard and Melville (2001:47) maintain that a questionnaire is a list of questions which respondents are requested to answer. These questions may be open and/or closed questions; typically the closed questions are responded to by means of ranking or scoring.

Goddard and Melville (2001:47) also posit that the effectiveness of a questionnaire depends on the planning of the questionnaire in terms of objectivity which will influence the analysis of the responses. Questionnaires may be structured, semi-structured, or unstructured. A structured questionnaire comprises fixed standardised questions and scales. The questions and scales are presented to all the respondents in the same way. There are no variations in the questions and the same response choices are available (Bowling 2002:258). When specific information is required, structured or closed questions may be included; this type of questionnaire usually is used for large-scale data collection (Goddard & Melville 2001:48).

Bowling (2002:258) affirms that one of the main advantages of structured questionnaires is their ability to collect answers that are clear in meaning. The responses can be processed without much effort, as they only need to be counted, and then the quantitative data are available for analysis. This method ensues in data collection and analysis that can be conducted with relative ease and relatively economically in terms of large scale data collection and analysis.

A disadvantage, however, is that not all the relevant factors may be covered by the set (pre-coded) questions; participants may be compelled to select an option that does not fully reflect their opinion on the matter at hand. It is for this reason that open-ended questions were added to the questionnaire used in this study. Thus, a questionnaire that was quantitative in nature with some elements of a qualitative nature (the open-ended questions) was used.

Goddard and Melville (2001:48) propose the following criteria for a good questionnaire, which the researcher strived to comply with:

- The questionnaire must be complete and contain all the information required.
- The questionnaire must be brief and should not abuse the respondents' time or concentration.
- Only relevant questions are to be asked.
- The instructions must be unambiguous.
- It must be compiled by using precise, clear, comprehensive and understandable questions.
- The questions may not be leading, nor suggest answers.
- The majority of the questions must be closed questions.

- The instrument must be reliable.

For the questionnaire survey in this study a mainly quantitative approach was followed, with a number of open-ended questions.

3.3.2.2 *Emergency medical care practitioners' questionnaire on their experiences regarding paediatric pre-hospital care*

The aim of the questionnaire survey was to obtain demographic information of the participants and to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care.

The questionnaire was compiled using factors identified in previous studies during the literature review; some questions were adapted to be applicable in the context of the pre-hospital emergency medical care environment. Letters for permission to conduct the study (Appendix A) and an invitation letter, as well as a consent form to participate in the questionnaire survey are included as Appendix B. The questionnaire is attached as Appendix C, and includes the following sections (cf. Table 3.1):

TABLE 3.1: EMERGENCY MEDICAL CARE PRACTITIONERS' QUESTIONNAIRE

NAME OF SECTION	DESCRIPTION OF CONTENT
Section A: Demographic information	The following demographic information: gender, age, race, qualification, district of operation, level of experience
Section B: Basic & Clinical Knowledge	Questions regarding the level of basic and clinical knowledge of the practitioner
Section C: Basic and Clinical Competence	Questions regarding the clinical competences of the practitioner
Section D: Stress Levels	Questions regarding the stress levels experienced by the practitioners
Section E: Basic and Clinical Skills	Questions regarding the basic and clinical skills of the practitioner
Section F: Professional Competency	Questions regarding the professional competency of the practitioner
Section G: Equipment	Questions regarding the availability of equipment to the practitioners
Section H: General	General questions

The first section of the questionnaire includes the demographic questions, as a factual, non-threatening introduction to the questionnaire. The sections that follow were arranged

in a logical order and questions related to the same topic were grouped together (cf. Table 3.1). The questionnaire survey comprised questions with a number of pre-coded answer choices, as well as some open-ended questions providing respondents the opportunity to provide reasons or clarifications to the answers.

3.3.2.3 *Sample selection*

Sampling is defined as the process of selecting a sufficient number of elements from the population. The reason for sampling from a population instead of collecting data from the whole population is to select a number of elements that can represent the target population as fully as possible (Bailey 1987:81).

Ideally, a researcher would prefer to study the whole population to give more meaning to the findings; however, this is not possible due to the large numbers, and, therefore researchers usually have to settle for a sample (a smaller, representative number) (Bailey 1987:81).

In this study stratified random sampling was used to obtain a representative sample. Maree and Pietersen (2007:175) define stratified random sampling as a method of sampling according to which the population is divided into a number of homogeneous, non-overlapping groups, called strata. The sampling that is done from these groups or strata is called stratified sampling, which is suitable for addressing the problem of non-homogeneous populations. In this way the population can be represented better than through simple random sampling. The strata in this study were the different levels of employment and scope of practice of the emergency medical care practitioners, as well as the different districts in the Free State Province.

3.3.2.4 *Target population*

The target population in a study comprises a group of individuals who have and share certain identified characteristics (De Vos *et al.* 2005:223). The target population in this study included the emergency medical care practitioners in the Free State provincial emergency medical services who were registered (at the time of the study) with the Health Professions Council of South Africa (HPCSA).

Yegedis and Weinbach (2002:180) posit that in selecting a target population the following factors should be taken into consideration: budgetary constraints, methods of data collection, and time allocated to conduct the research. These should be carefully contemplated and stated. It normally is complicated and not feasible to study a whole population, thus only a subset of the population will be used as subjects in an investigation. This subset is known as a sample of the population. By studying the sample, the researcher would be able to draw conclusions that can be generalised as being applicable to the entire population.

Emergency medical care practitioners in the Free State provincial emergency medical services are employed throughout the different districts in the Free State province (cf. Figure 3.1).

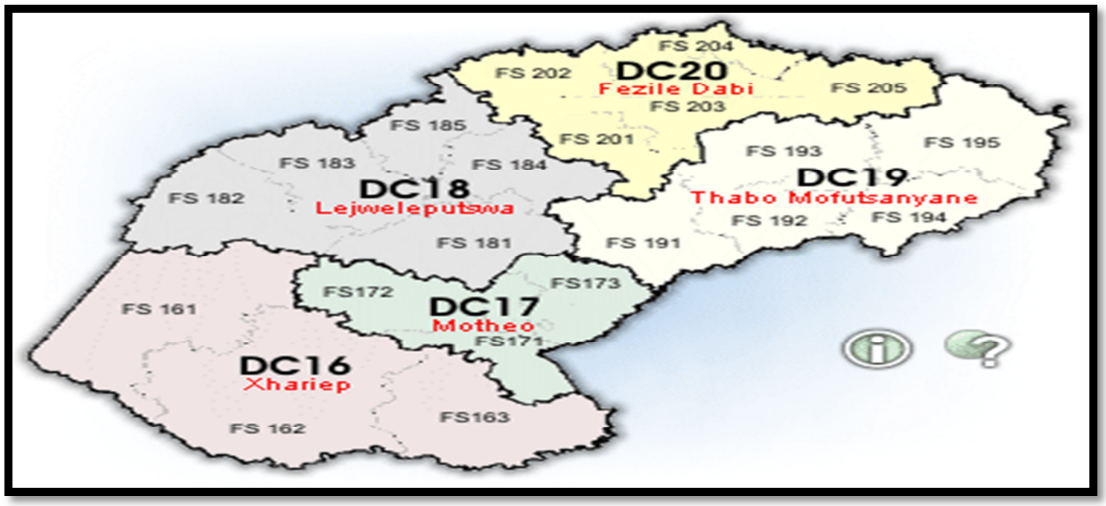

FIGURE 3:1: EMERGENCY MEDICAL CARE PRACTITIONERS' DISTRIBUTION IN THE FREE STATE PROVINCE (divided into districts) (FROM FREE STATE (FS) HEALTH PORTAL (FSDoH 2013:ONLINE)

The emergency medical care practitioners in the Free State provincial emergency medical services are employed at different levels according to their scope of practice and qualifications. These levels range from: Basic Life Support (BLS), Intermediate Life Support (ILS), and Advanced Life Support (ALS). The advanced life support practitioners are divided into the levels of Critical Care Assistant (CCA), Emergency Care Technician (ECT), National Diploma Paramedic (NDip EMC), and the Bachelor's Degree in Emergency Care practitioner (BTech). In Table 3.2 the number of registered emergency medical care practitioners per level and district is provided. Information used in Table 3.2 was obtained from the operational manager of the Free State Emergency Medical Services, Main Building, Department of Health, Bloemfontein, Free State.

TABLE 3.2: NUMBER OF REGISTERED EMERGENCY MEDICAL CARE PRACTITIONERS PER LEVEL AND DISTRICT

MEDICAL CARE PRACTITIONERS	DISTRICT				
	MOTHEO	XHARIEP	LEJWELEPUTSWA	FEZILE DABI	THABO MAFUSANYANE
Basic Life Support	204	173	273	260	398
Intermediate Life Support	25	22	37	31	27
Critical Care Assistant CCA	2	5	7	6	10
Emergency Care Technician ECT	3	2	2	1	1
National Diploma Paramedic	1	0	2	2	1
Bachelor's Degree Emergency Care Paramedic BTech	4	0	0	0	1
TOTAL	**239**	**202**	**321**	**300**	**438**

3.3.2.5 *Survey population*

The survey population consisted of 250 (17%) emergency medical care practitioners in the Free State provincial emergency medical services that were registered with the HPCSA and who were selected through stratified random sampling.

The strata in this study were the different levels of employment and scope of practice of the emergency medical care practitioners (cf. Table 3.2), as well as the different districts in the Free State Province (cf. Figure 3.1).

3.3.2.6 *Sample size*

The response rate of the questionnaire survey was 78.8% and 197 emergency medical care practitioners in the Free State provincial emergency medical services that were registered with the HPCSA took part in the study. All these participants gave informed consent to participate in the survey and completed the questionnaire survey (cf. Table 3.3).

TABLE 3.3: NUMBER OF REGISTERED EMERGENCY MEDICAL CARE PRACTITIONERS PER DISTRICT THAT COMPLETED THE QUESTIONNAIRE (n = 197)
(Table continues on next page)

MEDICAL CARE PRACTITIONER	DISTRICT				
	MOTHEO	XHARIEP	LEJWELEPUTSWA	FEZILE DABI	THABO MAFUSANYANE
Basic Life Support	36	14	14	25	25
Intermediate Life Support	7	4	9	6	18

Critical Care Assistant CCA	1	0	2	1	1
Emergency Care Technician ECT	5	4	1	3	6
National Diploma Paramedic	7	1	0	0	0
Bachelor's Degree Emergency Care Paramedic B-Tech	3	0	0	0	1
TOTAL	**59***	**23**	**26***	**35**	**51***

**** 3 participants (one in each of these respective districts) did not fill in their qualification level***

3.3.2.7 *Description of the sample*

The sample consisted of 197 emergency medical care practitioners in the Free State provincial emergency medical services that were registered with the HPCSA, drawn from different levels of employment and scope of practice of the emergency medical care practitioners (cf. Table 3.2), as well as the different districts in the Free State Province (cf. Figure 3.1).

3.3.2.8 *Pilot study*

A pilot or feasibility study is a small-scale experiment designed to test logistics and gather information prior to a larger study, in order to improve the quality and efficiency of the study (Lancaster, Dodd & Williamson 2004:307-12). The pilot study was done to ensure that the questions were clear and not biased, the questionnaire was well-structured and to determine the amount of time needed for completion.

The pilot study was conducted by requesting six individuals from the different pre-hospital emergency care levels within the Free State department of health to complete the questionnaire. This was undertaken to ensure the reliability, validity and trustworthiness of the study. The following biographical information about these participants was noted.

All the participants in the pilot study were males between the ages of 20 and 35. They had been involved in the pre-hospital emergency care environment for between five and ten years. Two of the participants were in the pre-hospital training environment, and the rest were operational staff in the emergency services. After the completion of the pilot study each participant was asked about the validity and the time required to complete the questionnaire.

When asked about the validity of the questionnaire, the responses were as follows:

- "Not bad. There is a lot of questions that made me think about paediatric patients, equipment and ethical aspects I didn't know about".
- "Hope this can create a platform for managers to think about, if we are not properly skilled what stressors we are going through when dealing with paediatric patients".
- "My basic knowledge and clinical knowledge has deteriorated a lot, I am scared to assist paediatrics".
- "I lack professional competency".

When asked about the time factor of completing the questionnaire, the responses were as follows:

- "Took me about 40 minutes to complete".
- "30 minutes".
- "30 minutes, had to read carefully".
- "About 30 minutes".

The researcher thus concluded that it took approximately 30 minutes to complete the questionnaire and that the questions in the survey were pertinent to the study. Due to the fact that the participants did not suggest any changes to the questionnaire, it was decided to include the participants that had completed the pilot study in the final results.

3.3.2.9 *Data collection*

The researcher identified five supervisors in the different regions within the Free State province to assist in the dissemination of the questionnaire survey after a mutual agreement had been reached that they were willing to assist the researcher. The electronic copy of the questionnaire was printed and copies were made for the randomly selected participants in the study.

The researcher drove to the different regions to hand over the questionnaires personally. The supervisors were informed about information they should provide the participants regarding the completion of the questionnaire, for example, the signing of the consent form and the time it would take the candidates to complete the form. The researcher

also emphasised that the candidates should be informed again that they might withdrew from the study any time as participation was voluntary.

When questionnaires with responses were received, it was noticed that in some cases there were more qualified professionals/providers in the different districts and working on different levels as indicated by the information received from the Department's Operational Manager. It was decided to analyse all questionnaires received. This discrepancy may be seen as a limitation in the study.

3.3.2.10 *Data analysis*

The data analysis was done by a qualified statistician by using frequencies and percentages. The collected data were integrated, and the findings were summarised as will be discussed in Chapter 4. The open-ended questions were analysed by the researcher. This was done by reading, identifying and summarising concepts and grouping of themes into specific categories. The study leaders checked the groupings and categories to ensure authenticity.

3.4 ENSURING THE QUALITY OF THE STUDY

To ensure the quality of quantitative studies, it is important to ensure acceptable levels of validity and reliability of the measuring instruments and the measurements procedures. For the qualitative quality assurance the concept of trustworthiness is applied.

3.4.1 Trustworthiness

Trustworthiness is best defined as the 'believability' of a researcher's findings (Maykut & Morehouse 1994:64). Guba (1981:75-91) established four criteria for trustworthiness in qualitative research, namely credibility, transferability, dependability and conformability, whereas the four criteria for trustworthiness in quantitative research are: internal and external validity, reliability and objectivity.

According to Babbie and Mouton (2001:227-278) quantitative research can only be considered valid if it is reliable; a qualitative study can be transferrable when it is credible, and is judged credible when it is dependable. The trustworthiness of this study was established by providing a detailed outline of how the quantitative and qualitative data were analysed and interpreted with a view to the final research report.

3.4.2 Validity

An instrument is valid if it measures what it is intended to measure and accurately achieves the purpose for which it was designed (Uys & Basson 2000:80). Brink, Van der Walt and Van Rensburg (2012:109) emphasise that validity is a matter of degree, and discussions should focus on how valid a test is, not whether it is valid or not.

According to Brink *et al.* (2012:109-110), no measuring instrument is perfectly valid. Validity involves the appropriateness, meaningfulness, and usefulness of inferences made by the researcher on the basis of the data collected.

The validity of this research was maintained through the way in which the research instrument (questionnaire survey) was designed, as well as the expertise of the study leaders and supportive expertise provided by the researcher.

3.4.3 Reliability

Reliability is concerned with the consistency, stability and repeatability of the informants' accounts, as well as the researcher's ability to collect and record information accurately (Creswell 2009:190-191). Brink *et al.* (2012:216) state that reliability refers to a consistent and dependable research instrument that measures variables in terms of types of reliability and stability, equivalence and internal consistency. In this study reliability was ensured by doing a thorough literature review on the field of pre-hospital emergency medical care (cf. Brink *et al*. 2006:160). The reliability of this study was established by means of a well-constructed questionnaire that was carefully piloted and reviewed by experts in this area of research.

3.5 ETHICAL CONSIDERATIONS

Research ethics is referred to as a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal and sociological obligations to the study participant (Polit & Beck 2006:36). In this study participants' informed consent was obtained for participation, anonymity was guaranteed, no possibility of harm was involved for any participant, confidentiality was ensured, and the required permission for the study was obtained.

3.5.1 Approval

Permission to conduct this research was obtained from the Ethics Committee of the Faculty of Health Sciences of the University of the Free State (UFS), from the Head of the Department, FSDoH, and from the Dean of the Faculty of Health Sciences, UFS. Approval was also obtained from the Ethics Committee of the Faculty of Health Sciences of the UFS (ECUFS number 212/2013).

3.5.2 Informed consent

Participants were provided with a cover letter (cf. Appendix B1) providing relevant detailed information with regard to the aim and purpose of the study and how participants might elect to either participate and/or exercise their right to withdraw from the study. All participants in this study gave informed consent to participate in the research (cf. Appendix B2).

3.5.3 Right to privacy

The participants' personal information was treated as confidential; only information regarding participants' professional status (i.e. years' experience, position, qualifications, etc.) was requested.

Information that was collected via questionnaires was kept in a secure location with access only by the principal researcher. All information collected will be stored and kept in the secure location until such a time as deemed appropriate and determined by the principal researcher to safely destroy the information using acceptable and international practices for the discarding of information used in research.

3.6 CONCLUSION

Chapter 3 provided an overview of the research methodology involved in the study and the procedures that were followed.

In the next chapter, Chapter 4, entitled ***Results and discussion of findings of the questionnaire survey,*** the results of the questionnaire that was used to obtain data for this study will be reported and discussed.

CHAPTER 4

RESULTS AND DISCUSSION OF THE FINDINGS OF THE QUESTIONNAIRE SURVEY

4.1 INTRODUCTION

The purpose of the chapter is to present the results obtained from 197 questionnaires distributed to 250 emergency medical care practitioners in the Free State provincial emergency medical services that were registered with the HPCSA. The response rate was 78.8%. The questionnaire survey yielded both quantitative (numerical) and qualitative (text) data from closed and open-ended questions respectively.

The questionnaire (cf. Appendix C) was designed to obtain demographic information of the participants, information on their basic and clinical knowledge, their basic and clinical competence, their stress levels, basic and clinical skills, professional competency, and the equipment that they used with regard to paediatric pre-hospital emergency care, as well as their opinion on how emergency care medical services could be improved. The literature review provided a basis for the identification of the research questions that were included in the questionnaire.

The demographic description of the sample is presented first (cf. 4.2 Demographic information). The demographic information, Section A, includes biographic data such as age, gender, ethnic group, the district in which they practised at the time of the study, as well as the time they had been working in the pre-hospital emergency medical environment, the area of service, employment and qualification(s).

The second section, Section B, presents the descriptive information on the basic and clinical knowledge of the participants (cf. 4.3 Basic and clinical knowledge). The third section, Section C, deals with the participants' basic and clinical competence (cf. 4.4 Basic and clinical competence). The fourth section, Section D, examines the levels of stress that the participants experienced (cf. 4.5 Stress), while the fifth section, Section E, explicates the basic and clinical skills of the participants (cf. 4.6 Basic and clinical skills). The sixth section, Section F, examines the participants' professional competency (cf. 4.7: Professional competency) and section seven, Section G, provides details of the equipment

that are available to the participants (cf. 4.8 Equipment). The final section, Section H, (cf. 4.9 The Improvement of the paediatric pre-hospital emergency medical care and transportation), asked the participants' opinions on how the emergency medical services could be improved as far as paediatric pre-hospital emergency medical care and transportation were concerned within the Free State Emergency Medical Services.

The quantitative data are displayed in percentages. Qualitative data included comments, explanations and responses given by respondents and were divided into different themes and categories, and substantiated with examples of verbatim quotes from the respondents.

The chapter ends with a conclusion (cf. 4.10).

4.2 DEMOGRAPHIC INFORMATION

[Please compare Section A of Questionnaire (Appendix C)]
[N= number of respondents who gave consent to answer the questionnaire]
(n= number of respondents who actually answered the specific question)

The same sequence is followed in the graphic displays as stated as options in a specific question where possible.

Percentages are round off to one decimal point, for example 4.51 = 4.5%.

4.2.1 Age

Figure 4.1 indicates the age distribution of the sample. Of the respondents four respondents (2%) did not answer the question on age.

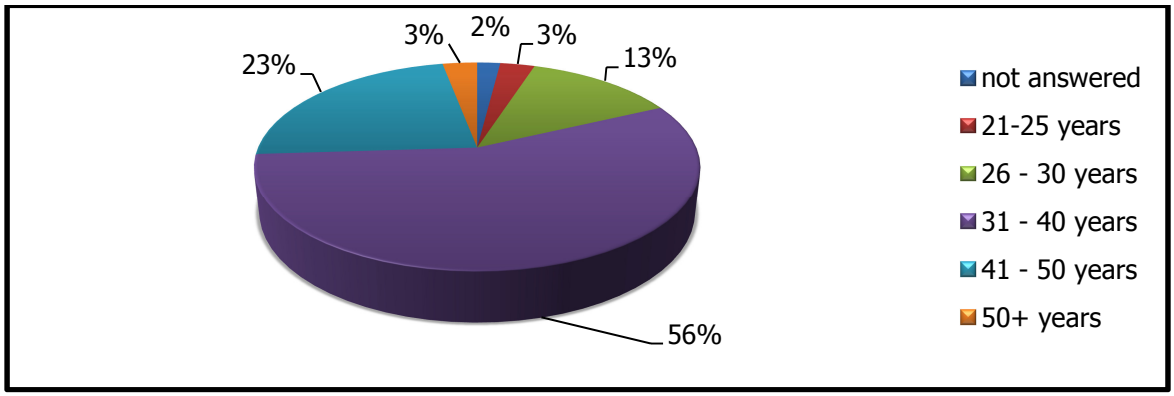

FIGURE 4.1: AGE DISTRIBUTION OF THE SAMPLE (%)
(Question 1, Section A of Questionnaire) [N = 197] (n=193)

Discussion: The majority of the respondents (56%) were between 31 – 40 years, 23% were between 41 – 50 years, 13% between 26 – 30 years, while only 3% of the respondents were younger than 25 years and 3 % were above 50 years.

4.2.2 Gender

Figure 4.2 indicates the gender distribution of the sample. Of the respondents, 196 indicated their gender, while one respondent omitted to supply his/her gender.

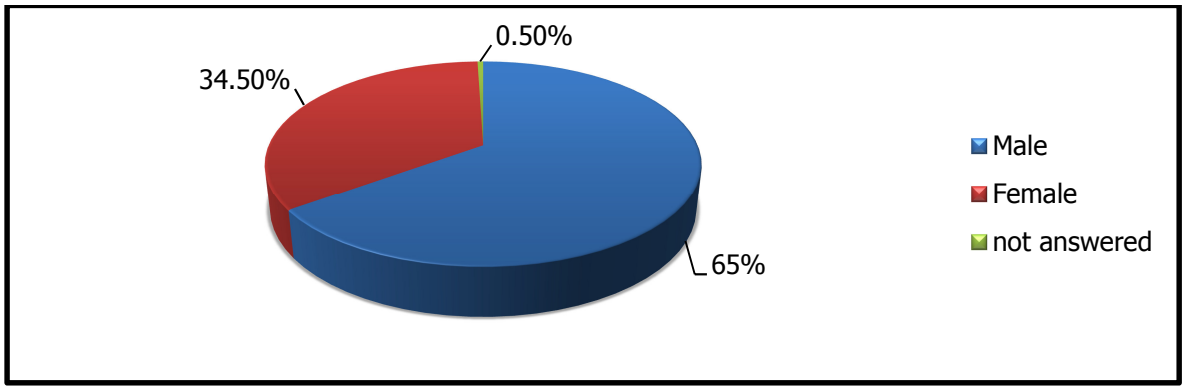

FIGURE 4.2: GENDER DISTRIBUTION OF THE SAMPLE (%)
(Question 2, Section A of Questionnaire) [N=197] (n=196)

Discussion: The gender distribution of 65% males and 34.5% females correlates well with the actual distribution as far as emergency medical care practitioners' appointments in the Free State are concerned.

4.2.3 Ethnic group

Figure 4.3 specifies the different ethnic groups to which the respondents in the sample belonged. Of the 197 respondents, 14 (7%) omitted to supply their ethnic group.

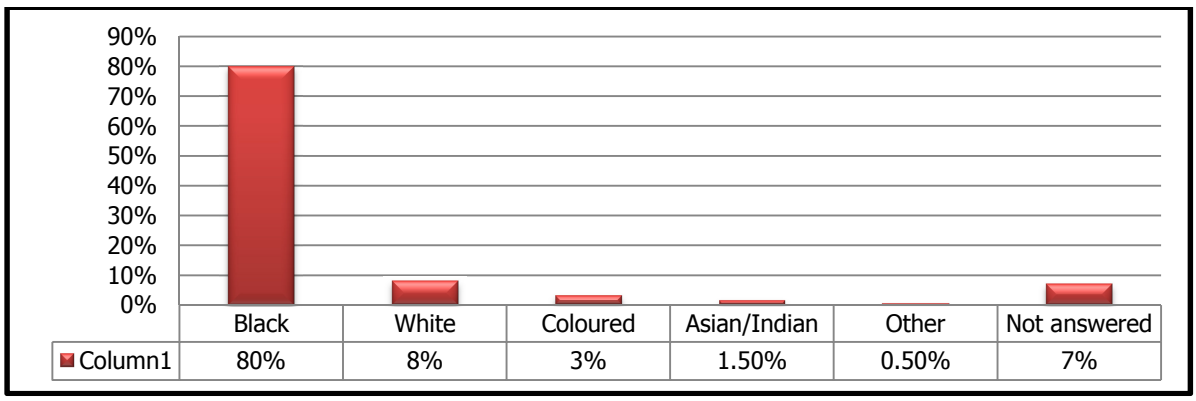

FIGURE 4.3: ETHNIC GROUP DISTRIBUTION OF THE SAMPLE (%)
(Question 3, Section A of Questionnaire) [N=197] (n=183)

Discussion: The majority of the respondents (80%) were black, while 8% were white, 3% were coloured and 1.5% of the respondents were Asian/Indian. One respondent (0.5%) indicated that he/she belonged to the 'other' ethnic group, but did not specify the specific ethnic group.

4.2.4 Districts

Figure 4.4 indicates the different districts where the respondents in the sample at the time of the survey were practising as pre-hospital emergency medical care practitioners.

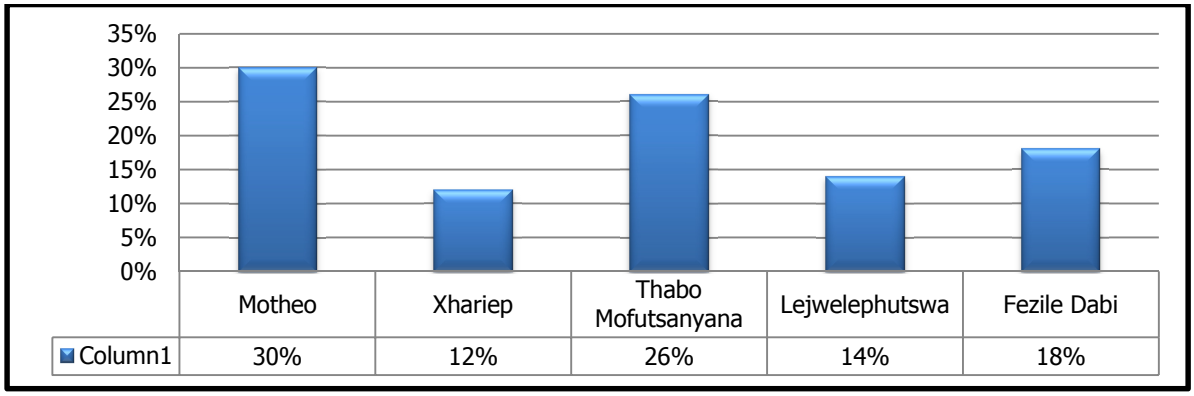

FIGURE 4.4: DISTRICT DISTRIBUTION OF THE SAMPLE (%)
(Question 4, Section A of Questionnaire) [N=197] (n=197)

Discussion: Of the respondents, 30%, practised in the Motheo district, 26% and 18% in the Thabo Mofutsanyana and Fezile Dabi districts respectively. In Lejwelephutswa district 14% of the respondents were practising, while the remaining 12% were in the Xhariep district (cf. Districts Figure 3.1).

4.2.5 Length of time of service

The number of years that respondents have been working as pre-hospital emergency medical care practitioners is presented in Figure 4.5. Nine respondents (4%) did not indicate the number of years that they had been in service.

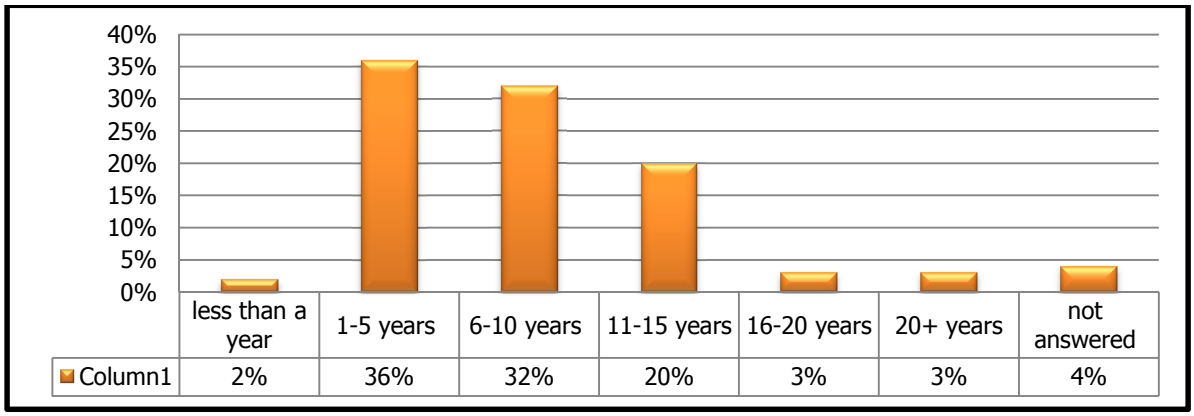

FIGURE 4.5: LENGTH OF SERVICE
(Question 5, Section A of Questionnaire) [N=197] (n=188)

Discussion: From all the respondents, 36% indicated that their length of service was between 1-5 years in the pre-hospital emergency care environment. A further 32% of the respondents represented 6-10 years of service, while 3% of the respondents respectively had 16-20 and 20 years of service. Only 2% of the respondents indicated that they had less than a year of service in the pre-hospital emergency care environment.

4.2.6 Service area

Figure 4.6 indicates the area (rural or urban) in which respondents rendered a service. All the respondents answered the question.

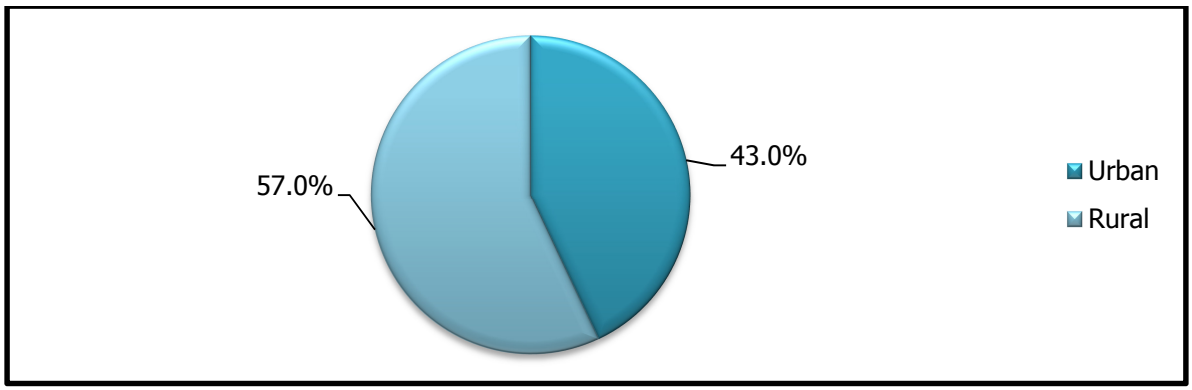

FIGURE 4.6: SERVICE AREA (%)
(Question 6, Section A of Questionnaire) [N=197] (n=197)

Discussion: More than half of the practitioners (57%) are practising in a rural setting and the remaining 43% are practising in an urban setting.

4.2.7 Highest qualification/level of training

In Figure 4.7 the respondents' highest level of qualification is indicated. Three respondents (1.5%) did not indicate their highest qualification.

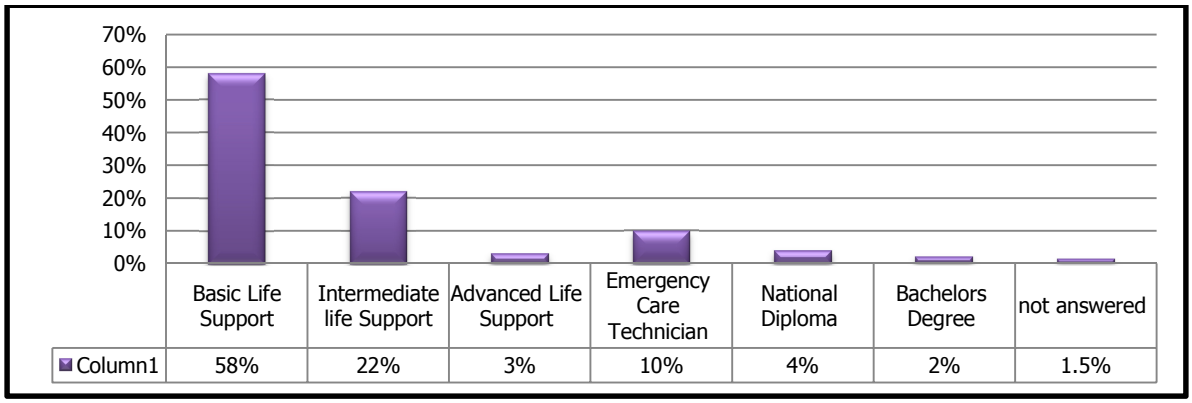

FIGURE 4.7: HIGHEST QUALIFICATION/LEVEL OF TRAINING (%) (Question 7, Section A of Questionnaire) [N=197] (n=194)

Discussion: More than half of the respondents (58%) had a basic life support qualification, 22% had an intermediate life support qualification and 10% were qualified emergency care technicians. Only a small percentage of the respondents obtained other higher qualifications in emergency medical care. From this it may be inferred that the majority of the respondents were not highly qualified in the field of paediatric care.

4.2.8 Number of years after qualification was obtained

Figure 4.8 indicates the number of years since the respondents had obtained their respective EMS related qualifications. Of the 197 respondents, 14 (7%) did not answer the question.

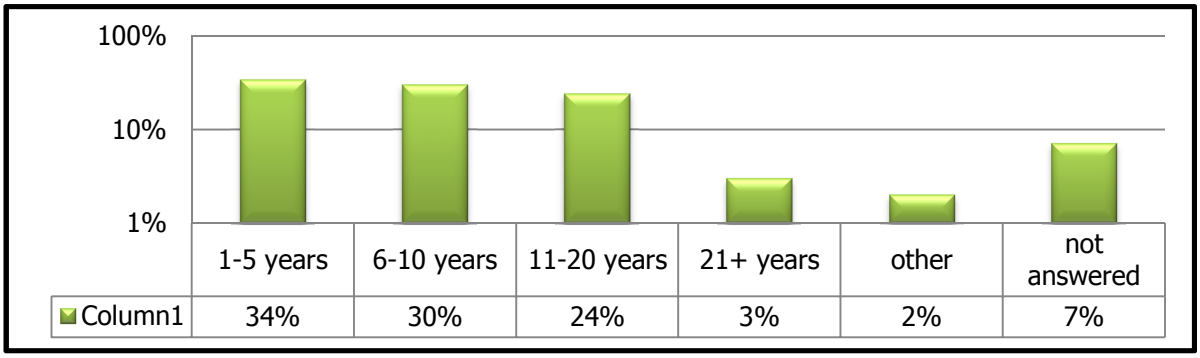

FIGURE 4.8: NUMBER OF YEARS SINCE THE QUALIFICATIONS WERE OBTAINED (Question 8, Section A of Questionnaire) [N=197] (n=183)

Discussion: Fewer than half (34%) of the respondents' emergency medical care related qualifications were obtain during the past 1-5 years, while only 3% of the respondents' qualifications had been obtained more than 21 years ago. A further 30% and 24% of the emergency medical care related qualifications were obtained 6-10 and 11-20 years ago respectively. Of the 197 respondents 7% did not answer the question, while 2% chose the 'other' option that might suggest less than a year ago.

4.2.9 Desire to obtain further qualifications in EMS

In Figure 4.9 respondents' desire to obtain a further qualification(s) in EMS is depicted.

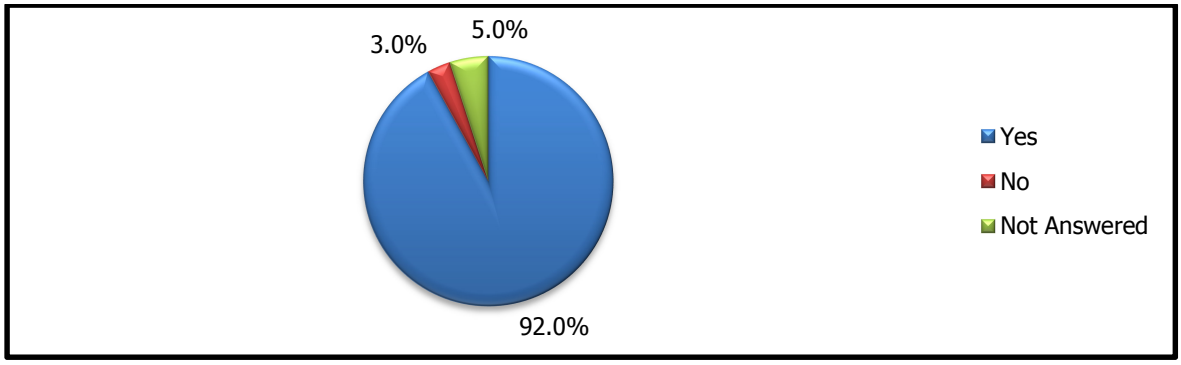

FIGURE 4.9: DESIRE TO OBTAIN FURTHER QUALIFICATION(S) (%)
(Question 9, Section A of Questionnaire) [N=197] (n=187)

Discussion: The majority (92%) of the respondents indicated the desire to obtain further qualifications in the pre-hospital emergency care environment, while 3% answered 'no' to the question, affirming that they did not want to attain further qualifications in the pre-hospital emergency care environment. Of the respondents 5% did not answer the question.

Table 4.1 provides the reasons respondents gave on why they would like to obtain a further qualification.

TABLE 4.1: RESPONDENTS' REASONS ON WHY THEY WOULD LIKE TO OBTAIN FURTHER QUALIFICATIONS (Question 9, Section A of Questionnaire) [N=197]
(Table continues on next page)

THEME	CATEGORIES
Qualification	To acquire qualification
	To acquire advanced training
Knowledge	To improve knowledge
	To obtain knowledge and skill
	To gain more experience

Patient Care	To improve patient care
	To ensure professional competency
Departmental improvement	To handle departmental change
	To maintain and keep high standards
	To maintain a high level of professionalism
Staff	Shortage of staff
	Lack of current ECTs
Personal	Personal development and personal reasons
	To increase income
Better service	Better service to community

Discussion: Various reasons were provided by the respondents on why they would like to further their qualifications. The reasons included to obtain further qualifications, with the view to acquire more advanced training, to improve their knowledge and to be able to offer better patient care, as well as to ensure professional competency. The other themes that were identified included departmental improvement and staff, and it mainly consisted of reasons such as the rectification of the current shortage in staff and to increase the standards of the departments. Some of the respondents indicated that it was for personal reasons and included comments such as the improvement of their income. The respondents also indicated that they would like to provide a better service to the community.

4.3 BASIC AND CLINICAL KNOWLEDGE

[Please compare Section B of Questionnaire (Appendix C)]

Section B of the questionnaire focuses on the basic and clinical knowledge that respondents had with regard to paediatric pre-hospital emergency care and transportation. The results are presented in table format per district.

4.3.1 Standard of knowledge

Table 4.2 indicates the respondents' own belief on whether their knowledge of paediatric pre-hospital care and transportation was up to standard (YES/NO). In Table 4.3 the reasons are provided (per district) as to why the respondents believed their knowledge on paediatric pre-hospital care and transportation was up to standard or not up to standard.

TABLE 4.2: RESPONDENTS' OPINION ON WHETHER THEIR KNOWLEDGE OF PAEDIATRIC PRE-HOSPITAL CARE AND TRANSPORTATION IS UP TO STANDARD (Question 10, Section B of Questionnaire) [N=197] (n=174)

DISTRICT	KNOWLEDGE UP TO STANDARD (YES) (%)	KNOWLEDGE NOT UP TO STANDARD (NO) (%)
Motheo	41	59
Xhariep	44	56
Thabo Mofutsanyana	61	39
Lejwelephutswa	52	48
Fezile Dabi	43	57

Discussion: Respondents, who answered the question, indicated their opinion (cf. Table 4.2) that their knowledge of paediatric pre-hospital care and transportation **is up to standard** as follows: In the Motheo district 41% of respondents indicated a 'yes'; Xhariep 44%; Thabo Mofutsanyana 61%; Lejwelephutswa 52% and Fezile Dabi 43%.

Respondents, who answered the question, indicated their opinion (cf. Table 4.2) that their knowledge of paediatric pre-hospital care and transportation **is not up to standard** as follows: Motheo 59%; Xhariep 56%; Thabo Mofutsanyana 39%; Lejwelephutswa 48% and Fezile Dabi 57%. Their reasons are summarised in Table 4.3

From this it can be deduced that a large percentage (39-59%) of the respondents in the different regions regarded their own knowledge with regard to paediatric pre-hospital care and transportation as not adequate or up to standard.

TABLE 4.3: RESPONDENTS' REASONS WHY THEY BELIEVED THEIR KNOWLEDGE OF PAEDIATRIC PRE-HOSPITAL CARE AND TRANSPORTATION ARE UP TO STANDARD OR NOT UP TO STANDARD (Question 10, Section B of Questionnaire) [N=197]
(Table continues on next page)

District	Reasons for knowledge up to standard (Themes)	Verbatim quotes	Reasons for knowledge NOT up to standard (Themes)	Verbatim quotes
Motheo	Adequate training	"I was trained to care and transport this kinds of patient and I attended the PALS training"	Degree of exposure	"Because I've never been exposed to paediatric cases most of the time" "I am working at a control centre" "Only performs the basic and from there I don't know much"
	Sufficient knowledge	"I can assist a patient through the phone"	Lack of / insufficient	"I still need to learn and get more

		"What my protocol insists on my knowledge is up to standard" "I did a module in paediatric care and transportation"	training	knowledge and training"
Xhariep	Adequate training	"Because even now I am still in training"	Lack of / insufficient training	"Need more training on paediatrics" "People don't know how to treat paediatric – only take temperature"
	Sufficient training	"I know what to do for the patient and only my protocol restricts me" "After every 3 months I refresh the knowledge"	Degree of exposure	"I have never worked with paediatric patient or at paediatric pre-hospital care"
Thabo Mofut-sanyana	Adequate training	"Because I am currently busy with my obstetrics classes" "Can handle different paediatric patients with confidence"	Lack of / insufficient training	"I do not have enough training on paediatric patients" "I am not trained"
	Sufficient training	"I know the mother must be with her baby to calm the baby" "I keep myself updated with current knowledge"	Scope of practice	"Limited scope of practice" "My qualification does not allow me to treat paediatric" "We are still running short of resources in order to improve paediatric pre-hospital care"
Lejwele-phutswa	Adequate training	"Due to constant in-service training programmes run in the district"	Lack of / insufficient training	I don't get enough education and training for paediatric pre-hospital care"
	Other	"Working with paediatric is what I do"	Scope of practice and other factors	"Because I can only treat to a certain point – it is my protocol" "Because we don't have equipment for paediatric on the ambulance" "Lack of personnel"
Fezile Dabi	Adequate training	"Workshops regarding paediatrics were rendered"	Lack of training	"Because of some lack of information"
	Experience	"We are working with so many paediatrics, I gained experience" "You must let the family or parent hold the child"	Degree of Exposure	"I can't deal with them everyday"

Discussion: The main reasons that respondents over all the districts provided for whether they believed that their knowledge with regard to paediatric pre-hospital care

and transportation are up to standard or not up to standard have a bearing on their training and experience/exposure. Those that believed that they did have sufficient knowledge were also of the opinion that they had enough training and experience on paediatric pre-hospital emergency care and transportation, and those who believed that they did not have sufficient knowledge were also of the opinion that they did not have sufficient training and had not been exposed to paediatric patients.

4.3.2 Basic and clinical knowledge

In Section B: Basic and Clinical Knowledge, of the Questionnaire (Appendix C) a number of subject-specific questions (Number 11 to 20) based on basic and clinical knowledge were asked.

The Researcher before the time provided the correct answers to the questions to the statistician to assist with the data analysis. The Researcher used text books to ensure the correctness of the answers.

Table 4.4 indicates the basic and clinical knowledge that respondents have **in general** in the Free State, while Tables 4.5 – 4.9 indicate the basic and clinical knowledge that respondents have **per district**. Respondents were asked specific questions to test their basic and clinical knowledge. They had to indicate whether they thought they knew the answer (YES or NO), as well as to provide the answers to the different questions. In the tables the questions posed to the respondents on their basic and clinical knowledge are shown as well as whether or not the participants thought that they knew the answer and the percentage of respondents that **actually knew** or **did not know** the correct answer. In some cases respondents did not provide the correct answer, but rather an explanation as to why they think that they knew the answer, these answers were categorised in the 'uncertain' category (cf. Tables 4.5 – 4.9)

TABLE 4.4: BASIC AND CLINICAL KNOWLEDGE OF RESPONDENTS IN THE FREE STATE (Question 11 – 20, Section B of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS		DO YOU KNOW THE ANSWER?			CORRECT ANSWER		
	n	YES %	NO %	n	YES %	NO %	UNCERTAIN (%)
Do you know how to calculate paediatric blood pressure (BP)?	193	55	45	113	5	71.5	23.5

Do you know the paediatric age groups?	193	83	17	163	15.5	65.5	19
Do you know the new cardiopulmonary resuscitation (CPR)?	193	**94**	6	183	**62.5**	27.5	10
Do you know the paediatric choking algorithm?	193	70	30	139	42	35	23
Do you know how to perform Foreign Body Airway Obstruction (FBAO) on an unresponsive paediatric?	193	86	14	168	31	39.5	28.5
Do you know that paediatrics are nose breathers for the first several months of life?	193	68	32	136	15	59	26
Do you know the paediatric Glasgow Coma Scale?	193	67	33	135	21	56	23
Do you know that paediatrics have behavioural immaturity (unable to verbalise distress)?	193	61	39	123	9	53	38
Do you know how to use the Resuscitation / Broselow tape?	193	**39**	61	84	**54**	42	4
Do you know where to determine capillary refill time in an infant?	193	**80**	20	158	**52.5**	44	3.5

Discussion: From this table it follows that there is a discrepancy between the respondents' believe of whether they have the basic and clinical knowledge required to answer a specific question and whether they were able to provide the correct answer to the questions posed to them to test their basic and clinical knowledge. In none of the questions posed to the respondents the percentage of respondents that believed that they knew the answer and the percentage of respondents that were able to provide the correct answer correlate. Worth noting is that the question on Resuscitation / Broselow tape a higher percentage of respondents got the answer correct than they expected [Note that 193(n) respondents answered the yes/no question but only 84(n) the second part of the question]. The questions on CPR and capillary refill the respondents also did well.

Table 4.5 shows the basic and clinical knowledge that respondents have in the Motheo District.

TABLE 4.5: BASIC AND CLINICAL KNOWLEDGE OF RESPONDENTS IN THE <u>MOTHEO DISTRICT</u> (Question 11 - 20, Section B of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS		DO YOU KNOW THE ANSWER?			CORRECT ANSWER		
	n	YES (%)	NO (%)	n	YES (%)	NO (%)	UNCERTAIN (%)
Do you know how to calculate paediatric blood pressure (BP)?	59	49	51	29	14	65	21
Do you know the paediatric age groups?	59	83	17	49	27	49	24
Do you know the new cardiopulmonary	59	95	5	56	71	18	11

resuscitation (CPR)?							
Do you know the paediatric choking algorithm?	59	66	34	39	43	26	31
Do you know how to perform Foreign Body Airway Obstruction (FBAO) on an unresponsive paediatric?	59	86	14	51	40	30	30
Do you know that paediatrics are nose breathers for the first several months of life?	59	63	37	37	13	46	41
Do you know the paediatric Glasgow Coma Scale?	59	64	36	38	18	61	21
Do you know that paediatrics have behavioural immaturity (unable to verbalize distress)?	59	63	37	37	14	43	43
Do you know how to use the Resuscitation / Broselow tape?	59	46	54	27	63	33	4
Do you know where to determine capillary refill time in an infant?	59	80	20	47	64	32	4

Discussion: The data provided in the Motheo district vary from the overall data for the Free State as described in Table 4.4 in certain questions and there is no specific question in this category that respondents knew more or less of than the overall group of respondents.

Table 4.6 shows the basic and clinical knowledge that respondents have in the Xhariep District.

TABLE 4.6: BASIC AND CLINICAL KNOWLEDGE OF RESPONDENTS IN THE XHARIEP DISTRICT (Question 11 - 20, Section B of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS		DO YOU KNOW THE ANSWER?			CORRECT ANSWER		
	n	YES (%)	NO (%)	n	YES (%)	NO (%)	UNCERTAIN (%)
Do you know how to calculate paediatric blood pressure (BP)?	17	**59**	**41**	10	**0**	**80**	**20**
Do you know the paediatric age groups?	17	88	12	15	20	80	0
Do you know the new cardiopulmonary resuscitation (CPR)?	17	**100**	0	17	**47**	35	18
Do you know the paediatric choking algorithm?	17	**53**	47	9	**67**	33	**0**
Do you know how to perform Foreign Body Airway Obstruction (FBAO) on an unresponsive paediatric?	17	82	18	14	14	29	57
Do you know that paediatrics are nose breathers for the first several months of life?	17	76	24	13	15	70	15
Do you know the paediatric Glasgow Coma Scale?	17	65	35	11	18	36	46
Do you know that paediatrics have behavioural immaturity (unable to verbalise distress)?	17	82	18	14	14	57	29
Do you know how to use the	17	41	59	7	72	14	14

Resuscitation / Broselow tape?							
Do you know where to determine capillary refill time in an infant?	17	71	29	12	50	33	17

Discussion: None of the respondents (0%) in the Xhariep region answered correct on the question how to calculate paediatric blood pressure, 20% was uncertain about the answer and a further 80% provided the incorrect answer; however, 59% of the respondents believed that they knew the correct answer. With regard to the question 'Do you know the new cardio pulmonary resuscitation (CPR)? all the respondents (100%) indicated that they knew the correct answer, but only 47% of the respondents were able to provide the correct answer. On the other hand, 53% of the respondents indicated that they do know the paediatric choking algorithm, although 67% of the respondents (n=9) who answered the second part of the question, were able to provide the correct answer.

Table 4.7 shows the basic and clinical knowledge that respondents have in the Thabo Mofutsanyane District.

TABLE 4.7: BASIC AND CLINICAL KNOWLEDGE OF RESPONDENTS IN THE THABO MOFUTSANYANE DISTRICT (Question11 - 20, Section B of Questionnaire) [N=197]

QUESTIONS		DO YOU KNOW THE ANSWER?			CORRECT ANSWER		
	n	YES (%)	NO (%)	n	YES (%)	NO (%)	UNCERTAIN (%)
Do you know how to calculate paediatric blood pressure (BP)?	46	43	57	20	5	75	20
Do you know the paediatric age groups?	46	**85**	15	39	**3**	82	15
Do you know the new cardiopulmonary resuscitation (CPR)?	46	93	7	43	49	42	9
Do you know the paediatric choking algorithm?	46	76	24	35	29	43	28
Do you know how to perform Foreign Body Airway Obstruction (FBAO) on an unresponsive paediatric?	46	80	20	37	24	57	19
Do you know that paediatrics are nose breathers for the first several months of life?	46	67	33	31	10	77	13
Do you know the paediatric Glasgow Coma Scale?	46	65	35	30	30	53	17
Do you know that paediatrics have behavioural immaturity (unable to verbalise distress)?	46	**48**	52	22	**0**	64	36
Do you know how to use the Resuscitation / Broselow tape?	46	39	61	18	39	56	5
Do you know where to determine capillary refill time in an infant?	46	89	11	41	42	56	2

Discussion: In the Thabo Mofutsanyane region, 85% of the respondents indicated that they knew the question on paediatric age groups, however, only 3% were able to provide the correct answer. On the question, 'Do you know that paediatrics have behavioural immaturity (unable to verbalise distress)' 48% of the respondents who answered the question, thought that they knew the answer, but none of them (0%) who answered the second part of the question, were able to provide the correct answer.

Table 4.8 shows the basic and clinical knowledge that respondents have in the Lejwelephutswa District.

TABLE 4.8: BASIC AND CLINICAL KNOWLEDGE OF RESPONDENTS IN THE LEJWELEPHUTSWA DISTRICT (Question 11 - 20, Section B of Questionnaire) [N=197]

QUESTIONS		DO YOU KNOW THE ANSWER?			CORRECT ANSWER		
	n	YES (%)	NO (%)	n	YES (%)	NO (%)	UNCERTAIN (%)
Do you know how to calculate paediatric blood pressure (BP)?	26	**73**	27	19	**0**	68	32
Do you know the paediatric age groups?	26	81	19	21	14	62	24
Do you know the new cardiopulmonary resuscitation (CPR)?	26	92	8	24	79	17	4
Do you know the paediatric choking algorithm?	26	73	27	19	47	32	21
Do you know how to perform Foreign Body Airway Obstruction (FBAO) on an unresponsive paediatric?	26	92	8	24	37	42	21
Do you know that paediatrics are nose breathers for the first several months of life?	26	69	31	18	28	50	22
Do you know the paediatric Glasgow Coma Scale?	26	77	23	20	25	50	25
Do you know that paediatrics have behavioural immaturity (unable to verbalise distress)?	26	65	35	17	18	41	41
Do you know how to use the Resuscitation / Broselow tape?	26	**31**	69	8	**62**	38	0
Do you know where to determine capillary refill time in an infant?	26	81	19	21	52	48	0

Discussion: Of the respondents in the Lejwelephutswa district 73% were of the opinion that they knew how to calculate paediatric blood pressure (BP), although none (0%) of them who answered the second part of the question, were able to provide the correct answer. On the other hand, 31% of the respondents believed that they did not know how to use the Resuscitation / Broselow tape, but 62% of the respondents that answered the second part of the question (n=8), actually answered the question correctly.

Table 4.9 shows the basic and clinical knowledge that respondents had in the Fezile Dabi District.

TABLE 4.9: BASIC AND CLINICAL KNOWLEDGE OF RESPONDENTS IN THE FEZILE DABI DISTRICT (Question 11 - 20, Section B of Questionnaire) [N=197]

QUESTIONS		DO YOU KNOW THE ANSWER?			CORRECT ANSWER		
	n	YES (%)	NO (%)	n	YES (%)	NO (%)	UNCERTAIN (%)
Do you know how to calculate paediatric blood pressure (BP)?	30	**67**	33	20	**0**	75	25
Do you know the paediatric age groups?	30	80	20	24	12	67	21
Do you know the new cardiopulmonary resuscitation (CPR)?	30	93	7	28	61	28	11
Do you know the paediatric choking algorithm?	30	73	27	22	45	41	14
Do you know how to perform Foreign Body Airway Obstruction (FBAO) on an unresponsive paediatric?	30	90	10	27	26	41	33
Do you know that paediatrics are nose breathers for the first several months of life?	30	73	27	22	13	55	32
Do you know the paediatric Glasgow Coma Scale?	30	**70**	30	21	**9**	67	24
Do you know that paediatrics have behavioural immaturity (unable to verbalise distress)?	30	**60**	40	18	**0**	67	33
Do you know how to use the Resuscitation / Broselow tape?	30	30	70	9	33	67	0
Do you know where to determine capillary refill time in an infant?	30	73	27	22	50	50	0

Discussion: Of the respondents in the Lejwelephutswa district 67% were of the opinion that they knew how to calculate paediatric blood pressure (BP), although none (0%) who answered the second part of the question, were able to provide the correct answer. Similarly, 70% of the respondents believed that they knew the paediatric Glascow Coma Scale, although only 9% were able to provide the correct answer and 60% of the respondents believed that they knew that paediatrics have behavioural immaturity (unable to verbalise distress), but none (0%) of them provided the correct answer.

4.4 BASIC AND CLINICAL COMPETENCE

(Please compare Section C of Questionnaire [Appendix C])

Section C of the questionnaire focuses on the basic and clinical competence that respondents have with regard to paediatric pre-hospital emergency care and transportation. The results are presented per district.

4.4.1 Registration with HPCSA

All the respondents in the questionnaire survey had to be registered with the HPCSA; Table 4.10 indicates the number of years that participants had been registered with the HPCSA in the different districts.

TABLE 4.10: NUMBER OF YEARS REGISTERED WITH THE HPCSA PER DISTRICT (Question 21, Section C of Questionnaire) [N=197] (n=182)

YEARS REGISTERED WITH HPCSA	FEZILE DABI %	LEWEJELE-PUTSWA %	MOTHEO %	THABO MOFUTSAN-YANA %	XAHRIEP %
1 Year	**32**	**17**	**14**	**13**	**6**
2 Years	0	4	0	2	0
3 Years	3	8	5	2	0
4 Years	6	0	2	8	13
5 years +	**59**	**71**	**79**	**75**	**81**

Discussion: A large percentage of the respondents (59%, 71%, 79%, 75% and 81%) in the respective regions had more than five years' registration as emergency care practitioners with the HPCSA. A smaller percentage (32%, 17%, 14%, 13% and 6%) in the respective regions had only one year of registration with the HPCSA. Following from this it can be assumed that the majority of the respondents were experienced EMC practitioners, whilst quite a large number of newly qualified EMC practitioners also were appointed in the different regions, with only a small number of respondents that were registered with the HPCSA for more than one year, but less than five years.

4.4.2 Number of paediatric calls responded to per week

The average number of paediatric calls and the percentage of respondents that reacted to these calls per week within the different districts are presented in Table 4.11.

TABLE 4.11: AVERAGE NUMBER OF PAEDIATRIC CALLS RESPONDENTS REACTS TO PER WEEK (Question 22, Section C of Questionnaire) [N197] (n=182)

NUMBER OF PAEDIATRIC CALLS PER WEEK	FEZILE DABI %	LEWEJELE-PUTSWA %	MOTHEO %	THABO MOFUTSAN-YANA %	XAHRIEP %
0 calls	6	11	41	18	25
1 call	34	46	7	32	37
2 calls	18	19	14	8	13
3 calls	3	12	5	20	13
4 calls	12	8	7	10	12
5 calls +	27	4	26	12	0

Discussion: EMC practitioners are only allowed to practise within their scope of practice and not all practitioners are allowed to treat paediatric patients. The respondents in this study are from a variety of different levels of EMC practitioners (cf. 4.2.7) which is one of the reasons why the number of responses shows such variations.

4.4.3 Continuous Professional Development (CPD) programmes

All health care professionals registered with the HPCSA are required to attend a number of CPD programmes annually in order to keep their knowledge in their respective professions up to date. Table 4.12 illustrates the average number of CPD sessions that respondents attended during 2014 per district.

TABLE 4.12: NUMBER OF CPD PROGRAMMES ATTENDED DURING 2014 (Question 23, Section C of Questionnaire) [N=197] (n=185)

NUMBER OF CPD PROGRAMMES ATTENDED THIS YEAR	FEZILE DABI (%)	LEWEJELE-PUTSWA (%)	MOTHEO (%)	THABO MOFUTSAN-YANE (%)	XHARIEP (%)
Zero (0)	**62**	**84**	**92**	**84**	**76**
One (1)	14	8	3	14	24
Two (2)	9	8	0	0	0
Three (3)	12	0	2	0	0
Four (4)	0	0	0	2	0
Five (5) or more	3	0	3	0	0

Discussion: The majority of the respondents (62-92%) from all five regions indicated that they did not attend CPD programmes during 2014, although it is a requirement of the HPCSA to attend a certain number of CPD programmes per year.

It is, however, important to realise that the questionnaire survey was done from January up to July 2014 – a seven month period (not a full year). The questionnaire also required of them to indicate their attendance of CPD programmes **regarding paediatric care,** and not any type of CPD programmes. The number of CPD opportunities on this topic per district may vary and it might have been that respondents in rural areas could not attended.

4.4.4 Basic competencies

Respondents were asked to describe their basic competencies. The basic competencies were divided into different themes and categories. Table 4.13 provides a description of

the themes and categories, as well as the number of competencies that were mentioned under each category.

TABLE 4.13: BASIC COMPETENCIES OF RESPONDENTS (Question 24, Section C of Questionnaire) [N=197]

THEMES	CATEGORIES	NUMBER OF RESPONDENTS INDICATING THE BASIC COMPETENCY
Professional responsibilities	**Function as a professional**	**21**
	Participate in continuing education and professional development	8
	Possess an understanding of the medico-legal aspects of the profession	8
	Recognise and comply with relevant provincial and national legislation	4
	Function effectively in a team environment	8
	Make decisions effectively	1
Communication	Effective oral communication skills	3
	Effective interpersonal relations	6
Health and safety	Create and maintain a safe work environment	10
Assessment and diagnostics	Conduct complete physical assessment demonstrating appropriate use of palpation, percussion and auscultation	5
	Assess vital signs	**15**
Therapeutics	Prepare oxygen delivery devices	1
	Deliver oxygen and administer manual ventilation	**12**
	Implement measures to maintain hemodynamic stability	4
	Immobilise actual and suspected fractures.	6
	Administer medications	9
Integration	Utilise differential diagnostic skills, decision-making skills and psychomotor skills in providing care to patients	11
	Provide care to meet the needs of unique patient groups	**19**
	Conduct on-going assessments and provide care	**27**
Transportation	Prepare ambulance for daily operations	6
	Drive ambulance or emergency response vehicle	2
	Assist and transport critically ill and injured patient	9

Discussion: The basic or core competencies could be divided into themes as follows: Professional responsibilities, Communication, Health and Safety, Assessment and diagnostics, Therapeutics, Integration and Transportation. Each theme contains categories of basic competencies. In Table 4.13 it is indicated how many respondents mentioned a specific competency, for example 27 respondents indicated that they were of the opinion that the conduct of on-going assessments and the provision of care were a

basic competence while 19 respondents indicated that the provision of care to meet the needs of unique patient groups were a basic competence.

4.4.5 Clinical Competencies

Respondents were asked to describe their clinical competencies. The clinical competencies named by the respondents were divided into different themes and categories. Table 4.14 lists the themes and categories, as well as the number of competencies that were mentioned under each category.

TABLE 4.14: CLINICAL COMPETENCIES OF RESPONDENTS (Question 25, Section C of Questionnaire) [N=197]

THEMES	CATEGORIES	NUMBER OF RESPONDENTS INDICATING THE CLINICAL COMPETENCY
Professional Responsibilities	**Function as a professional**	**14**
	Participate in continuing education and professional development	8
	Function effectively in a team environment	3
Communication	Effective oral communication skills	1
	Effective interpersonal relations	8
Health and Safety	Maintain good physical and mental health	3
	Create and maintain a safe work environment	8
Assessment and Diagnostics	Conduct triage in a multiple-patient incident	3
	Conduct complete physical assessment demonstrating appropriate use of palpation, percussion and auscultation	**14**
	Assess vital signs.	11
Therapeutics	Maintain patency of upper airway and trachea.	1
	Prepare oxygen delivery devices.	1
	Deliver oxygen and administer manual ventilation	**14**
	Implement measures to maintain hemodynamic stability.	9
	Provide basic care for soft tissue injuries.	13
	Immobilise actual and suspected fractures.	8
	Administer medications	**19**
Integration	**Utilise differential diagnostic skills, decision-making skills and psychomotor skills in providing care to patients**	**18**
	Provide care to meet the needs of unique patient groups	**24**
	Conduct on-going assessments and provide care.	6
Transportation	Drive ambulance or emergency response vehicle	6
	Assist and transport critically ill and injured patients	**15**
Other		21

Discussion: The seven clinical competencies that were mentioned most by the respondents included to provide care to meet the needs of unique patient groups, administer medications, utilise differential diagnostic skills, decision-making skills and psychomotor skills in providing care to patients, assist and transport critically ill and injured patients, to deliver oxygen and administer manual ventilation to conduct complete physical assessment, demonstrating appropriate use of palpation, percussion and auscultation, and to function as a professional. It could further be argued that professional responsibilities, communication as well as health and safety, should not really be included in professional competencies, however, the respondents added these as such.

4.5 STRESS

[Please compare Section D of Questionnaire (Appendix C)]

Section D of the questionnaire focuses on the amount of stress that respondents experienced with regard to paediatric pre-hospital emergency care and transportation. The results are presented per district (cf. Table 4.15 – 4.19). The results indicate the percentage of respondents that do (Yes) or do not (No) experienced stress related to the situation described in the question, as well as the reasons for the stress. The reasons were divided into different themes and will be displayed together with examples of the verbatim quotes used by the respondents. The direct quotes will add to explaining the reasons given and will also serve as examples to enhance the trustworthiness of the study.

Ten questions were put to the respondents to get feedback on their stress levels with possible reasons for building up stress or not. **The number of respondents that answered the specific question is added at the end of each question (n)**. On most of the questions a large percentage of respondents answered that it is a factor that caused stress. This was indicated for most of the questions in all the districts. The only questions, namely 'Do you feel undervalued as an emergency medical care practitioner?' and 'Does stress impact on your ability to care for paediatric patients?' showed a different pattern, in that a much lower percentage of respondents (bold in the applicable tables) indicated that these factors stressed them less.

Tables 4.15 – 4.19 compare the results, reasons and verbatim quotes for the different districts. Only here and there a single comment will be made in the discussion to emphasise a specific outcome.

TABLE 4.15: STRESS EXPERIENCED BY RESPONDENTS IN THE MOTHEO DISTRICT (Question 26 - 34, Section D of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES %	REASON	VERBATIM QUOTES	NO %	REASON	VERBATIM QUOTES
Do paediatric emergency calls invoke stress in you? (n=54)	67	Emotional Knowledge Experience Communi-cation	"Emotionally difficult to work with paeds" "Insufficient knowledge and skill cause underprepared-ness" Lack of exposure to paeds cases" "Communication from the infant is minimal"	33	Personal Knowledge and Experience	"Ability to control my emotions" "Capable to handle the medical emergency situation" "Sufficient knowledge and exposure"
Does a lack of paediatric training cause you to stress? (n=59)	85	Training Experience Scope of practice Other	"Insufficient training/ knowledge to treat PAEDS successfully" "Lack of experience and exposure in treating paeds" "Outside my scope of practice and lack of knowledge" "Unpredictable element when treating PAEDS cases"	15	Knowledge Other:	"Adequate knowledge to treat paeds" "Do research on my own" "I don't stress" "Not permanently on the road"
Do you feel underpaid as an emergency medical care practitioner? (n=58)	79	Management Risks Salary Conditions	"Demoralised by our management." "Exposure to risk and dangerous situations" "Financially underpaid" "Work under pressure and stress"	21	Passion Patient Job satisfaction	"My job is my passion" "Do it for the patient" "Find my job satisfactory"
Do you feel undervalued as an emergency medical care practitioner? (n=54)	**50**	Emotional Public	"Emotionally very draining" "Public's perception of a paramedic is low"	50	-	-
Does stress impact on your ability to care for paediatric patients? (n=55)	**38**	Influence on performance	"You can't treat what you don't have knowledge about and lack of confidence can also lead to you not able to perform" "Because they are	62	Competence Coping mechanisms	"Competent enough to treat to my best ability" "For now I know how to deal with stress" "I can control my emotions"

			very much sensitive and I end up stressing sometimes unnecessary" "Paediatrics are unpredictable" "Because of lack of knowledge"			"When I'm at work I put my personal things aside" "I perform better under stress"
Do you have coping mechanisms for dealing with paediatric deaths during emergency calls? (n=55)	88	Personal Family Counselling Empathy	"As an emergency personnel I have to adjust myself to the situation" "My family keep me going" "Going for counselling" "Debriefing and acknowledging the fact that I have an emotional impact" "Feel sorry for them"	12	Avoidance Lack of counselling	"I make sure to walk away when my crew mate breaks the news to parents and I cry aside" "I can cope but by that time I have to be the one strong for the family loss" "No counselling mechanism in work place"
Are there causes of stress in your job as emergency medical care practitioner? (n=58)	93	Resources Trauma Other	"Because we do not have equipment" "Horrific accident scenes, body mutilations, serious assault" "As you take a call, someone is dying" "Calls we are doing can traumatise us without getting counselling" "Dealing with difficult complaints" "Pressure from community and leaders" Working conditions" "Management	7	Coping mechanism	"Emergency calls are stressful and the adrenalin rush is a positive contribute to my body"
Does a lack of proper ambulance emergency equipment stress you? (n=60)	86	Influence on performance Responsibility Patients	"If you can't have equipment you cannot do your treatment" "You will be liable should anything happen to the patient" "Patients are the ones that suffer the most"	14	Other	"I don't work with ambulance but yes if ambulance have to start late for shift because of lack of equipment" "I work in control room"
Does a lack of <u>critical</u> and clinical skills stress you? (n=59)	91	Influence on performance	"I am limited because of lack of skills" Lack of knowledge is very dangerous to the patients" "Yes because it is like I'm neglecting the patient"	9	Competence Confidence Other	"No, does not have an impact because I know how to" "I feel confident in my clinical competencies" "I love dealing with my patients"

Does the lack of emergency medical care training stress you? (n=58)	67	Competence Unprofessional Patient care	"In emergency work I have to meet specific requirements" "As emergency medical responder one has to provide adequate emergency medical care" "Less knowledge of your work is unprofessional and not helping instead kills" "It impacts negatively on patient care"	33	Other	"Am limited and we need more skilled personnel because there is a lot of challenges out there" "I am learning more at the college at this moment" "I feel well trained"

Discussion: From this table it is clear that paediatric calls in themselves invoked stress in EMC practitioners and the reasons provided were that emotions, lack of knowledge and experience, and difficult communication from children caused stress. Furthermore, EMC practitioners in the Motheo district felt that they were not sufficiently trained, they felt underpaid, there was a lack of resources and they had to deal with a lot of trauma each day, which all contributed to their high stress levels. However, they did not feel that being undervalued contributed much to their stress, and they did not believe that the stress impacted on their ability to care for the patient and they did have coping mechanisms in place to deal with paediatric deaths, for example counselling, family support and personal coping mechanisms.

TABLE 4.16: STRESS EXPERIENCED BY RESPONDENTS IN THE XHARIEP DISTRICT (Question 26 - 34, Section D of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES %	REASON	VERBATIM QUOTES	NO %	REASON	VERBATIM QUOTES
Do paediatric emergency calls invoke stress in you? (n=22)	**82**	Difficult Communica-tion Knowledge and skills Scope of practice	"Difficult to work with paeds" "Communication from the infant is minimal" "Insufficient knowledge and skill cause under-preparedness" "Outside my scope of practice"	18	Comfortable Knowledge	"Comfortable to work with paeds" "Sufficient knowledge and exposure"

Does a lack of paediatric training cause you to stress? (n=23)	91	Training Scope of practice Other	"Insufficient training and knowledge to treat PAEDS successful lack of knowledge" "Outside my scope of practice" "Unpredictable element when treating PAEDS cases"	9	Knowledge Competence	"Gain sufficient training and knowledge to treat paeds successfully" "Competent to handle any call"
Do you feel underpaid as an emergency medical care practitioner? (n=22)	95	Responsibili-ties Risks Qualification Differences in districts Financial	"Responsibilities are more than the rewards" "Exposure to risk and dangerous situations" "Higher qualification does not imply a better salary" "Salary scales differ with other districts and provinces" "Financially underpaid"	5	Inequality	"Workload does not justify salary" "Underpaid according to our qualification"
Do you feel undervalued as an emergency medical care practitioner? (n=21)	**48**	Community	"I serve community with a poor qualification"	52	Training	"Takes long to develop enough knowledge and skills"
Does stress impact on your ability to care for paediatric patients? (n=23)	**61**	Uncertainty Support Parents Other	"Because I don't know how to handle them" "Because we don't get counselling" "You are stressing when you're dealing with this patient especially when parent is around" "Yes, especially when we treat cardiac arrest"	39	Professionalism Acceptance Coping mechanisms	"When caring for patient you must be professional all other reasons to be excluded" "I know to accept things I cannot change" "Stress is part of life, we will die with it" "Because I can be in control of my emotions"
Do you have coping mechanisms for dealing with paediatric deaths during emergency calls? (n=23)	**96**	Acceptance Support	"There is life and death" "Call and talk to supervisor" "Support from my family" "Speaking to someone about this feeling, it helps"	4	Personal experience Other	"Because I have a paediatric at home which I refer to when dealing with paeds" "No counselling" "It is very difficult" "It is so sad to see a child dies and I feel like I have failed to do what I was supposed to do"
Are there causes of stress in	96	Shortages	"Lack of equipment" "When there are	4	Job satisfaction	"Because I like treating patients"

your job as emergency medical care practitioner? (n=23)		Diversity Support	shortages of ambulances" "We are dealing with different kinds of human beings" "Especially if you don't have support of your employer" "Incompetent managers"			
Does a lack of proper ambulance emergency equipment stress you? (n=23)	91	Performance	"Because I cannot give proper treatment" "Yes, 'cause I cannot do my job fully effective" "It makes one look bad in the eyes of the public Because people die"	9	No reasons given	-
Does a lack of <u>critical</u> and clinical skills stress you? (n=22)	96	Performance	"Because proper job cannot be performed" "You won't be able to assist the patient" "Skills get limited"	4	Competence	"I am competent"
Does the lack of emergency medical care training stress you? (n=23)	82	Service Delivery Personal Development	"The community can't get what they deserve" "Affects patient outcome" "Every person needs to be developed"	18	No reasons given	-

Discussion: Of the respondents in the Xhariep district 82% indicated that paediatric calls invoke stress in them. The reasons varied from poor communication, lack of knowledge and skills, scope of practice, and difficulty working with children. Lack of proper training, being underpaid, shortages in resources, diversity of patients, lack of support, lack of skills were highlighted as the main reasons that caused stress in EMC practitioners. Respondents furthermore indicated that the stress had an impact on their ability to care for the paediatric patient. Almost all the participants (96%) indicated that they did have coping mechanisms in place to deal with paediatric deaths, for example acceptance, support, and other. Of the respondents 48% responded that they felt undervalued as an emergency medical care practitioner, and 61% indicated that stress impacted on their ability to care for paediatric patients.

TABLE 4.17: STRESS EXPERIENCED BY RESPONDENTS IN THE THABO MOFUTSANYANE DISTRICT
(Question 26 - 34, Section D of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES %	REASON	VERBATIM QUOTES	NO %	REASON	VERBATIM QUOTES
Do paediatric emergency calls invoke stress in you? (n=52)	**77**	Emotionally Knowledge Scope of practice Other	"Emotionally difficult to work with paeds" "Insufficient knowledge & skill cause under-preparedness" "Outside my scope of practice" "Communication from the infant is minimal"	23	Comfortable Knowledge	"Comfortable to work with paeds" "Sufficient knowledge and exposure"
Does a lack of paediatric training cause you to stress? (n=49)	80	Training Experience Scope of practice Other	"Insufficient training/knowledge to treat PAEDS successful" "Lack of experience/ exposure to paeds" "Outside my scope of practice/lack of knowledge" "Peads are more vulnerable than adults"	20	Knowledge Other	"Adequate knowledge to treat paeds" "Insufficient training/knowledge to treat paeds successfully"
Do you feel underpaid as an emergency medical care practitioner? (n=45)	76	Conditions Qualification Differences in districts	"Work under pressure and stress: "Higher qualification does not imply a better salary" "Salary scales differ with other districts & provinces"	24	Passion Patient Job satisfaction	"My job is my passion" "Do it for the patient " "Job satisfaction"
Do you feel undervalued as an emergency medical care practitioner? (n=47)	**43**	Management	"Demoralised by our management"	57	No reasons given	-

Does stress impact on your ability to care for paediatric patients? (n=49)	**53**	Training Emotional	"Because we don't normally get training for paediatric patients" "We need more training in the care for paediatrics including their equipment" "Stress causes misdiagnose" "I get emotional when the paediatric not feeling well"	47	Resources Emotional Manage stress	"If I have the correct resources I won't stress" "You have to control your emotions" "I can handle pressure when dealing with kids" "I still perform my duties when under pressure, I like challenges"
Do you have coping mechanisms for dealing with paediatric deaths during emergency calls? (n=49)	**86**	Experience Other	"I have many years of experience" "I just tell myself what has happened has happened" "It is not an easy thing when come to that situation" "Tears make me feel better, perform CPR and bring their lives back, helps me a lot" "I never panic"	14	Counselling Other	"No counselling provided" "I am nervous and weak" "None available" "I am still learning to cope with paediatric deaths"
Are there causes of stress in your job as emergency medical care practitioner? (n=51)	96	Resources Other	"Because we do not have equipment" "Shortage of equipment, and medical consumables, Unequipped vehicles" "We don't even have counselling at work" "To see people die on the scene" "When colleagues panic"	4	Debriefing Personal Support	"After doing stressful calls I do debriefing" "I always try to distance myself from stress at work" "I have a great and supportive manager so there is no stress at work"
Does a lack of proper ambulance emergency equipment stress you? (n=51)	87	Performance Professio-nalism Patient rights	"How can I save lives without equipment?" "Delay of call because of lack of ambulances" "You have to compromise a lot which appears unprofessional" "Patients have a right to medical equipment" "We deal with people's lives"	13	No reasons given	-

Does a lack of critical and clinical skills stress you? (n=46)	88	Performance	"Mismanagement of patients with lack of critical and clinical skills" "If you don't have enough experience you cannot do the job" "We sometimes struggle on the scenes" "No best standard of treatment can be given to patients"	12	Training Scope of practice	"Already taught how to deal with every situation" "Not really as long as I perform my skills within the scope of my practice"
Does the lack of emergency medical care training stress you? (n=52)	77	Service delivery Skills Programmes	"The service will be more efficient with competent personnel" "You must acquire new skills to think out of the box" "New training programs will decrease stress" "After about 12 years of service you only proceed to one level of training"	23	Training	"When I train I develop skills"

Discussion: Of the respondents 77% answered that paediatric emergency calls invoked stress in them for different reasons, such as being emotional, lack of knowledge, and limitations in their scope of practice. The main causes of stress reported for EMC practitioners in the Thabo Mofutsanyane district included lack of training, being underpaid, lack of skills, and limited resources and equipment. Of the respondents, 53% indicated that stress impacted on their ability to care for the paediatric patient, while 86% of the respondents indicated that they had coping mechanisms for dealing with paediatric deaths. Of the respondents, 43% reported feeling undervalued as an emergency medical care practitioner.

TABLE 4.18: STRESS EXPERIENCED BY RESPONDENTS IN THE LEJWELEPHUTSWA DISTRICT (Question 26 - 34, Section D of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES %	REASON	VERBATIM QUOTES	NO %	REASON	VERBATIM QUOTES
Do paediatric emergency calls invoke stress in you? (n=25)	**80**	Emotionally Knowledge Exposure	"Emotionally difficult to work with paeds" "Insufficient knowledge and skills cause under-preparedness"	20	Comfort Knowledge	"Comfortable to work with paeds" "Sufficient knowledge and exposure"

		Communica-tion	"Lack of exposure to paeds cases" "Communication from the infant is minimal"			
Does a lack of paediatric training cause you to stress? (n=26)	92	Training Knowledge Scope of practice	"Insufficient training" "Regular training and refresher courses would help" "Knowledge to treat PAEDS successful" "Outside my scope of practice"	8	Training	"Insufficient training and knowledge to treat paeds successfully"
Do you feel underpaid as an emergency medical care practitioner? (n=25)	72	Support Risks Salary	"Demoralised by our management" "Exposure to risk and dangerous situations" "Earn less since joining the department" "Increase in salary will improve job satisfaction" "Not paid for overtime"	28	Morale	"I get paid for the work I do" "Depends on market related affordability of an employer"
Do you feel undervalued as an emergency medical care practitioner? (n=25)	**52**	Conditions	"Type of work and pressure we deal with on a daily basis"	48	No reasons given	-
Does stress impact on your ability to care for paediatric patients? (n=26)	**58**	Performance	"Mismanagement of patient" "I need to know much about the paediatric treatment to decrease death rate" "Very much occupation stress impairs my ability to treat paeds" "Because if you are not well trained you stress"	42	Professio-nalism Other	"I can be professional and don't lose focus easily" "Because I want to improve qualification and care of paediatric" "I just love babies, I don't stress but I do care" "No, I don't think so, just doing my best" "I usually help first and digest later"
Do you have coping mechanisms for dealing	**96**	Acceptance	"Because I love to do that, but usually take it as like it is because	4	Training	"No, because I don't have training to handle that deaths"

with paediatric deaths during emergency calls? (n=26)		Emotional support	you can't change it" "If someone is not my relative I cope very well" "Debriefing helps"		Other	"There is none; I just go home after an event involving paediatrics" "No, can't cope ,think as if it is my child"
Are there causes of stress in your job as emergency medical care practitioner? (n=24)	100	Resources	"Because of lack of equipment in some areas" "Broken vehicles" "Underpaid, being managed by under qualified personnel" "Children dying on our ambulances" "Dealing with injured patients including the families and relatives"	0	No reasons given	-
Does a lack of proper ambulance emergency equipment stress you? (n=26)	96	Performance	"How can you do your job when there is no equipment?" "Because we cannot deliver good service" "It minimizes your chances of helping people to the best of your ability" "We deal with people's lives"	4	No reasons given	-
Does a lack of <u>critical</u> and clinical skills stress you? (n=24)	100	Performance	"Am going to disadvantage the patient" "We do have complications during treatment" "If I don't know, I can't treat and save life"	0	No reasons given	-
Does the lack of emergency medical care training stress you? (n=26)	80	Competence Patient care	"I can't perform as I am under-trained to perform certain skills" "Is because I know I am not giving the patients the best care" "Most of us should be developed to control death rate"	20	No reasons given	-

Discussion: Of the respondents in the Lejwelephutswa district 80% indicated that paediatric emergency calls invoked stress in them for different reasons, for example,

emotions, knowledge, exposure and communication. A lack of skills and training, lack of resources and equipment, as well as being underpaid also contributed to their stress levels. Of the respondents 96% were of the opinion that they had coping mechanisms to deal with paediatric deaths, which included acceptance, and emotional support. Of the respondents 52% felt undervalued as an emergency medical care practitioner, while 58% indicated that stress did impact on their ability to care for paediatric patients.

TABLE 4.19: STRESS EXPERIENCED BY RESPONDENTS IN THE FEZILE DABI DISTRICT (Question 26 - 34, Section D of Questionnaire) [N=197]
(Table continues on next page)

QUESTION	YES %	REASON	VERBATIM QUOTES	NO %	REASON	VERBATIM QUOTES
Do paediatric emergency calls invoke stress in you? (n=35)	**74**	Emotional Training Exposure	"Emotionally difficult to work with paeds" "Insufficient knowledge and skills cause under-preparedness" "Lack of exposure to paeds cases"	26	Emotional Knowledge	"Comfortable to work with paeds" "Sufficient knowledge and exposure"
Does a lack of paediatric training cause you to stress? (n=35)	80	Training Other	"Insufficient training and knowledge to treat paeds successfully" "Unpredictable element when treating paeds cases"	20	Knowledge Scope of practice	"Apply general knowledge to paeds case until backup arrives" "Outside my scope of practice"
Do you feel underpaid as an emergency medical care practitioner? (n=35)	91	Qualification Remune-ration	"Higher qualification does not imply a better salary" "Salary scales differ with other districts & provinces"	9	Job satisfac-tion	"My job is my passion" "Do it for the patient"
Do you feel undervalued as an emer-gency medical care practitioner? (n=34)	**41**	Morale Type of work	"Demoralised by our management" "Type of work and pressure we deal with on a daily basis"	59	Job satis-faction	"Satisfied with job environment"
Does stress impact on your ability to care for paediatric patients? (n=34)	**50**	Uncertainty Focus	"When I am not 100% sure of what I am doing" "They require a lot of focused assessment"	50	Training Coping	"I am confident working with paediatrics because I know most of the things when coming to paediatric patient"

					mecha-nisms	"I always try to cope with the situation" "I can handle stressful situations"
Do you have coping mechanisms for dealing with paediatric deaths during emergency calls? (n=34)	**83**	Acceptance Support	"Because I understand it is part of my career and I will come across such situations" "I visit my family psychologist every three months"	17	Training Other	"I can cope with paediatric deaths if training can be provided" "Nothing in place" "You must deal with it on your own and sometimes it stays with you for a long time"
Are there causes of stress in your job as emergency medical care practitioner? (n=35)	89	Shortages Trauma	"Shortage of equipment, resources and consumables, Unequipped vehicles" "Trauma causes stress"	11	Patients	"Because of the illness of the patients" "We cope"
Does a lack of proper ambulance emergency equipment stress you? (n=35)	85	Performance Danger	"If you don't have the right equipment you cannot do the job" "It puts me in danger and my patients"	15	Equipment	"They are in good condition" "Some give problems to treat the patient"
Does a lack of <u>critical</u> and clinical skills stress you? (n=34)	91	Performance	"It makes me feel incompetent" "We sometimes struggle on the scenes"	9	Support	"We have back-ups to call"
Does the lack of emergency medical care training stress you? (n=34)	74	Performance	"You can only work to your scope of practice" "We struggle on the scenes"	26	Training	"Not anymore"

Discussion: The respondents in the Fezile Dabi district's responses to the stress they experienced, in main, corresponded with the reasons for stress provided by the respondents from other districts, and included lack of skills, lack of training, being underpaid, and lack of equipment and resources. Of the respondents 74% indicated that paediatric calls did invoke stress in them and 83% of the respondents were of the opinion that they did have sufficient coping mechanisms to deal with paediatric deaths. Of the respondents, 41% felt undervalued as emergency medical care practitioners, while 50% indicated that stress impacted on their ability to care for paediatric patients.

4.6 BASIC AND CLINICAL SKILLS

[Please compare Section E of Questionnaire (Appendix A)]

Section E of the questionnaire focuses on the basic and clinical skills with regard to paediatric pre-hospital emergency care and transportation that respondents indicated. The results are presented in table format per district.

Tables 4.20 – 4.24 indicate the basic and clinical skills that respondents indicated, reported per district. Respondents were asked specific questions to test their basic and clinical skills. **The number of respondents that answered the specific question is added at the end of each question as (n).** They had to indicate whether they thought they could perform the basic and/or clinical skills described in the questions (YES or NO), and provide a reason for their answer. The reasons were grouped together in different themes. Only the basic and clinical skills that more than **65%** of the respondents either could perform or could not performed will be discussed.

TABLE 4.20: BASIC AND CLINICAL SKILLS OF RESPONDENTS IN THE <u>MOTHEO DISTRICT</u> (Question 35 - 40, Section G of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Can you assess Blood Pressure in a paediatric patient? (n=59)	**59**	Training Method Equipment	"I was trained to assess it" "2cm above the calf" "By calculation paediatric pt age x 2 + 90mmHg" "Using the monitor" "If I'm given the right tools" "Adult cuff sets"	41	Equipment Experience Scope of practice	"Because we don't have saturation monitor in our ambulance" "I haven't performed that skill at all" "Working in call centre"
Do you know the latest guideline in CPR for paediatric patients? (n=59)	**80**	Guidelines Method	"I am familiar with 2010 AHA guidelines" "Ration 15:2"	20	Method Confidence	"CPR doesn't change, still the same - 15 compressions & 2 ventilations" "I'm not sure confident enough to try to perform it"
Do you know how to use the Automated External Defibrillator	**70**	Training Availability	"I have been learning about it at the FSCOEC" "In my BAA course it was learned" "When it is available	30	Scope of practice Training Experience	"I am a BAA working in store room" "Still need training" "It was only

(AED)? (n=60)			it is a device that guides you as you treat pt."			demonstrated to me not use it"
Do you know how to utilise the different ventilators available to you? (n=58)	33	Training Method	"I was trained to do so" "According to the age and size" "Mask"	**67**	Scope of practice Training Experience Equipment	"Beyond my protocol" "I haven't done that training before" "Never been exposed" "Not exposed to the equipment"
Do you know how to operate the incubator? (n=59)	41	Training Experience	"Taught at college" "I have used it several times working on the helicopter doing transfers"	59	Scope of practice Experience Training	"It's above my scope of practice" "Never been exposed" "I was never taught about it"
Do you know how to use the 3-lead and the 12-lead ECG? (n=58)	40	Training	"Only 3-lead" "It is part of my scope of practice" "I was trained to do it"	60	Scope of practice Training Experience	"Above my protocol" "Need training, not familiar with the equipment" "Seen how it works but never have a chance to use it myself"
Do you know how to do umbilical vein cannulation? (n=57)	42	Training Method	"Done the skill two days ago" "By measuring it by four finger by cannulation by four fingers"	58	Scope of practice Experience Other	"It is out of scope of practice" "Lack of experience" "What is cannulation?"

Discussion: From Table 4.20 it is deduced that 59% of the respondents in the Motheo district were able to assess blood pressure, 80% knew the guidelines on CPR, and 70% indicated they could use the automated external defibrillator in paediatric patients. On the other hand, 67% of the respondents indicated that they did not know how to utilise the different ventilators that were available to them, and the reasons provided were because it was outside their scope of practice, a lack of training or experience, and a lack of equipment.

TABLE 4.21: BASIC AND CLINICAL SKILLS OF RESPONDENTS IN THE XHARIEP DISTRICT (Question 35 - 40, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Can you	**50**	Method	"I use a cuff with a	50	Equipment	"I don't have

assess Blood Pressure in a paediatric patient? (n=20)			bladder length equal to approximately two thirds of the child's upper arm measured from the acromion to the tip of the sleeve" "70/40"		Training	child cuff" "I was never taught"
Do you know the latest guideline in CPR for paediatric patients? (n=21)	**95**	Training Method	"It was part of our training, just keep on reading about it" "I am currently studying ECT" "1 person CPR 30:2 2 person CPR 15:2" "After giving 2 breaths immediately give 30 compressions for approximately 2 minutes (about 5 cycles)"	5	Other	"Not up to date"
Do you know how to use the Automated External Defibrillator (AED)? (n=23)	**61**	Training Method	"I learned that at college" "Just follow the voice/ sound/communication of the AED" "Yet it is used to shock the patient when he/she is in cardiac arrest"	39	Training Experience	"I was never taught" "I've never done it before"
Do you know how to utilise the different ventilators available to you? (n=20)	**55**	Protocol Other	"My protocol" "Competent in using ventilator"	45	Training Equipment	"I have not yet been trained about it" "It is not available"
Do you know how to operate the incubator? (n=22)	41	Training Method	"I was taught" "It is used to keep and maintain the temperature of a new-born and a premature baby"	59	Protocol Equipment Training	"Above my protocol" "No incubator" "Not yet been trained"
Do you know how to use the 3-lead and the 12-lead ECG? (n=22)	32	Training Scope of practice	"I was taught at College" "3-lead only"	**68**	Equipment Experience Other	"12-lead not available for us" "I have never used an ECG" "I don't know it"
Do you know how to do umbilical vein cannulation? (n=21)	43	Training	"Competency, from university "I was taught at College"	57	Scope of practice Other	"My scope of practice does not allow me" "I don't know it"

Discussion: Of the respondents in the Xhariep district, 50% indicated that they could assess blood pressure in paediatric patients; 95% knew the latest CPR guidelines. Of the respondents, 61% knew how to use an AED; 55% knew how to use the different ventilators. Of the respondents, 68% did not know how to use the 3-lead and the 12-lead ECG, and the reasons provided for that included a lack of equipment or experience. It seems that the respondents in this district had fewer skills than respondents in the other districts.

TABLE 4.22: BASIC AND CLINICAL SKILLS OF RESPONDENTS IN THE THABO MOFUTSANYANE DISTRICT (Question 35 - 41, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Can you assess Blood Pressure in a paediatric patient? (n=50)	**62**	Training Method Equipment	"Because I got lessons on it" "Because I know the formula which is: 90mmHg + 2 x age" "If apparatus is there"	38	Equipment Training Skills	"Do not have relevant equipment to do so" "Not yet been trained as development is very slowly" "Lack of skill"
Do you know the latest guideline in CPR for paediatric patients? (n=50)	**84**	Method Training	"15 compressions : 2 ventilations 2 fingers midtermal" "Already taught about it"	16	Training	"Not in-service training"
Do you know how to use the Automated External Defibrillator (AED)? (n=50)	**70**	Method Training Equipment	"Connect pads, switch on, attach to patient" "Learned that on ECG module" "We do have one in ambulances"	30	Experience Scope of practice Equipment	"I never use it" "Out of my scope of practice" "We don't have it in our ambulance"
Do you know how to utilise the different ventilators available to you? (n=50)	58	Training Method	"I was taught how to do it" "BUM you give patient 100% oxygen, give 15 litres per minute"	42	Scope of practice Training Experience	"Above my scope" "Lack of in-service training" "No exposure"
Do you know how to operate the incubator? (n=52)	48	Training Method	"I was given basic training during my ALS" "Temp setting, 02 Connection, warm hot water bottles, plug point in EMS vehicles"	52	Scope of practice Training Equipment	"It is not in my scope of practice" "Never trained to use an incubator" "There is no incubator at our

		Experience	"Yes, I have done it before and I have no problem with it"			station"
Do you know how to use the 3-lead and the 12-lead ECG? (n=52)	56	Scope of practice	"I was trained to use it when I was doing AEA and I am still using it as it falls under my skills" "Only 3 -lead but not 12 lead, 12 is not in my scope of practice"	44	Training Equipment	"Lack of in-service training" "We don't have ECG in most ambulances so I really don't know how to use it"
Do you know how to do umbilical vein cannulation? (n=50)	38	Method Training	"Administer O2; Position of a Pt; Transport; Re-assure pt; Lifting Pt with a stretcher" "Taught during training"	62	Scope of practice	"Above my scope of practice"

Discussion: Of the respondents, 62% indicated their thought that they could assess blood pressure in a paediatric patient. The majority (84%) indicated that they knew the latest CPR guidelines for paediatric patients, while a further 70% knew how to use the automated external defibrillator. As reasons for the lack of skills, they indicated their scope of practice, lack of experience and training, lack of equipment, and some other reasons.

TABLE 4.23: BASIC AND CLINICAL SKILLS OF RESPONDENTS IN THE LEJWELEPHUTSWA DISTRICT (Question 35 - 41, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Can you assess Blood Pressure in a paediatric patient? (n=22)	**64**	Training Method	"I have been taught to do his" "Because I buy myself I have BP cuff for paeds" "By the use of BP cuff"	36	Equipment Training	"Do not have relevant equipment to do so" "I'm not trained for that"
Do you know the latest guideline in CPR for paediatric patients? (n=24)	**96**	Training	"I did CPR module" "Presently doing it in school ECT"	4	Training	"I was never trained"
Do you know how to use the Automated	**84**	Training Method	"I learned about it" "Make sure you and the pt. are in safe location before	16	Training Equipment	"No I haven't been taught" "We don't have it in the

External Defibrillator (AED)? (n=25)			continuing and check to insure that pt. is not in standing water of flammable liquid. AED will shock up to 3 times, usually one shock needed"			ambulance"
Do you know how to utilise the different ventilators available to you? (n=23)	48	Training Method	"I have been trained to do so" "I can extract and again combine the BVM"	52	Protocol Training Experience	"Not in my protocol" "Never taught how to do so" "I've never seen this"
Do you know how to operate the incubator? (n=25)	64	Experience Training	"Yes, due to the fact that I had to do inter-hospital transfers" "I know how to operate it because I was taught"	36	Equipment Training Protocol	"Because we don't have incubator" "I've never been trained to use it" "Is not in my protocol"
Do you know how to use the 3-lead and the 12-lead ECG? (n=26)	62	Training Scope of practice	"Have done refresher on ECG & pharmacology privately" "Only 3 lead ECG as it is within my scope of practice"	38	Scope of practice Equipment	"Beyond my scope" "We don't have ECG in our ambulance"
Do you know how to do umbilical vein cannulation? (n=24)	58	Training Method	"I learned it from college" "Yes by using 4 fingers"	42	Experience Training	"I have never tried it" "Need in-service training"

Discussion: Of the respondents, 64% can assess blood pressure in a paediatric patient. Ninety-six per cent (96%) of the respondents were of the opinion that they knew the latest CPR guidelines for paediatric patients, while a further 84% indicated they knew how to use the automated external defibrillator. Between 48% and 64% of respondents maintained they knew how to use the different kinds of equipment concerned. They indicated that they had obtained the skills due to different training and practical experiences.

TABLE 4.24: BASIC AND CLINICAL SKILLS OF RESPONDENTS IN THE FEZILE DABI DISTRICT (Question 35 - 41, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTIONS	YES	REASON (THEMES)	VERBATIM QUOTES	NO	REASON (THEMES)	VERBATIM QUOTES
Can you assess Blood Pressure in a paediatric patient?	**68**	Training	"I have been trained to do this" "We've done it in service training"	32	Scope of practice Equipment	"According to my scope of practice I can't"

(n=34)		Equipment	"Yes with a child BP cuff" "Only if you have relevant equipment"			"Lack of equipment, I have only adult BP cuff"
Do you know the latest guideline in CPR for paediatric patients? (n=34)	**76**	Training Method	"2010 guidelines still performing" "The ratio is 30.2 Compression of 30I"	24	Training	"Never been taught"
Do you know how to use the Automated External Defibrillator (AED)? (n=34)	**79**	Training Method	"I received proper training" "I learned about it" "Recently refreshed" "Connect AED to the body" "We use to shock the patient"	21	Experience Equipment	"Not yet been there and they are not available in our station"
Do you know how to utilise the different ventilators available to you? (n=34)	53	Training Method	"I have been trained to do so" "Training is provided" "Getting and choosing the correct size and value. Having oxygen cylinder" "Nasal canula, non-breathing mask"	47	Training Scope of practice	"I have not yet been taught about it" "It's not in my scope"
Do you know how to operate the incubator? (n=33)	58	Training Scope of practice Method	"Basics on course but not enough now" "We learnt at a labour ward in hospital" "Is part of my scope of practice" "We use it to put the baby in when it is born" "It's used to put new-born baby inside, switch on to get enough heat, then put on the tubing of oxygen and transfer"	42	Equipment Training	"Because we don't have it at EMS" "No training received"
Do you know how to use the 3-lead and the 12-lead ECG? (n=34)	29	Scope of practice	"Only 3-lead" "It is part of my scope of practice"	**71**	Scope of practice Training Equipment	"I am only using 3 lead due to my scope of practice" "No training" "We only have 3-lead"
Do you know how to do umbilical vein cannulation? (n=32)	44	Method	"External Jugular vein cannulation"	56	Scope of practice Training	"It's not in my scope" "No training received"

Discussion: In the Fezile Dabi district, 68% of the respondents indicated that they were able to assess blood pressure in paediatric patients; a further 76% indicated that they knew the latest guidelines on CPR for paediatrics, and 79% knew how to use the automated external defibrillator. On the other hand, 71% indicated that they did not know how to use the 3-lead and the 12-lead ECG, and the reasons included a lack of training, or equipment, or that it was not in their scope of practice.

Respondents were furthermore asked to list their five main basic skills that they possess. The basic skills that were named by the respondents are listed in Table 4.25.

TABLE 4.25: BASIC SKILLS OF RESPONDENTS
(Question 42, Section E of Questionnaire) [N=197]

BASIC SKILLS	
Administer O_2	Patient simulation
Care of patient, history, communication, teamwork, problem solving, professional	External jugular veins
Transport	Needle cricothyrotomy
BP	Jet insufflation device
Capillary refill	Umbilical vein catherisation
Pulse	Patient history
HGT	Monitoring vital signs
Respiration, Airway management	Maternity
Chest decompression (*)	Wound care
Needle Cricothyrotomy (*)	Intramuscular injection
Applying mast suit	Traction splint
Break delivery	Intubation
Drug administration (*)	External pacing
ECG (3-lead)	Body temperature
Dextrose infusion	CPR
Putting up an IV	Spinal immobilization
Entonox	Stop bleeding
Charcoal	Auscultation
Haemo-gluco-test	Helmic manoeuvre
Nebulisation	Glasgow Coma Scale
Activated charcoal	Other (HIV, Diabetes, Backache, Asthma)
Calling for assistance	

Discussion: Having acquired basic skills is important for any pre-hospital emergency care practitioner. The answers highlighted that the overall skills possessed were mostly basic and intermediate, with 20% being advanced life support skills. This entails that 80% of the paediatric population is served by basic-skilled emergency care practitioners. Some of the skills (*) are listed as basic skills but should be classified as intermediate and advanced skills.

The next question required of respondents to list their five main clinical skills. The clinical skills listed by the respondents are presented in Table 4.26.

TABLE 4.26: CLINICAL SKILLS OF RESPONDENTS
(Question 43, Section E of Questionnaire) [N197]

CLINICAL SKILLS	
Asthmatic attacks	Glucose monitor
Diabetes	Care of burns
BP	Poisoning
Temperature	Deliver a baby (normal, breech, vertex)
Airway	Cricothyrotomy
Pulse	CPR
HGT	Fever
Chest decompression	Distress
Traction splits	Vomiting
Immobilising C spine	Incubation
LED extensions	Umbilical cord cannulation
Femoral IC line	IV cannulation
Tracheal intubation	Declaration of death
Pacing and cardio version	Needle decompression
Scheduled drugs	Fluid management
Intravenous cannulation	External jugular vein cannulation
Endotracheal intubation	Needle cricothyroidotomy
Auscultation	Basic 3-lead ECG
Percussion	Wound care
Palpating	Other (mentoring, listening, teaching, communicating, caring)
Diabetic coma	Monitor vital signs

Discussion: Clinical pre-hospital skills for an emergency care practitioner are of paramount importance, not only to provide comprehensive care but also to enhance clinical competence. As noted in Tables 4.25 – 4.26, basic and clinical skills competence and methods improve clinical awareness and ability. The paediatric patient will remain underserved if the clinical knowledge remains the same.

4.7 PROFESSIONAL COMPETENCY

[Please compare Section F of Questionnaire (Appendix C)]

Section F of the questionnaire asked respondents questions with regard to their professional competencies emergency medical care practitioners. **The number of respondents that answered the specific question is added at the end of each question as (n)**. The results are presented in Tables 4.27 – 4.31, which outline the questions asked to participants on which they had to respond whether they do (YES) or do not (NO) portray specific professional behaviour features, as well as the reason for their respective answers. The results are tabulated per district. Only the professional competencies that more than **80%** of the respondents believed that **they had** or did **not have** will be discussed.

TABLE 4.27: PROFESSIONAL COMPETENCIES OF RESPONDENTS IN THE MOTHEO DISTRICT (Question 44 - 53, Section F of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Do emergency medical care practitioners have special qualities which distinguish them from other similar? (n=44)	**91**	Compassion Pressure Caring Cautious-ness and Awareness	"Compassionate about their job" "ECP can work under pressure" "Take care for the people of patient" "They are more cautious and observant and much more aware of safety"	9	Qualities	"Because we are not that special in our field of working. Hospital practitioners have always criticise us and calling us taxi drivers when we arrive at the clinics and hospitals" "Do not understand who EMC practitioners are compared to in this question"
Being an emergency medical care practitioner is not just a job but it is a real calling? (n=58)	**93**	Serving community Saving lives Passion	"Because even if the employer underpaid us we still continues to service the community in general" "Because we save lives" "I have passion for working with the pt."	7	Needing a job Passion	"For some of us we needed and we are desperate for a job" "It is like any other job, however one need to be proud and develop passion for his/her job"
Do you report an error even if no one else was aware of a mistake? (n=56)	**84**	Improve-ment Equipment	"Because if it's not reported no steps or improvement will be done as the error was not noticed" "Equipment needs service" "So that you will be on your safe side" "Depend on what kind or error"	16	Reporting errors	"I haven't come across of such situation" "The employer is quick to punish errors but seldom praises good deeds"

Do you discuss confidential information with the appropriate people? (n=59)	61	Patient hand-over Share ideas Assistance	"During handing over at the hospital" "Just to share ideas" "Only with my colleagues at work" "Because if I don't how will my seniors be able to assist me if I'm asking questions for clarity about treatment on specific patient e.g. administering of different drugs"	39	Confiden-tiality Not allowed	"Because the confidential information is between me and patient and it cannot be disclosed without patient permission" "Because we don't allow to discuss any information of the patient"
Do you follow the code of conduct to the letter? (n=56)	**82**	Conduct Guidance Safety	"Because it is the right thing to do and to avoid consequences of misconduct" "This guides you as a practitioner + keeps one out of trouble with the HPCSA" "To be on a safe side"	18	Patient first	"I deviate from it to put a patient's life first" "I'm human, make mistakes but try to uphold the code of conduct most of the time" "Demoralized by our management especially the politics"
Do you feel that some patients waste the ambulances' time? (n=57)	**84**	Transpor-tation False calls No emergency	"Ambulance is misused for transportation (taxi)" "False calls" "Patient should be taken to the local clinic since it's not a medical emergency"	16	Patient rights	"Every patient is entitled to better care and treatment" "A patient stays a patient even if he only needs comfort or assurance of his health status. Yes it is harder work more money spent, but the end result is positive towards the public"
Do you communicate with other health professionals to enhance patients care? (n=55)	**98**	Guidance Knowledge and expe-rience Skills	"Consult a knowledgeable source if I'm unsure" "Gain more knowledge and experience" "Share skills and experience with other co-workers"	2	No reasons given	-
Do you assume that all the	25	Trust	"Sometimes we trust our colleagues when	75	Daily checklist	"Check my equipment before resuming my duties

equipment is in working order? (n=59)		Other	they say something is there / working only to find on scene that is not there / working" "Because that's how it should be"		Assurance Equipment	/ Daily checklist" "Because I have to be sure not assume" "Not all equipment is functional"
Do you delay making yourself available for the next patient call? (n=59)	20	Delaying calls	"Not often but if I was busy the whole night with calls that is not an Emergency like D.O.A." "Sometimes I just need a quick break to compile myself and refresh my mind if it was traumatic but not for medical patients"	**80**	Impor-tance Conse-quence Life Other	"Because each and every call is crucial" "Delaying a call leads to serious consequences" "Somebody might lose his/her life" "I love doing what I do"
Do you make sure that your uniform is presentable (ironed, shoes polished)? (n=57)	**97**	Patient trust Public Profes-sionalism	"First impressions last and bring comfort to those we serve" "I am working with the public" "Image is important for professionalism"	3	No reasons given	-

Discussion: Of the respondents who answered the question in the Motheo district 91% believed that EMC practitioners have special qualities, and the qualities identified included compassion, working under pressure, care, caution, and awareness, and others. Furthermore, 93% of the respondents believed that being an EMC practitioner is a calling; 84% always reported errors; 82% followed the code of conduct; 98% communicated with other professionals to enhance patient care. They reported that they did not delay making themselves available for a next call and that they were always presentable. Respondents (84%) do, however, believe that some patients waste the ambulance time and included reasons such as using the ambulance for transportation, false emergencies and no real emergency.

TABLE 4.28: PROFESSIONAL COMPETENCIES OF RESPONDENTS IN THE XHARIEP DISTRICT (Question 44 - 53, Section F of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES%	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Do emergency medical care practitioners	**94**	Qualified Save lives	"Difference in qualification" "Save people	6	No reasons given	-

have special qualities which distinguish them from other similar? (n=16)		Conditions	life" "Work on bad conditions"			
Being an emergency medical care practitioner is not just a job but it is a real calling? (n=19)	**89**	Stress People's lives	"Be able to deal with stress" "Because you are working with people's life" "Loving your job and working with human beings"	11	Remunera-tion	"Because money is a need" "Long ago it was like that, but nowadays is because of jobless stress"
Do you report an error even if no one else was aware of a mistake? (n=19)	74	Rectification Honesty	"Because it needs to be rectified" "Honesty and being truthful"	26	Silence	"I just keep quiet"
Do you discuss confidential information with the appropriate people? (n=19)	63	Debriefing Clarity Respect	"For debriefing" "If I need clarity" "With the patient's concern" "Respecting a person"	37	Principles Other	"I follow and practise Batho Pele Principles" "I hate people laughing at me"
Do you follow the code of conduct to the letter? (n=17)	**88**	Guidelines	"Always practise under the guidelines" "For an easy environment" "If I have to"	12	Other	"Not at all times"
Do you feel that some patients waste the ambulances' time? (n=19)	**100**	Refuse treatment False calls No emergency	"Call ambulance but refuse treatment / transportation" "False calls" "Patient should be taken to the local clinic since it's not a medical emergency"	0	No reasons given	-
Do you communicate with other health professionals to enhance patients' care? (n=19)	**95**	Consultation Patient interest Debriefing	"Consult a knowledgeable source (colleagues / nurse / doctor / sister) if I'm unsure" "For the best interest of the patient" "Informal debrief sessions with co-workers"	5	No reasons given	-

Do you assume that all the equipment is in working order? (n=19)	21	Level of care	"To maintain my level of care"	**79**	Daily checklist Equipment	"Check my equipment before resuming my duties / Daily checklist" "Not all equipment is functional"
Do you delay making yourself available for the next patient call? (n=19)	5	Fluctuate	"Not at all times"	**95**	Unprofes-sional	"Doing that is unprofessional because delaying availability can kill our patient" "Because any call can be an emergency"
Do you make sure that your uniform is presentable (ironed, shoes polished)? (n=19)	**100**	Public Patient trust Identification	"Am always clean because am working with the people" "Good image gains trust from patients" "So that I can be identified"	0	-	-

Discussion: Of the respondents who answered the question in the Xhariep district 94% believed that EMC practitioners have special qualities and these qualities included being qualified, saving lives and working under difficult conditions. Furthermore, respondents (89%) believed that being an EMC practitioner is a calling; they indicated that they followed the code of conduct (88%), and communicated with other professionals to enhance patient care (95%). They did not delay making themselves available for the next call (95%) and they were always presentable. Respondents (100%) did, however, believe that some patients wasted the ambulance's time and included reasons such as refusing treatment, false emergency calls, and no real emergency.

TABLE 4.29: PROFESSIONAL COMPETENCIES OF RESPONDENTS IN THE THABO MOFUTSANYANA DISTRICT (Question 44 - 53, Section F of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Do emergency medical care practitioners have special qualities which distinguish them out from other	**84**	Dedication Conditions	"Always needs to be dedicated" "We are able to work in or at any condition. E.g. It is difficult to nurse to work in ambulance if the pt must deliver the	16	No reasons given	**-**

similar? (n=43)		Training Attitude	baby" "Well trained personnel have better knowledge than others" "Respect, discipline, punctuality, etc."			
Being an emergency medical care practitioner is not just a job but it is a real calling? (n=51)	**92**	Save lives Dedication Passion	"Because of the life saver function" "Dedication of oneself is needed" "I'm doing everything with passion" "Not every person can do it"	8	Seen as a job	"For some it is, but for 90% of our staff I don't agree. It's a quick way of getting a job and being paid at the end of the month" "For me it's a job"
Do you report an error even if no one else was aware of a mistake? (n=50)	**86**	Honesty Responsi-bility Warning Loyalty	"For the benefit of a patient we all have to be honest of our finding out difficulties experienced while treating pt" "Taking respons-ability to my job" "Warn my colleagues "It's being loyal"	14	Other	"I try by all means to cover my tracks"
Do you discuss confidential information with the appropriate people? (n=47)	70	Professional Input	"Because I'm professional" "Sometimes cause I need their inputs/opinions" "If it is necessary"	30	Confiden-tiality Unethical	"Confidential stays confidential" "It's unethical, wrong"
Do you follow the code of conduct to the letter? (n=49)	**100**	Competence Scope of practice Safety	"I have to in order to do good job" I work under my scope of practice" "Yes, but putting the pt's safety and my safety first"	0	No reasons given	-
Do you feel that some patients	**84**	Transpor-tation	"Ambulance is misused for transportation	16	Educating parents	"As a pre-hospital care is our duty to go to Pt's place to

waste the ambulances' time? (n=51)		Uniformed public Not emergency	(taxi)" "Insufficient information by the public on how to use an ambulance service and EMC" "Patient should be taken to the local clinic since it's not a medical emergency "			check the situation and teach them without different facilities. How it works including clinics, hospitals and ambulances"
Do you communicate with other health professionals to enhance patient care? (n=51)	**94**	Patient hand-over Consultation Knowledge and experience Advice	"At the handover of Pt at the hospital / Giving patient reports" "Consult a knowledgeable source (colleagues / nurse / doctor / sister) if I'm unsure" "Gain more knowledge / Experience" "Seeking advice"	6	Other	"They need service since they are bought some equipment are no longer complete as a result of negligence"
Do you assume that all the equipment is in working order? (n=51)	33	Preparation	"Prepared when arriving at the scene"	67	Checklist Equipment Assurance	"Check my equipment before resuming my duties / Daily checklist" "Not all equipment is functional" "Not assuming, I make sure that all equipment is in working condition"
Do you delay making yourself available for the next patient call? (n=52)	17	Other	"I enjoy being out of the office and being on the street" "Not always, more especially if I'm tired"	**83**	Duty Unethical Other	"It is my duty to make myself available to save lives in time" "Unethical and inhumane" "I'm not the enemy of the patients"
Do you make sure that your uniform is presentable (ironed, shoes polished)? (n=51)	**94**	Public Trust Role model	"Become responsible and professional in front of the people you render the service to" "Gains trust" "I want to be a	6	Unprofes-sional	"I don't have full uniform" "I have a problem polishing my shoes, I don't know why. It's just not in me and I know that it's wrong"

			good role model to the youth"			

Discussion: Of the respondents who answered the question in the Thabo Mofutsanyane district 84% believed that EMC practitioners have special qualities and these qualities included dedication, working under difficult conditions, training and professional attitude. Furthermore, respondents believed that being an EMC practitioner is a calling (92%), they always reported errors (86%), followed the code of conduct (100%), and communicated with other professionals to enhance patient care (94%). They indicated that they did not delay making themselves available for the next call (83%), and that they always were presentable. Respondents (84%) did indicate, however, that they believed that some patients wasted the ambulance's time and included reasons such as using the ambulance for transportation, that the public was not informed of its true purpose, and wanted to use the ambulance for no real emergency.

TABLE 4.30: PROFESSIONAL COMPETENCIES OF RESPONDENTS IN THE LEJWELEPHUTSWA DISTRICT (Question 44 - 53, Section F of Questionnaire) [N=197] (Table continues on next pages)

QUESTION	YES	REASON (THEMES)	VERBATIM QUOTES	NO	REASON (THEMES)	VERBATIM QUOTES
Do emergency medical care practitioners have special qualities which distinguish them from other similar? (n=18)	**89**	Passion Decision making"	"Passion and love of the job itself" "They can take quick decisions under uncomfortable situations and pressure to save life of patient" "Because they deal with real lives"	11	Other	"Majority of ECP are in this profession for wrong reasons"
Being an emergency medical care practitioner is not just a job but it is a real calling? (n=24)	**92**	Attitude and passion	"Fully needs someone who has good attitude and passion" "It is difficult or hard, sometimes it needs someone who loves the job"	8	Becoming a professional	"I don't want to be a paramedic at first, but now are enjoying it, the challenges we face it part of my life now whenever I go"
Do you report an error even if no one else was aware of a mistake? (n=24)	75	Improve-ment Patient	"Cause it's the only way to improve on those mistakes" "For the benefit of a patient we all have to be honest	25	Other	"To whom even our adverse event meeting did nothing"

			of our findings and difficulties we experience while treating pt."			
Do you discuss confidential information with the appropriate people? (n=25)	48	Counselling Patient care	"My manager is my counsellor" "To improve patient care and manage-ment"	52	Patient rights Other	"Because the patient rights" "Which peoples - all I know is that I am alone"
Do you follow the code of conduct to the letter? (n=23)	**91**	Guidance Ethical	"Always as it guides us" "Ethical compliance"	9	Other	"I don't want to lie, sometime I just burned it"
Do you feel that some patients waste the ambulances' time? (n=25)	**88**	Transpor-tation False No emergency	"Ambulance is misused for transportation (taxi)" "False calls" "Patient should be taken to the local clinic since it's not a medical emergency"	12	Patient rights	"Because all of them they are in need of ambulance"
Do you communicat e with other health professional s to enhance patients' care? (n=25)	**88**	Patient hand-over Knowledge and experience	"At the handover of Pt at the hospital / Giving patient reports" "Gain more knowledge / Experience"	12	Lack of communica-tion	"I do not communicate with other health professionals to Emergency patients care"
Do you assume that all the equipment is in working order? (n=26)	35	Checking procedure	"Do vehicle check for 15 min"	65	Checklist Equipment	"Check my equipment before resuming my duties / Daily checklist" "Shortage in equipment"
Do you delay making yourself available for the next patient call? (n=26)	15	Other	"Clean the ambulance after every call to avoid cross infection"	**85**	Calling Patient	"As this is a calling to me I am not here for fun. I am medically making myself available even when I am off duty" "Patient comes first"
Do you make sure that your uniform	**100**	Professional	"Always prepared mentally and professional	0	No reasons given	-

is presentable (ironed, shoes polished)? (n=25)		Role model	image and prevent cross infection" "Because uniform is the professionalism to be clean at all times" "I have to lead by an example to the community"			

Discussion: Of the respondents who answered the question in the Lejwelephutswa district, 89% believed that EMC practitioners have special qualities and these qualities included passion and decision making. Furthermore, respondents (92%) believed that being an EMC practitioner was a calling; they followed the code of conduct (91%); and communicated with other professionals to enhance patient care (88%). They indicated that they did not delay making themselves available for the next call (85%) and they were always presentable. Respondents did believe, however, that some patients wasted the ambulance's time (88%), and included reasons such as using the ambulance for transportation, false emergencies and no real emergency.

TABLE 4.31: PROFESSIONAL COMPETENCIES OF RESPONDENTS IN THE FEZILE DABI DISTRICT (Question 44 - 53, Section F of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES	REASON (THEMES)	VERBATIM QUOTES	NO	REASON (THEMES)	VERBATIM QUOTES
Do emergency medical care practitioners have special qualities which distinguish them from other similar? (n=31)	**90**	Save lives	"To save life before anyone, to assist patient without a fear that certain diagnose is infectious" "Kind of work we do is not what everybody can do"	10	Other	"Nobody cares about us, it's like we don't exist in this department"
Being an emergency medical care practitioner is not just a job but it is a real calling? (n=35)	**94**	Passion	"Because you have passion for your job" "We do it from the bottom of our hearts"	6	Remuneration	"Nowadays because of shortage of work most of us we do this job for money"
Do you report an error even if no one else was aware of a mistake?	**94**	Improve-ment	"I do report so that mistakes can be avoided and rectified" "To help us	6	Not taken responsibly/not taking responsibility	"If you reporting the mistake they are gonna say it's you"

(n=35)			perform and improve our practice"			
Do you discuss confidential information with the appropriate people? (n=35)	57	Patient hand-over	"Only when given permission by the patient; When handing over the patient only" "Especially with the staff involved with the call" "It is necessary"	43	Confidential Other	"It's confidential" "There is no one at our station"
Do you follow the code of conduct to the letter? (n=33)	**91**	Guidelines	"It's our guidelines for our job" "Because it is proper channel"	9	No reasons given	-
Do you feel that some patients waste the ambulances' time? (n=35)	**89**	Transpor-tation False No emergency	"Ambulance is misused for transportation (taxi)" "False calls" "Patient should be taken to the local clinic since it's not a medical emergency"	11	Patient rights	"It is the patient's right to access emergency medical service"
Do you communicate with other health professionals to enhance patient care? (n=35)	**91**	Knowledge and experience Skills and experience	"Consult a knowledgeable source if I'm unsure" "Gain more knowledge and experience" "Share skills and experiences with other co-workers"	9	No reasons given	-
Do you assume that all the equipment is in working order? (n=35)	26	Checking procedures	"Not all equipment is functional"	74	Checklist Equipment	"Check my equipment before resuming my duties / Daily checklist" "Not all equipment is functional"
Do you delay making yourself available for the next patient call? (n=35)	17	No reasons given	-	**83**	No reasons given	-
Do you make sure that your uniform is presentable (ironed, shoes	**97**	Presentable Public servant	"I am always neat and presentable" "As a public servant you	3	No reasons given	-

polished)? (n=33)			must be neat and clean all the time"			

Discussion: Of the respondents who answered the question in the Fezile Dabi district 90% believed that EMC practitioners have special qualities and these qualities included saving lives. Furthermore, respondents (94%) believed that being an EMC practitioner is a calling; they always reported errors (94%); followed the code of conduct (91%), and communicate with other professionals to enhance patient care (91%). They did not delay making themselves available for the next call (83%) and they were always presentable. Respondents, however, believed that some patients wasted the ambulance's time (89%), and included reasons such as using the ambulance for transportation, false emergencies and no real emergency.

4.8 EQUIPMENT

[Please compare Section G of Questionnaire (Appendix C)]

Section G of the questionnaire asked respondents about the equipment that is available to treat paediatric patients in the pre-hospital emergency medical care environment and during transportation. **The number of respondents that answered the specific question is added at the end of each question as (n).** The results are presented in Tables 4.32 – 4.36 and outline the questions asked to participants on whether the equipment is available (YES) or not (NO), as well as the reason for their respective answers. The results are tabulated per district. Only the equipment that more than **65%** of the respondents believed were available or not available, will be discussed.

TABLE 4.32: EQUIPMENT USED BY RESPONDENTS IN THE MOTHEO DISTRICT (Question 54 - 63, Section E of Questionnaire) [N=197] (Table continues on next pages)

QUESTION	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Is 100% oxygen administering equipment available on the emergency services vehicles (your ambulance and response vehicle)? (n=56)	**73**	Equipment	"BVMR & oxygen is available on all vehicles" "At all times unless the official is ignorant to ask for one if not available in the vehicle" "You cannot attend a call	27	No equipment Scope of practice	"There is lack of oxygen mask" "Working in control room"

			without oxygen"			
Are pulse oximetry and paediatric probes available? (n=53)	30	Own equipment	"ILS/EMC workers buy it out of their pocket"	**70**	Broken Funds No equipment Scope of practice	"Broken equipment" "No available funds" "Paediatric probes are limited" "Working in control room"
Is non-invasive blood pressure (NIBP) monitoring equipment available? (n=52)	50	Equipment	"Recently bought that"	50	Scope of practice No equipment	"Above my scope of practice / Beyond protocol" "Not available / We don't have it / No"
Are intraosseous needles (IO) available? (n=47)	32	Limited availability	"But not all sizes" "In storeroom it must be requested for use"	**68**	No equipment Scope of practice	"Not available / not provided" "Outside my scope of practice / Above my protocol"
Is an automated external defibrillator (AED) available? (n=54)	57	Other	"Always AED at ambulance" "In the ambulance there is"	43	No equipment Scope of practice	"They don't have batteries out of AED" "Not my protocol"
Is a capnography available? (n=47)	32	Limited equipment Scope of practice	"Limited to certain vehicles and qualifications" "To advance life support"	**68**	Funds Scope of practice	"It is too expensive, too many patient demands. ECG is choice of demand" "Above my protocol"
Is advanced airway and endotracheal equipment available? (n=51)	55	Limited availability	"But it is only OP tube that is available" "They are always available to keep the pt. airway open"	45	Scope of practice Advanced equipment	"Only for advanced life support" "Every response vehicle has one" "Most of that kind of equipment you need to ask it from hospitals"
Is an electrocardiogram (ECG) available? (n=51)	**84**	Other	"Only for response vehicle" "It is useful when monitoring the patient"	16	Funds Scope of practice	"Department don't have enough funds" "Only ALS"
Is the basic stabilisation	**98**	Equipment	"Assist to stabilize pt.	2	Scope of practice	"I am in control room"

equipment (splints, traction splints, spinal boards cervical collars & scoop stretchers) available? (n=55)			when responding to call" "I never had any shortages" "Excellent"			
Is a full set of self-inflating bag and reservoirs available? (n=55)	**67**	Limited equipment	"Though some of them need repairing " "It is vital to have it" "Part of check list"	33	No equipment	"Not even there in the store room" "We don't have"

Discussion: Of the respondents who answered the question in the Motheo district, more than **73%** responded that oxygen administering equipment, electrocardiogram (ECG) (84%), basic stabilisation equipment (98%), and full set of self-inflating bag and reservoirs (67%) were available. Pulse oximetry and paediatric probes (70%), intraosseous needles (68%), and capnography (68%) were not available. The reasons provided for certain equipment not being available, included that the equipment was not in a working condition, there were no equipment, a lack of funds, and that it fell outside their scope of practice.

TABLE 4.33: EQUIPMENT USED BY RESPONDENTS IN THE XHARIEP DISTRICT (Question 54 - 63, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTION	YES %	REASON (THEMES)	VERBATIM QUOTES	NO %	REASON (THEMES)	VERBATIM QUOTES
Is 100% oxygen administering equipment available on the emergency service vehicles (your ambulance and response vehicle)? (n=22)	**77**	Equipment	"2 oxygen cylinder & one if for back-up" "Each vehicle / jump bag have this equipment at our local district"	23	No equipment	"Not all the times"
Are pulse oximetry and paediatric probes available? (n=23)	4	Equipment checked	"Check list performed"	**96**	Own equipment	"ILS/EMC workers buy it out of their pocket"
Is non-invasive blood pressure (NIBP) monitoring equipment available? (n=22)	50	Equipment	"BP cuffs are always available" "Was given"	50	No equipment	"No nothing like that on the EMS" "No there's nothing I have written a letter to the District manager but

						there was no answer"
Are intra-osseous needles (IO) available? (n=21)	48	Equipment	"Ambulance are provided by IO" "I was issued"	52	No equipment	"Not available / not provided"
Is an automated external defibrillator (AED) available? (n=23)	44	Limited availability	"But not much" "The ambulance are provided by AED"	56	No equipment Not working	"Not even one in the ambulance or response vehicle" "Not serviced & not working"
Is capnography available? (n=23)	13	Availability	"Issued to me"	**87**	No equipment	"No there is not" "Out of stock"
Is advanced airway and endotracheal equipment available? (n=23)	43	Scope of practice	"For the people who use it like if it is in your scope"	57	No equipment	"There is nothing of such nature, as I mentioned before I have sent the letter to the District Manager Mr Basson, there is no answer"
Is an electrocardiogram (ECG) available? (n=23)	**65**	Limited	"It is always in the ambulance" "Part of the assessment tool"	35	No equipment	"Not given" "Since I started to work as an ECT I never had an ECG monitor in the response vehicle or on the ambulance"
Is basic stabilisation equipment (splints, traction splints, spinal boards cervical collars & scoop stretchers) available? (n=23)	**96**	Equipment	"All ambulance (operational) are equipped with them" "Given"	4	No reasons given	-
Is a full set of self-inflating bag and reservoirs available? (n=23)	59	Equipment	"Full set of self- inflating bag is available"	41	No equipment	"I have never seen one" "They are not available"

Discussion: In the Xhariep district, 77% of the respondents who answered the question, indicated that oxygen administering equipment; an electrocardiogram (ECG) (65%), and basic stabilisation equipment (96%) were available. Pulse oximetry and paediatric probes (96%), and capnography (87%) were not available. The reasons provided for this equipment not being available, included that the equipment was not in a working condition, there was no equipment, a lack of funds and that it fell outside their scope of practice.

TABLE 4.34: EQUIPMENT USED BY RESPONDENTS IN THE THABO MOFUTSANYANA DISTRICT (Question 54 - 63, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTION	YES	REASON (THEMES)	VERBATIM QUOTES	NO	REASON (THEMES)	VERBATIM QUOTES
Is 100% oxygen administering equipment available on the emergency services vehicles (your ambulance and response vehicle)? (n=51)	**82**	Equipment	"It is very important, no ambulance can go without it" "I make sure before starting my shift to check and refill" "Yes always"	18	No equipment	"No oxygen at the station" "Out of stock, since working for EMS"
Are pulse oximetry and paediatric probes available? (n=50)	16	Equipment	"Is the non-invasive device that used on earlobe or fingertips to check or measure the percentage of oxygen saturation (SO2) of the blood"	**84**	No equipment	"Lack of equipment" "Never used them / Never saw them before" "No stock / not available / not given"
Is non-invasive blood pressure (NIBP) monitoring equipment available? (n=50)	54	Equipment	"BP cuffs, Stethoscope" "Most of our ambulances they do have"	46	No equipment Scope of practice	"Never issued / Never seen" "Only for ILS and ALS vehicle / Only for some vehicles / ambulances"
Are intraosseous needles (IO) available? (n=46)	26	Limited availability	"Available at our station" "All sizes they are available in the ambulance"	**74**	No equipment Funds Scope of practice	"Never issued" "No funds" "Outside my scope of practice / Above my protocol"
Is an automated external defibrillator (AED) available? (n=51)	55	Condition	"But they need to be serviced" "It's available at our station"	45	No equipment	"Not all ambulances have it" "Unavailable"
Is a capnography available? (n=42)	10	Other	"We have on the ambulance and jump bag"	**90**	Funds No equipment	"Department says it is too expensive" "I have no idea what you are talking about" "None available"
Is advanced airway and endotracheal equipment available? (n=44)	34	Equipment	"Every ALS is having his own set" "Have on the ambulance"	**66**	No equipment	"I haven't seen one" "Shortage of equipment"
Is an	**75**	Condition	"It is available	25	No	"Most ambulances

electrocardiogram (ECG) available? (n=52)		Scope of practice	but is old. It don't have pulse oximetry" "On ALS only"		equipment	do not have the ECG"
Is basic stabilisation equipment (splints, traction splints, spinal boards cervical collars & scoop stretchers) available? (n=52)	**92**	Other	"Always stocked" "In most of ambulances" "This is the only area we are 100% on"	8	No equipment	"Not in ESV"
Is a full set of self-inflating bag and reservoirs available? (n=33)	58	Equipment	"Each unit has a set of this equipment. We also have a spare set for each vehicle." "Stored in ambulances"	42	No equipment	"It's not available" "Shortage of equipment"

Discussion: Of the respondents who answered the question in the Thabo Mofutsnayane district, 82% responded that oxygen-administering equipment; an electrocardiogram (ECG) (75%); basic stabilisation equipment (92%), and a full set of self-inflating bag and reservoirs were available (58%). Pulse oximetry and paediatric probes (84%); intraosseous needles (74%), capnography (90%) and advanced airway and endotracheal equipment (66%) were not available. The reasons provided for some equipment not being available, included that the equipment was not in a working condition, there was no equipment, a lack of funds, and that it was outside their scope of practice.

TABLE 4.35: EQUIPMENT USED BY RESPONDENTS IN THE LEJWELEPHUTSWA DISTRICT (Question 54 - 63, Section E of Questionnaire) [N=197]
(Table continues on next pages)

QUESTION	YES	REASON (THEMES)	VERBATIM QUOTES	NO	REASON (THEMES)	VERBATIM QUOTES
Is 100% Oxygen administering equipment available on the emergency services vehicles (your ambulance and response vehicle)? (n=25)	**88**	Equipment	"Because I use them every time there is a call out" "On response vehicle it always there" "There are oxygen cylinders and masks and BVMs available in ambulances"	12	No equipment	No, sometime we are struggling to find the O_2 in our vehicles"

Are pulse oximetry and paediatric probes available? (n=24)	21	Equipment	"Yes most of the cases I attend they are available"	**79**	No equipment Scope of practice	"No stock / not available / not given" "Only available for / on response vehicles (ALS) / Only ILS and ALS not BLS"
Is non-invasive blood pressure (NIBP) monitoring equipment available? (n=25)	36	Limited equipment	"Only a few" "Both manual and electronic"	64	No equipment	"I never saw that for the past 3 months in my ambulance, maybe we do have but never saw it" "Not available / We don't have it / No Stock"
Are intraosseous needles (IO) available? (n=22)	36	Equipment	"Available at our station" "Yes and IO drills too"	64	No equipment Scope of practice	"Not available / not provided" "Outside my scope of practice / Above my protocol"
Is an automated external defibrillator (AED) available? (n=25)	60	Limited equipment	"At least there is one in 4 ambulance - 4 ambulance 1 has the AED" "Dept. bought some"	40	No equipment Scope of practice	"Is a lack of equipment" "Is not in my protocol I never have it in my ambulance"
Is capnography available? (n=20)	10	No reasons given	-	**90**	No equipment	"I never saw one since I worked here" "Not provided with it" "I don't know what is capnography, maybe in other term"
Is advanced airway and endotracheal equipment available? (n=20)	40	Equipment	"Is always available in the ambulance" "Part of the airway bag on all ALS on FS"	60	Funds Scope of practice	"Expensive equipment" "Not in my scope of practice and lack of paramedics"
Is an electrocardiogram (ECG) available? (n=23)	**78**	Scope of practice Condition	"Not in my scope of practice and lack of para-medics" "But not working proper"	22	Scope of practice	"My level does not allow me to use EG"
Is the basic stabilisation equipment (splints, traction splints, spinal boards	**100**	Other	"Always available" "Because we clean and take care of the ones we have"	0	No reasons given	-

cervical collars & scoop stretchers) available? (n=22)			"Because we clean and take care of the ones we have"			
Is a full set of self-inflating bag and reservoirs available? (n=20)	**80**	Equipment	"Always available" "For the use of patients who needed it to be treated, good quality"	20	Equipment	"Maybe the department will buy them soon"

Discussion: In the Lejwelephutswa district, 88% of the respondents who answered the question indicated that oxygen-administering equipment; electrocardiogram (ECG) (78%); basic stabilisation equipment (100%), and a full set of self-inflating bag and reservoirs (80%) were available. Pulse oximetry and paediatric probes (79%), and capnography (90%) were not available. The reasons provided for the specific equipment not being available, included that the equipment was not in a working condition, there was no equipment, a lack of funds and that it fell outside their scope of practice.

TABLE 4.36: EQUIPMENT USED BY RESPONDENTS IN THE FEZILE DABI DISTRICT (Question 54 - 63, Section E of Questionnaire) [N=197]
(Table continues on next page)

QUESTION	YES	REASON (THEMES)	VERBATIM QUOTES	NO	REASON (THEMES)	VERBATIM QUOTES
Is 100% oxygen-administering equipment available on the emergency services vehicles (your ambulance and response vehicle)? (n=35)	**86**	Equipment	"Available" "Every ambulance has enough" "We have a bvm for a child/adult in our vehicles and in responses"	14	Broken No equipment	"The regulators are broken and we don't have the right O_2 masks" "Not in a working condition"
Are pulse oximetry and paediatric probes available? (n=34)	18	Limited equipment	"It is available but not in all ambulances and not all the time due to shortage of equipment"	**82**	No equipment Funds	"Lack of equipment" "No stock / not available / not given" "Department is under administration"
Is non-invasive blood pressure (NIBP) monitoring equipment available? (n=34)	26	Equipment Scope of practice	"Because every personnel has been provided" "Only for ILS and ALS vehicle /	**74**	No equipment Scope of practice	"Not all ambulances / vehicles" "Not available / We don't have it / No Stock" "Outside my scope of practice"

			Only for some vehicles / ambulances"			
Are intraosseous needles (IO) available? (n=31)	35	Limited equipment	"But not all sizes" "Only one of each left. Blue + pink, no yellow"	**65**	No equipment Scope of practice	"Not available / not provided" "Outside my scope of practice / Above my protocol"
Is an automated external defibrillator (AED) available? (n=35)	49	Limited equipment	"But not in all ambulances, only for response vehicles" "It is provided"	51	No equipment	"It doesn't have pads" "It's only supplied to the response vehicles"
Is capnography available? (n=29)	14	Equipment	"But in response vehicles"	**86**	No equipment Scope of practice	"Not provided" "Advance scope from ILS"
Is advanced airway and endotracheal equipment available? (n=32)	41	Equipment Scope of practice	"There are many" "For ALS qualified practitioners"	59	No equipment Scope of practice	"We don't have it" "Not my scope of practice"
Is an electrocardiogram (ECG) available? (n=35)	**74**	Condition	"Not everything in good condition but we do have it" "All available"	26	No equipment	"Not available"
Is the basic stabilisation equipment (splints, traction splints, spinal boards cervical collars & scoop stretchers) available? (n=33)	64	Equipment	"In response vehicles and in ambulances" "We have them"	36	No equipment	"We don't have in our station" "Not enough"
Is a full set of self-inflating bag and reservoirs available? (n=9)	**86**	No reasons given	-	14	No reasons given	-

Discussion: In the Fezile Dabi district, 86% of the respondents who answered the question indicated that oxygen administering equipment; electrocardiogram (ECG) (74%); and a full set of self-inflating bag and reservoirs (86%) were available. Pulse oximetry and paediatric probes (82%); invasive blood pressure (NIBP) monitoring equipment (74%);

intraosseous needles (65%), and capnography (86%) were not available. The reasons provided for certain equipment not being available, included that the equipment was not in a working condition, there was no equipment, a lack of funds and that it was outside their scope of practice.

4.9 IMPROVEMENT OF PAEDIATRIC PRE-HOSPITAL EMERGENCY MEDICAL CARE AND TRANSPORTATION

[Please compare Section H of Questionnaire (Appendix C)]

Section H of the questionnaire was an open-ended question that asked respondents their opinion on how emergency medical care and transportation within the Free State region could be improved. Responses were grouped together in different categories and are displayed accordingly (cf. Table 4.37).

TABLE 4.37: IMPROVEMENTS IN PAEDIATRIC PRE-HOSPITAL EMERGENCY CARE AND TRANSPORTATION AS SUGGESTED BY THE NUMBER OF RESPONDENTS (Question 64, Section H of Questionnaire) [N=197]
(Table continues on next page)

THEMES FOR IMPROVEMENT	FEZILE DABI	LEJWELE-PUTSWA	MOTHEO	THABO MOFUT-SANYANA	XHARIEP
Appoint midwives	0	0	1	0	0
Attend training courses	**4**	**8**	**10**	**7**	**4**
Attitude of ECP should be better	0	1	0	0	0
Better management	1	0	1	0	1
Building an ambulance station	0	1	0	0	0
Communication between personnel (EMS workers) and pre-hospital medical workers	0	0	0	0	1
Cut out delays when attending paediatric cases	1	0	0	0	0
Dedication	0	0	0	1	0
Educating the community about EMS services	0	0	1	0	1
Employment opportunities	0	1	0	0	0
Exposure to paediatric units	1	0	1	0	0
Fill vacant posts	0	0	0	1	0
Get staff input	0	0	0	0	1
Good communication amongst emergency lane practitioners and hospital	0	0	1	0	0
Implementation of quality assurance strategies to keep parties accountable	0	0	1	0	0
Improve personnel attitude / morale and motivation of staff	0	0	1	1	1
Improve the standard of EMS	1	0	0	0	0
In-service training and	**18**	**13**	**29**	**30**	**13**

education					
Increase number of vehicles	**0**	**1**	**6**	**8**	**6**
Increase resources	1	0	0	0	0
Increase salaries	1	0	1	0	0
Increase staff	0	0	2	5	1
Increase the advanced, trained personnel	1	1	5	0	1
Internal assessment of all personnel	0	0	0	0	1
Invest in quality personnel by sending them for M-Tech and PhD	0	0	1	0	0
Knowledgeable officials should be consulted for purchasing the relevant equipment to treat paediatrics	0	0	0	1	0
New ambulances	0	1	0	0	0
Non-negligent	0	0	0	1	0
Own our own ambulance and should not be dependent on government vehicles	0	0	1	0	0
Permanent sister in the ambulance	0	1	0	0	0
Provide counselling after traumatic paediatrics treatment	0	0	1	0	0
Provide the necessary equipment and consumables to treat paediatrics	**6**	**2**	**14**	**16**	**3**
Researchers and consultants should be consulted	1	0	0	0	0
Respect the response time	0	0	0	1	0
Retain qualified personnel that moves to private sector	0	0	0	1	1
Roadworthy vehicles	1	0	0	1	0
Sending qualified personnel while transporting patients	2	0	0	0	1
Senior management should address the issues	0	1	0	0	0
Specially equipped vehicles for paediatric transportation	**5**	**2**	**7**	**5**	**1**
Staff development for better service delivery	1	0	0	0	0
Stress management training	1	0	0	0	0
Train the personnel working in the call centre	0	0	1	0	0
Training in maintenance of special paediatric equipment	0	0	1	0	0
Willingness to serve the community irrespective of salary	0	0	1	0	0

Discussion: All the recommendations made by the participants were divided into themes. The five themes comprising the most recommendations are in included in bold

type in the table. These included: the attendance of more training courses, to receive more in-service training and education; to increase the number of vehicles; to provide the necessary equipment and consumables to treat the paediatrics, and to obtain specially equipped vehicles for paediatric transportation.

4.10 CONCLUSION

Chapter 4 provided an overview of the results and a discussion of the findings of the questionnaire survey.

In the next chapter, Chapter 5, entitled ***Experiences of Free State Emergency Medical Care Practitioners regarding paediatric pre-hospital care,*** the researcher will provide recommendations on how the operational readiness for paediatric emergency medical care might be improved with a view to reducing the mortality in and increasing the operational readiness for paediatric emergency medical care, and thereby to reduce the mortality and morbidity rate within the Free State Emergency Medical Services.

CHAPTER 5

EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE

5.1 INTRODUCTION

Dealing with a paediatric emergency is one of the most stressful calls a pre-hospital emergency care practitioner can encounter. Children are not 'little adults'. Their anatomy and physiology deserve special consideration since they differ from those of an adult. From an emotional standpoint, paediatrics (child patients) also are unique. Their reactions and capabilities differ, depending on their developmental stage and life experience.

In this chapter the experiences of the Free State Emergency Medical Care practitioners with regard to paediatric pre-hospital care will be discussed. The discussion focuses on demographic information, education and training, basic and clinical knowledge, basic and clinical competencies, stress, basic and clinical skills, professional competency, equipment and improvements. This discussion is followed by a description of the factors that influence Free State emergency medical care practitioners' experience with regard to paediatric pre-hospital care, including scope of practice, ethical and social considerations, competence, knowledge and skills decay, stress, resources and the paediatric patient. The chapter concludes with recommendations for the improvement of paediatric pre-hospital care within the Free State Emergency Medical Services.

5.2 EXPERIENCES OF THE FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS WITH REGARD TO PAEDIATRIC PRE-HOSPITAL CARE

In Chapter 4, **Description and discussion of the results of the questionnaire survey**, the results of the entire questionnaire were described and discussed. The following section will only highlight the main findings having a bearing on the experiences of the Free State emergency medical care practitioners regarding paediatric pre-hospital care.

5.2.1 Demographic information

The pre-hospital emergency medical care environment is a generally male dominated occupation and females only recently started to enter this field. From the survey it is

evident that the Free State emergency medical care service is still dominated by male practitioners (cf. 4.2.2 - **gender**). This situation is not unique to the Free State as many other pre-hospital emergency medical care services in South Africa are still lacking female emergency care practitioners.

EMC practitioners in the Free State, employed by the DoH in general are relatively young, have basic qualifications, and do not have much experience as pre-hospital emergency medical care practitioners. The majority of the respondents only have basic or intermediate life support qualifications (cf. 4.2.7 - **highest qualification**), have less than 10 years' experience in the emergency medical care environment (cf. 4.2.5 - **length of service**), and are between the ages of 31 – 40 years (cf. 4.2.1 - **age**).

5.2.2 Education and training

Emergency medical care practitioners can obtain different qualifications and subsequently have different scopes of practice (cf. 2.3.3 - **education and training**). Higher qualifications allow a wider scope of practice. EMC practitioners with only a basic or intermediate life support qualification are only allowed to treat paediatric patients in the pre-hospital medical care environment at a basic level.

From this study it is apparent that only a small number of EMC practitioners in the Free State are in possession of higher qualifications, such as advanced life support, a diploma or a degree, and that the majority of the respondents only have a basic or intermediate life support qualification (cf. 4.2.7 - **highest qualification**). This will definitely have an influence on the pre-hospital care services delivered by the Free State emergency medical care practitioners and contribute to the quality of the service rendered to large sections of the Free State community that are underserved, especially paediatric patients.

Further education and training in the pre-hospital emergency medical care environment are crucial for the development of pivotal knowledge and skills; from the questionnaire survey it is evident that the EMC practitioners desire to enhance their knowledge and skills in the pre-hospital sphere (cf. 4.2.9 - **desire to obtain further qualifications in EMS**). A knowledgeable and skilled workforce enhances the credibility of the organisation; it can assist the EMC practitioners to adapt to the ever-changing emergency care profession.

Continuous professional development (CPD) entails learning activities through which health care professionals maintain and develop throughout their career to ensure that they retain their capacity to practise safely, effectively and legally within their evolving scope of practice (cf. 2.4.8 - **continuous professional development**). The key strength of CPD activities is to maximise staff potential by linking learning to actions and theory to practice. CPD activities (lectures, seminars, workshops, training) can be used to enhance the knowledge, skills and abilities of EMC practitioners. Respondents in the study were asked about their attendance of CPD programmes specifically related to paediatric patients, but due to the short time-frame in which the study was done it cannot be concluded that these answers reflect the true attendance of CPD activities by EMC personnel in the Free State.

5.2.3 Basic and clinical knowledge

Literature findings indicate that basic and clinical knowledge enables the practitioner to practise within the legal and ethical boundaries of their profession, understanding the need to respect and uphold the rights, dignity, values and autonomy of the patient, including their role in the diagnostic and therapeutic process, and to be aware of the impact of culture, equality and diversity in the pre-hospital emergency care environment (cf. 2.4.5 - **clinical decision-making,** and 2.4.6. - **critical thinking and clinical learning**). Basic and clinical knowledge allows a practitioner to practise in an area or areas of his/her profession in a way that meets the standard of the profession and does not pose a danger to patients or to him-/herself. Belonging to an autonomous profession, practitioners need to make informed, reasoned decisions about the practice to ensure that they comply with the standards that they have to uphold.

A large portion of the Free State EMC practitioners that took part in this study regarded their own knowledge with regard to paediatric pre-hospital care and transportation as not adequate or up to standard (cf. 4.3.1 - **standard of knowledge**) and the main reasons provided for that were a lack of training and/or exposure to paediatric patients. The respondents' basic and clinical knowledge also was tested (cf. 4.3.2 - **basic and clinical knowledge**), and what is perturbing is that in the majority of cases the respondents were not able to answer the questions correctly. The results raise some important questions with regard to possible areas in the clinical learning environment that require more training. Knowledge of emergency medical care is unique, and practitioners need to immediately recall specific information to care for critically ill patients, they have to

understand the use of medical resources for the immediate care of the patient, and have the ability to apply the information to undifferentiated paediatric patient presentations. ECPs are expected to formulate an appropriate differential diagnosis with special attention to life-threatening conditions, demonstrate the ability to utilise available medical resources effectively and concurrent with patient care, and apply this knowledge to clinical problem solving and clinical decision making.

5.2.4 Basic and clinical competencies

Basic and clinical competencies refer to the essential and most important knowledge, skills and abilities that an EMC practitioner needs to be able to perform safe and effective patient care. Pre-hospital emergency medical care continues to evolve, and emergency medical care practitioners' responsibilities, and consequently their basic and clinical competencies, are increasing.

The EMC practitioners in the Free State that took part in this study described their basic and clinical competencies as being able to function as a professional, to be able to assess vital signs of a patient, to deliver oxygen and administer manual ventilation, to provide care that meets the needs of unique patient groups, to conduct on-going assessments and care, to conduct complete physical assessment, demonstrating appropriate use of palpation, percussion and auscultation, to administer medication, to utilise differential diagnosis skills, decision-making skills and psychomotor skills in providing care to patients, and to assist and transport critically ill and injured patients (cf. 4.4.4 - **basic competencies,** and 4.4.5 - **clinical competencies**).

5.2.5 Stress

The working conditions of EMC practitioners are characterised by unstable environments, high levels of acuteness, a wide range of patients with diverse injuries or illnesses, and working under pressure, sometimes with minimal resources, experience and training, which make them more vulnerable to stress than other occupations (cf. 2.4.10 - **stress**).

EMC practitioners in the Free State indicated that they did experience high levels of stress, and stated reasons such as a lack of knowledge and experience, emotional aspects, difficulties associated in communicating with children, lack of resources, having to deal with trauma on a daily basis, insufficient training and poor compensation as contributing factors to their stress levels (cf. 4.5 - **stress**).

There are three primary differences among the respondent groups in the pre-hospital emergency care environment. Their level of education, training and responsibility in attending to paediatric calls in the pre-hospital environment. Respondents with only a basic or intermediate qualification have not received advanced training skills in paediatric care (cf. 2.3.3 - **education and training**). This places them at a disadvantage when having to care for paediatric patients in the pre-hospital care environment, and will inevitably contribute to higher stress levels.

Although the majority of the respondents across the five districts believe that they are underpaid for the services they are rendering, not so many of them feel that they are undervalued; from this it may be assumed that EMC practitioners take pride in their profession.

A lack of exposure to paediatric patients can result in knowledge decay at all levels of emergency care practitioners, from basic to advance. Some of the respondents indicated that the treatment of paediatric patients did not cause any stress, because they were the same as any other patient; yet the literature states different aspect about paediatric patients (cf. 2.6 - **why are paediatric patients different?**). These respondents' responses might have been influenced by a lack of understanding stemming from the basic nature of the level of education and training that they had received.

The pre-hospital care environment is physically and mentally demanding, yet most of the respondents who participated in the survey indicated that they were managing their stress on their own, because it is their job. The assumption can be made that pre-hospital emergency care practitioners do not comprehend the importance of psychological wellbeing and stress reduction for emergency care personnel. Practitioners continue to respond to the emergency incidents that require extreme physical output and often result in physiological and psychological outcomes.

5.2.6 Basic and clinical skills

EMC practitioners were asked whether they possessed certain basic and clinical skills pertaining to the treatment of paediatric patients. The skills mentioned by most of the respondents as skills that they did have are the ability to assess blood pressure, know how to perform CPR and can operate the automated external defibrillator in paediatric patients. However, most of the respondents lacked the skills to utilise the different

ventilators that are available and indicated they did not know how to use a 3-lead and 12-lead ECG.

Possessing basic clinical skills is imperative for any EMC practitioner. The results of the study highlighted that the overall skills possessed by the EMC practitioners in the Free State are mostly basic and intermediate, with very little advanced skills. This means that most of the paediatric population in the Free State are only served by EMC practitioners with basic and intermediate skills. It is important to note once again that the different levels of training (cf. 2.3.3 - **education and training**) prepare EMC practitioners to perform different skills and that the majority of the respondents in this study hold only a basic or intermediate life support qualification. This can explain why all the respondents hold only basic and intermediate qualifications, but basic and clinical skills improve clinical awareness and ability, and the paediatric patient will remain underserved if the basic and clinical skills of the EMC practitioners do not improve.

5.2.7 Professional competency

Professional competency generally refers to the habitual and judicious use of communication, knowledge, and technical skills required to carry out activities. Together with the knowledge and skills associated with the pre-hospital environment, professionals must demonstrate the capacity to integrate and apply them in varied and complex situations in the service of a patient or employer, and in such a manner as to prevent such patient from sustaining prejudice. Ethical and moral dimensions therefore must be considered in assessing needs and services.

The respondents in this study believe that emergency care practitioners have special qualities that distinguish them from other or similar professions, such as compassion, working under pressure, care, caution and awareness, and they believe that being an EMC practitioner is a calling, and not merely a job. They seem to report their errors, follow the code of conduct and communicate with other professionals to enhance patient care. It can be said that EMC practitioners in the Free State act in a very strict ethical manner and in the patients' best interests.

5.2.8 Equipment

Technology in medical equipment has evolved so significantly and is important in saving the lives of many patients, and thus has a noteworthy impact on a patient's health

improvement. For emergency circumstances, instruments, like life electro-cardiograph (ECG), are required for simple, painless tests that record the heart's electrical activity, which is of fundamental importance in emergency cases. Due to the advancement of technology, specialised equipment for paediatric patients is available, such as ventilators and automated external defibrillators. This equipment can play a fundamental role in improving the emergency medical care that paediatric patients receive.

Pre-hospital emergency medical equipment is essential to any emergency medical services. Proper equipment enhances the practitioner's capabilities to diagnose and monitor and to remedy specific medical conditions in paediatric care. Most of the respondents indicated that the equipment was not up to standard or that no equipment was available at all (cf. 4.8 - **equipment**). There was consistency in the responses of the participants from all five districts that equipment posed a great challenge in the districts, thereby increasing the mortality and morbidity in patient care.

5.2.9 Improvements

Respondents had various suggestions on how paediatric pre-hospital emergency care and transportation might be improved (cf. 4.9 - **the improvement of paediatric pre-hospital emergency medical care and transportation**). Suggestions that were made by a significant number of the respondents were related to the training of EMC practitioners, by means of short courses, as well as in-service training, to increase the number of response vehicles, especially specialised, equipped vehicles specifically for the treatment of paediatric patients, and to ensure that the resources (equipment and consumables) are available.

5.3 WHICH FACTORS INFLUENCE THEIR EXPERIENCE AND HOW?

Various factors have an influence on the way EMC practitioners experience paediatric pre-hospital care and transportation. In the following section these factors will be discussed.

5.3.1 Scope of practice

Training and education are crucial for the effective functioning of pre-hospital emergency medical care practitioners. A number of different training opportunities exist in South Africa within the field of emergency medical care, such as short courses, a diploma or a

degree programme (cf. 2.3.3 - **education and training**). An EMC practitioner's scope of practice depends on his/her level of training and the higher qualified a practitioner is, the wider his/her scope of practice will be. The treatment of paediatric patients in the pre-hospital emergency medical care environment is limited to EMC practitioners with higher qualifications and EMC practitioners with only a basic or intermediate life support qualification are not allowed to treat paediatric patients.

How EMC practitioners view or experience paediatric pre-hospital emergency medical care will definitely differ amongst practitioners whose scope of practice allow them to treat paediatric patients and those who are not allowed to treat paediatric patients.

5.3.2 Ethical and Social Considerations

The field of pre-hospital medical care has undergone notable growth over the past few decades. As the body of knowledge continues to grow, and more technologically advanced equipment is produced, and as research defines and refines the uniqueness of pre-hospital emergency medical care, the challenges of the pre-hospital setting are becoming more than operational and medical. Proficient response, proper care and safe, fast transport are the expectant fundamental components of pre-hospital care. However, more and more EMC practitioners are facing challenging ethical dilemmas (cf. 2.4.1 - **ethical considerations**).

The EMC practitioner must regularly interact and negotiate with unwilling patients, counsel those patients who ask for advice or refuse care, address requests for limitation of resuscitation, assume some degree of personal risk in the care of agitated, uncooperative, or infectious patients, deal with social and psychiatric challenges, and respond to a variety of unusual requests which may not be medical in nature. Pre-hospital care and transportation of paediatric patients pose various challenges, amongst others, ethical challenges, such as difficulties in communication, and informed consent. These challenges can be addressed by such as information, CPD and training.

5.3.3 Competence

A competent EMC practitioner will have the ability to make fast and effective clinical decisions and will have the necessary knowledge and skills to treat patients efficiently. The quality of care that patients receive in the out-of-hospital setting will have

repercussions on the eventual treatment and healing of the patient (cf. 2.4.5 - **clinical decision-making,** and 2.4.6. - **critical thinking and clinical learning**).

Competency levels of EMC practitioners definitely influence the way they perceive and experience paediatric pre-hospital medical care. EMC practitioners who are not competent or trained to treat paediatric patients will not be aware of the differences in the treatment of adult and paediatric patients. The decision as to when to transport a paediatric patient requires skill and informed judgement.

5.3.4 Knowledge and skills decay

EMC practitioners need to be able to perform a variety of skills, depending on the patient, injury, circumstances, and more. Some of the procedurals skills only may be performed on rare occasions. Skills decay after periods of not using a specific skill is well known and has substantial implications when relatively long periods of time separate training from the application of learned skills (cf. 2.4.7 - **knowledge and skills decay**).

EMC practitioners might have been trained to perform a specific skill, but because they rarely or even never used that skill in practice, they may lose it. This phenomenon is extremely dangerous as EMC practitioners might think that they know how to perform a certain procedure, but when attempting to do so they might realise that they cannot perform it any longer. It is imperative that EMC practitioners practise their skills regularly, especially the skills that they rarely use, to ensure that they do not 'lose' that skill. Competence to be validated on a regular basis by different role players.

5.3.5 Stress

Occupational stress and workplace health have become an issue of great concern over the past decade, both internationally and nationally. A major consequence of the rapidly changing pre-hospital emergency medical scene is the increased service standards, required to maintain and to ensure maximum efficiency and enhance competitiveness in the pre-hospital environment. In addition to the need to maintain high organisational performance, there is a requirement for practitioners to perform multiple tasks in the workplace to keep abreast of changing technologies. Concomitant with the lack of knowledge and skills, this greatly increases the stress levels of the lower qualified practitioners dealing with paediatric patients (cf. 2.4.10 - **stress**). The unpredictable and

challenging nature of the profession and the extent of trauma practitioners need to deal with on a daily basis are additional causes of stress in EMC practitioners.

5.3.6 Resources

Medical equipment as well as consumables in the emergency services may be limited, due to financial constraints or the infrequent use of specialised paediatrics equipment. Daily operational emergency service vehicles are not interiorly equipped to allow the storage of emergency equipment that covers all eventualities of patients of different age groups. EMC practitioners sometimes need to improvise and make use of equipment and consumables that are not necessarily intended for use on the specific patient or medical condition that they need to treat. Apart from equipment and consumables, physical resources are also a concern within the Free State EMC services, and practitioners need to work longer hours and with fewer personnel, that also have a negative influence on their experiences.

5.3.7 The paediatric patient

Paediatric patients require the same kind of invasive procedures as adult patients, but due to their different size and anatomy, many of the procedures are more complex and difficult to perform. Although some of the principles of examining paediatrics are similar to adult examinations, there are important differences in both outline and detail.

Paediatrics are not just small adults, and the pattern of disease, the approach to the examination and content of the examination are quite different in paediatrics; issues of legal responsibility and informed consent must always be considered in every paediatric procedure (cf. 2.6 - **why are paediatric patients different?**). The lack of training in paediatric care in many of the EMC courses makes the treatment of paediatric patients even more challenging and intimidating.

5.4 RECOMMENDATIONS FOR IMPROVEMENTS

The researcher wishes to propose the following recommendations for the improvement of pre-hospital medical care of paediatric patients, based on the literature (cf. Chapter 2 - **Paediatric pre-hospital emergency medical care**), and the findings of the

questionnaire survey (cf. Chapter 4 - **Results and discussion of the findings of the questionnaire survey**):

1. Standardisation of training for EMC practitioners to ensure that all practitioners are adequately trained to provide quality care to all patients that they are serving, including paediatric patients.
2. More paediatric education and training initiatives should be taken and EMC practitioners should be encouraged to attend these to ensure that EMC practitioners understand the importance of good pre-hospital care, understand the differences between paediatric patients and adult patients, and know how to use medical equipment on paediatrics.
3. Practitioners who infrequently practise paediatric skills in the pre-hospital environment must be retrained and assessed regularly for safe practice (CPD).
4. Careful thought has to be put in equipment choice. Specialised paediatric equipment is the ideal, but not always affordable. It is more important to ensure that basic medical equipment are available and in a working condition. Improvisation can be useful under certain circumstance, for example, full spinal immobilisation of a paediatric patient in an adult Kendrich Extrication Device (KED).
5. Creating quality service standards within the EMC services through consultation with patients and employees to understand each set of priorities better; study industry best practices used by organisations of a similar size and nature; creating a mission statement to provide the organisation with clarity when developing major objectives; self-evaluation of the services before and after the implementation of any new standards takes place in order to assess performance, and placing more emphasis on training for employees that enables them to meet or exceed new and evolving standards and ensuring that equipment is available and in a good working condition.
6. Improvement in the working conditions and remuneration of EMC practitioners in order to improve the standard, attitude and morale of personnel.
7. Retention of qualified EMC practitioners to enhance service and to improve the professional image of the emergency services.
8. Creating a forum where practitioners can articulate their feelings in a safe and supportive environment to assist in stress management.
9. Educating the community about the emergency services available as well as paediatric care.

10. Creating interdisciplinary training opportunities for EMC practitioners and hospital personnel to learn effective communication skills and to highlight the importance of effective communication for quality patient care.

5.5 CONCLUSION

In Chapter 5, an overview was provided of the experiences of Free State emergency medical care practitioners with regard to paediatric pre-hospital care, the factors that have an influence on these experiences were explicated and recommendations were made on how pre-hospital medical care can be enhanced for paediatric patients.

In the following chapter, Chapter 6, entitled ***Conclusion, recommendations and limitations of the study***, the study will be summated and final conclusions will be drawn.

CHAPTER 6

CONCLUSION, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

6.1 INTRODUCTION

From this study it came to the fore that insight in the experiences of EMC practitioners' experiences is required to understand the full consequences of their mammoth task, namely to serve communities who are in dire need of emergency (and other types of) medical care. The results of the research showed how the EMC practitioners experience a range of problems and problematic circumstances under which they have to deliver this essential service, especially as it concerns paediatric patients. Among the most disturbing findings count the findings about the lack of knowledge and skills of EMC practitioners, the paltry condition of their equipment (or total lack of essential equipment), and the shortage of highly qualified EMC practitioners. On the positive side the research found these practitioners loyal to their patients, proud of their occupation, and mostly striving to deliver ethical and effective services, even in the face of the profusion of challenges they have to deal with constantly.

The overall goal of the study was to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care in order to provide recommendations on how to improve the operational readiness regarding paediatric emergency medical care to reduce the mortality and morbidity rate within the Free State Emergency Medical Services.

The research methods used in this study included a literature review and a questionnaire survey to gather information on the experiences regarding paediatric pre-hospital care from the pre-hospital emergency medical care practitioners in the Free State Department of Health.

Chapter 1 of this study dealt with the introduction of and orientation to the study; Chapter 2 comprised a report on the literature study that was conducted. In Chapter 2; the main topics reviewed were Emergency Medical Care in South Africa, considerations when transporting paediatric patients, and why paediatric patients are different (cf. Figure 2.1). Chapter 3 was employed to provide a description of the research design and

methodology of, and sampling and selection in the study. Chapter 4 provided a description and discussion of the results of the questionnaire. In Chapter 5, the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care are summarised, as well as the factors that had an influence on their experiences, and recommendations were provided on how the researcher believes paediatric pre-hospital medical care in the Free State can be improved.

The aim of this chapter is to provide a summative overview of the study and express concluding thoughts on the findings of the study. The chapter commences with the overview, followed by conclusions that were drawn, a short discussion on the limitations of the study, the significance of the study, including the contribution to knowledge, recommendations, and a conclusive remark.

6.2 OVERVIEW OF THE STUDY

The research was approached and completed based on four explicit research questions. These questions arose as a result of an identified gap in current knowledge regarding the experiences of emergency medical care practitioners with regard to paediatric pre-hospital care. Building on a conceptual framework, created from engaging with the literature, and making use of a suitable research design and methodology, data were collected and processed, and the results were presented. From the research findings, as well as through engagement with theory, the research questions were answered and conclusions drawn, which served as basis to provide recommendations on how to improve paediatric pre-hospital care and transportation in the Free State emergency medical services.

In Chapter 1 (cf. 1.3 - ***Problem Statement and Research Questions***) an outline of the four research questions was presented. The research questions guided the study and shaped the final outcome. In 6.2.1 to 6.2.4 the research questions are reviewed and the main findings having a bearing on each research question are given.

6.2.1 Research question 1

The research question was stated as:

How can emergency medical care practitioners' experiences regarding paediatric pre-hospital care be conceptualise and contextualised?

The following objective was pursued:

Conceptualising and contextualising the experiences of emergency medical care practitioners regarding paediatric pre-hospital care with a view to form the theoretical framework for this study via a literature study.

The research question aimed to provide a background to this study. In Chapter 2, the experiences of the Free State emergency care practitioners regarding paediatric pre-hospital care were conceptualised and contextualised from a methodical perspective. These are the main areas on which the focus fell: **Paediatric pre-hospital emergency medical care and transportation: An overview** (cf. 2.2), **Emergency medical care training in South Africa** (cf. 2.3), **Considerations when transporting paediatric patients** (cf. 2.4), **Staff development** (cf. 2.5), and **Why are paediatrics different?** (cf. 2.6).

Each of these primary areas of the research study was made up of sub-divisions. The section on **Emergency Medical Care Training in South Africa** (cf.2.3) focused on **pre-hospital emergency medical care training in South Africa** (cf. 2.3.1), **the history of emergency medical care practitioners (EMCP)** (cf. 2.3.2) and **education and training** (cf. 2.3.3). This was done to understand the different levels of training that exist in South Africa for EMC practitioners and to understand how EMC has evolved over the past few decades. The level of training plays a pivotal role in the pre-hospital care and transportation of the paediatric patient.

The next main section, **Considerations when transporting paediatric patients** (cf. 2.4), focused on the different aspects that need to be considered when transporting paediatric patients. The social and economic situation has a huge impact on the pre-hospital environment and **ethical, social, political and health and literacy considerations** (cf. 2.4.1, 2.4.2, 2.4.3, 2.4.4) were discussed. This was followed by a discussion of **clinical decision-making** (cf. 2.4.5), **critical thinking and clinical learning** (cf. 2.4.6), **knowledge and skills decay** (cf. 2.4.7), **continuous professional development** (cf. 2.4.8), **evidence-based practice** (cf. 2.4.9), and **stress** (cf. 2.4.10).

In the section on **staff development** (cf. 2.5), the **barriers to staff development** (cf. 2.5.1), were discussed and included aspects such as the institutional culture, attitudes and misconceptions, and the long-term benefits of staff development.

The last section dealt with **why paediatric patients are different** (cf. 2.6), and focused on the different characteristics of the paediatric patient, including **paediatric anatomy** (cf. 2.6.1), **paediatric airway** (cf. 2.6.2), **paediatric metabolism** (cf. 2.6.3), and **paediatric cardiovascular system** (cf. 2.6.4) to highlight the differences between paediatric patients and adult patients.

6.2.2 Research question 2

The research question was stated as:

What are the Free State emergency medical care practitioners' experiences and views regarding paediatric pre-hospital care?

The following objective was pursued:

Exploring the Free State emergency medical care practitioners' experiences regarding paediatric pre-hospital care via a questionnaire survey.

This objective was attained by means of a questionnaire survey. Chapter 4 presented the **Results and discussion of the findings of the questionnaire survey** for EMC practitioners in the Free State. The **introduction** (cf. 4.1) was followed by a discussion of the **demographic information** (cf. 4.2) of the EMC practitioners that took part in this research. An overview of the EMC practitioners' experiences with regard to paediatric pre-hospital emergency medical care was presented, based on the different sections of the questionnaire, namely **basic and clinical knowledge** (cf. 4.3), **basic and clinical competence** (cf. 4.4), **stress** (cf. 4.5), **basic and clinical skills** (cf. 4.6), **professional competency** (cf. 4.7), **equipment** (cf. 4.8), as well as the EMC practitioners' suggestions on **the improvement of paediatric pre-hospital emergency medical care and transportation** (cf. 4.9).

6.2.3 Research question 3

The research question was stated as:

What are the factors that influence the Free State emergency medical practitioners' experiences and views regarding paediatric pre-hospital care and how do these factors influence emergency medical care practitioners' experiences?

The following objectives were pursued:

Identify the factors that influence of Free State emergency medical care practitioners' experiences and views regarding paediatric pre-hospital care via a questionnaire survey.

Determine how these factors have influenced the Free State emergency medical care practitioners' experiences and views regarding paediatric pre-hospital care through a questionnaire survey.

In Chapter 5, **Experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care,** the main findings on the **experiences of the Free State emergency medical care practitioners with regard to paediatric pre-hospital care** (cf. 5.2) were highlighted, followed by a discussion of **the factors that influence their experiences and how their experiences are influenced** (cf. 5.3). This discussion covered aspects such as **scope of practice** (cf. 5.3.1), **ethical and social considerations** (cf. 5.3.2), **competence** (cf. 5.3.3), **knowledge and skills decay** (cf. 5.2.4), **stress** (cf. 5.2.5), **resources** (cf. 5.2.6) and **the paediatric patient** (cf. 5.2.7).

6.2.4 Research question 4

The research question was stated as follows:

Can paediatric pre-hospital emergency medical care within the Free State emergency medical services be improved?

The following objective was pursued:

Provide information and make recommendations on how to improve paediatric pre-hospital emergency medical care to relevant stakeholders in the Free State Emergency Medical Care Services, including education and role-players involved in education and training programmes.,.

In order to address research question 4 the researcher proposed some **recommendations for improvement** (cf. 5.3) of pre-hospital medical care for paediatric patients.

6.3 CONCLUSION

This research was conducted after the researcher had found that very little or limited research has been done on pre-hospital emergency care and the transportation environment as these relate to paediatric care. The researcher first conducted a literature review to form the theoretical basis of the study. In order to provide scientific evidence, the researcher created a questionnaire based on the findings of the literature review that was presented to the Free State emergency care practitioners in order to gain some insight into the way they experienced pre-hospital emergency medical care for paediatric patients. The sound research approach and methodology ensured the quality, reliability and validity of the research. The completed research may also serve as the basis for a subsequent study.

The findings of the questionnaire survey, combined with those of the literature review assisted the researcher to propose certain recommendations on how the Free State emergency medical care services can improve with regard to paediatric patients in order to ensure efficient and effective care and the transportation of paediatric patients in the pre-hospital care environment.

6.4 LIMITATIONS OF THE STUDY

The researcher recognises the following limitations in the study with the view how to proceed further:

Although the study was clearly demarcated, it became a comprehensive study. The

questionnaire included several questions and focused on a large number of aspects in order to get a clear picture of how Free State EMC practitioners experienced paediatric pre-hospital emergency medical care. Therefore, the study resulted in a number of **research findings so comprehensive in quantity and quality** that it was not achievable to discuss in full. These aspects could be addressed when **publications** are prepared. Further it was noticed that in some cases, respondents only answered the first part of a question and not the follow-up second part of the question, for example giving reasons for their answer. The direct quotes, on the other hand, enhanced the "richness" of the data.

6.5 CONTRIBUTION OF THE RESEARCH

The finding of the research can make a substantial contribution to the enhancement of pre-hospital emergency medical care for paediatric patients. The researcher is of the opinion that the research made a valuable contribution by adding new facts and understanding to the existing body of knowledge concerning pre-hospital emergency medical care and transportation of paediatric patients. The sound research approach and methodology ensured the quality, reliability and validity of the research. In addition, the development of the questionnaire survey instrument as the data collection method, as well as the completed research can be utilised for further research in the field of Health Sciences Education, both locally and internationally, as well as in higher education in general.

The value of the study will be realised in the contribution it will make via recommendations with regard to pre-hospital emergency medical care for paediatric patients in order to enhance service delivery and reduce paediatric mortality rates in the Free State.

6.6 RECOMMENDATIONS

In order for the study to yield significant and valuable results, the researcher takes the liberty to recommend the following:

- That the findings of this research be made available to the management of the emergency medical services of the Free State province as well as other role-players.
- Dissemination of the research findings by submitting publications to accredited subject journals. The publications will be aimed at describing the experiences of Free

State EMC practitioners with regard to pre-hospital emergency medical care for paediatric patients as well as the recommendations that are proposed to enhance the pre-hospital emergency medical care for paediatric patients.

- To present research results and findings at relevant educational forums at national and international conferences.
- To do further research in the emergency medical care environment in order to improve the efficacy and efficiency of the service to all communities.

6.7 CONCLUSIVE REMARK

Pre-hospital emergency care is constantly evolving into a dynamic profession; innovations, new and improved technology and research are regularly emerging. A strong, knowledgeable, compassionate and skilled workforce is needed to take the pre-hospital emergency medical care service forward in delivering a safe and quality paediatric care environment.

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APPENDIX A

APPENDIX A1: LETTER REQUIRING PERMISSION TO CONDUCT THE RESEARCH – HEAD OF THE DEPARTMENT FSDoH

APPENDIX A2: REQUIRING PERMISSION TO CONDUCT THE RESEARCH – DEAN OF THE FACULTY OF HEALTH SCIENCES

APPENDIX A3: NOTICE OF RESEARCH: VICE-RECTOR: ACADEMIC

APPENDIX A1

LETTER REQUIRING PERMISSION TO CONDUCT THE RESEARCH – HEAD OF THE DEPARTMENT FSDoH

Head of the Department
Free State Department of Health
Bloemfontein

APPLICATION FOR PERMISSION TO CONDUCT RESEARCH ON EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE (ECUFS 212/2013)

Dear Mr

I am in the process of writing a script to obtain the Magister in Health Professions Education in the Faculty of Health Sciences at the University of the Free State (Student number 2008026500). The title of my research is **EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL EMERGENCY CARE.**

My study leaders are:

Prof. M.M. Nel
Head: Division Health Sciences Education
Faculty of Health Sciences, UFS
Bloemfontein, SOUTH AFRICA.

Dr S Kruger
Division Health Sciences Education
Faculty of Health Sciences, UFS
Bloemfontein, SOUTH AFRICA.

The **problem** that has to be addressed is the lack of scientific information on the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care. To achieve this goal, the following objective will be pursued:

The **goal** of the study is to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care in order to provide recommendations on how to improve the operational readiness regarding paediatric emergency medical care to reduce the mortality and morbidity rate within the Free State Emergency Medical Services.

The **aim** of the study is to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care.

To achieve this aim, the following **objectives** will be pursued, namely:

- How can the experiences of emergency medical care practitioners regarding paediatric pre-hospital care be conceptualised and contextualised as the theoretical framework for this study via a literature survey.
- To explore the Free State emergency medical practitioners' view regarding paediatric pre-hospital care via a questionnaire survey.
- To identify what the factors are that influence Free State emergency medical practitioners' views regarding paediatric pre-hospital care via a questionnaire survey.
- To determine how these factors influence Free State emergency medical practitioners' views regarding paediatric pre-hospital care via a questionnaire survey.
- To provide information and make recommendations to relevant stakeholders in the Free State Emergency Medical Services on how to improve paediatric pre-hospital emergency medical care.

The methods that will be used in this study comprise an extensive literature review to provide the theoretical basis of the study and a questionnaire survey. The survey population will consist of the emergency medical care practitioners in the Free State provincial emergency medical services that are registered with the HPCSA.

I hereby apply to conduct research as approved by the Ethics Committee (Faculty of Health Sciences) on the experiences of emergency medical care practitioners with regard to paediatric pre-hospital emergency medical care and transportation within the Free State emergency medical services

Yours faithfully

Markes W. Butler
Principal Researcher
Tel: (Office) 051 405 2782 / (Cell) 083 443 8134
Email address: butlermw@fshealth.gov.za / 1234ncsk@gmail.com

APPENDIX A2

REQUIRING PERMISSION TO CONDUCT THE RESEARCH – DEAN OF THE FACULTY OF HEALTH SCIENCES

Dean of the Faculty of Health Sciences
University of the Free State
Bloemfontein

APPLICATION FOR PERMISSION TO CONDUCT RESEARCH ON EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE (ECUFS 212/2013)

Dear Prof G.J. Van Zyl

I am in the process of writing a script to obtain the Magister in Health Professions Education in the Faculty of Health Sciences at the University of the Free State (Student number 2008026500). The title of my research is **EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL EMERGENCY CARE.**

My study leaders are:

Prof. M.M. Nel
Head: Division Health Sciences Education
Faculty of Health Sciences, UFS
Bloemfontein, SOUTH AFRICA.

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The **aim** of the study is to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care.

To achieve this aim, the following **objectives** will be pursued:

- How can the experiences of emergency medical care practitioners regarding paediatric pre-hospital care be conceptualised and contextualised as the theoretical framework for this study, via a literature survey.
- To explore the Free State emergency medical practitioners' views regarding paediatric pre-hospital care, via a questionnaire survey.
- To identify what the factors are that influence Free State emergency medical practitioners' views regarding paediatric pre-hospital care, via a questionnaire survey.
- To determine how these factors influence Free State emergency medical practitioners' views regarding paediatric pre-hospital care, via a questionnaire survey.
- To provide information and make recommendations to relevant stakeholders in the Free State Emergency Medical Services on how to improve paediatric pre-hospital emergency medical care.

The methods that will be used in this study comprise an extensive literature review to provide the theoretical basis to the study, and a questionnaire survey. The survey population will consist of the emergency medical care practitioners in the Free State provincial emergency medical services that are registered with the HPCSA.

I hereby apply to conduct research as approved by the Ethics Committee (Faculty of Health Sciences) on the experiences of emergency medical care practitioners with regard to paediatric pre-hospital emergency medical care and transportation within the Free State emergency medical services

Yours faithfully

Markes W. Butler
Principal Researcher
Tel: (Office) 051 405 2782 / (Cell) 083 443 8134
Email address: butlermw@fshealth.gov.za / 1234ncsk@gmail.com

APPENDIX A3

NOTICE OF RESEARCH: VICE-RECTOR: ACADEMIC

Vice-Rector: Academic
University of the Free State
Bloemfontein

NOTICE OF RESEARCH: EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE (ECUFS 212/2013)

Dear Prof D. Hay

I am in the process of writing a script to obtain the Magister in Health Professions Education in the Faculty of Health Sciences at the University of the Free State (Student number 2008026500). The title of my research is **EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL EMERGENCY CARE.**

My study leaders are:

Prof. M.M. Nel
Head: Division Health Sciences Education
Faculty of Health Sciences, UFS
Bloemfontein, SOUTH AFRICA.

Dr S Kruger
Division Health Sciences Education
Faculty of Health Sciences, UFS
Bloemfontein, SOUTH AFRICA.

The **problem** that has to be addressed is the lack of scientific information on the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care. To achieve this goal, the following objective will be pursued:

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To achieve this aim, the following **objectives** will be pursued:

- How can the experiences of emergency medical care practitioners regarding paediatric pre-hospital care be conceptualised and contextualised as the theoretical framework for this study via a literature survey.
- To explore the Free State emergency medical practitioners' views regarding paediatric pre-hospital care, via a questionnaire survey.
- To identify what the factors are that influence Free State emergency medical practitioners' views regarding paediatric pre-hospital care, via a questionnaire survey.
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The methods that will be used in this study comprise an extensive literature review to provide the theoretical basis of the study and a questionnaire survey. The survey population will consist of the emergency medical care practitioners in the Free State provincial emergency medical services that are registered with the HPCSA.

I hereby apply to conduct research as approved by the Ethics Committee (Faculty of Health Sciences) on the experiences of emergency medical care practitioners with regard to paediatric pre-hospital emergency medical care and transportation within the Free State emergency medical services

Yours faithfully

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Principal Researcher
Tel: (Office) 051 405 2782 / (Cell) 083 443 8134
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APPENDIX B

APPENDIX B1: INVITATION LETTER TO PARTICIPATE IN QUESTIONNAIRE SURVEY

APPENDIX B2: CONSENT FORM TO PARTICIPATE IN QUESTIONNAIRE SURVEY

APPENDIX B1

INVITATION LETTER TO PARTICIPATE IN QUESTIONNAIRE SURVEY

Date:_____

To: Participants in the questionnaire survey

Principal Researcher: Mr Markes Wayne Butler, Course Co-ordinator, Free State College of Emergency Care, Free State Department of Health.

Dear Colleague

I am conducting research in fulfilment of the requirements of a Master's Degree in Health Professions Education. The aim of the study is to explore the experiences of Free State emergency medical care practitioners regarding paediatric pre-hospital care.

You have been selected to participate in this research, because you are an emergency medical care practitioner in the Free State provincial emergency medical services and registered with the HPCSA. I feel that your contribution in this study will be valuable.

I therefore would like to request your participation in this research. Participation is voluntary and confidential. Your responses will be treated confidentially and you will remain anonymous, but should you feel concerned, you may withdraw your consent and end your participation at any stage of the project.

Permission to conduct the study had already been obtained from the ethics committee of the Faculty of Health Sciences (ECUFS 212/2013), University of the Free State and the Head of the Department, Free State Provincial Department of Health.

Should you be willing to participate, kindly fill in the attached consent form.

If you require any further information, or wish to withdraw your participation at any stage, you can contact the principal researcher or any of the study-leaders below.

Thank you in advance for your consideration to take part in this research.

Regards

Markes W. Butler
Principal Researcher
Tel: (Office) 051 405 2782 / (Cell) 083 443 8134
Email address:
butlermw@fshealth.gov.za /
1234ncsk@gmail.com

Contact Details:

Study Leader: Prof. M.M. Nel
Head of the Division Health Sciences Education
Telephone 051 405 3092
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Co-Study Leader: Dr S.B. Kruger
Division Health Sciences Education
Telephone: 051 405 2846
E-mail: krugersb@ufs.ac.za

APPENDIX B2:

CONSENT FORM TO PARTICIPATE IN QUESTIONNAIRE SURVEY

Regarding participation in the M (HPE) study titled: **EXPERIENCES OF FREE STATE EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE**

I (title and full names) _____
herewith declare that

- I have been fully informed about the study and my participation in the study;
- I freely agree to participate in this project, and acknowledge that should I wish to withdraw my participation, due to unforeseen circumstances or personal choice, I can do so in writing. I understand that this will not disadvantage me in any way;
- I understand that my identity and personal details will remain confidential;
- I further acknowledge that I am aware that the results of this study will be made available to the Free State Emergency Medical Service. The findings also will be presented at appropriate congresses and forums, and used for for publication purposes;
- I understand that I will be given a copy of the Consent Form to keep;
- I am aware that I can contact the researcher and/or study leaders of the study at any time, should I have a concern.

Signature _____ Date:_____

Please return this form to:

Markes W. Butler
Principal Researcher
Tel: (Office) 051 405 2782 / (Cell) 083 443 8134
Email address: butlermw@fshealth.gov.za / 1234ncsk@gmail.com

APPENDIX C

QUESTIONNAIRE SURVEY TO EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE

APPENDIX C:

QUESTIONNAIRE SURVEY TO EMERGENCY MEDICAL CARE PRACTITIONERS REGARDING PAEDIATRIC PRE-HOSPITAL CARE

SECTION A – DEMOGRAPHIC INFORMATION

Office use only

□□□ **1 –3**

Please mark the appropriate answer with a (x)

1.	**What is your age?**	(a) Below 21 years	1	**□6**
		(b) 21 - 25 years	2	
		(c) 26 - 30 years	3	
		(d) 31 – 40 years	4	
		(e) 41 – 50 years	5	
		(f) 51 + years	6	
2.	**What is your gender?**	(a) Male	1	**□7**
		(b) Female	2	
3.	**To which ethnic group do you belong?**	(a) Black	1	**□8**
		(b) White	2	
		(c) Coloured	3	
		(d) Asian/Indian	4	
		(e) Other	5	
	If other, please specify:			
4.	**In which district are you currently practising as a pre-hospital emergency medical care practitioner?**	(a) Motheo	1	**□9**
		(b) Xhariep	2	
		(c) Thabo Mofutsanyana	3	
		(d) Lejwelephutswa	4	
		(e) Fezile Dabi	5	
5.	**Duration of employment in pre-hospital emergency medical care environment**	(a) Less than a year	1	**□10**
		(b) 1 – 5 years	2	
		(c) 6 – 10 years	3	
		(d) 11 – 15 years	4	
		(e) 16 – 20 years	5	
		(f) 20 + years	6	
6.	**You are currently rendering a service in a(n):**	(a) Rural area	1	**□11**
		(b) Urban area	2	
7.	**Your highest medical qualification in pre-hospital emergency medical care (EMC)**	(a) Basic Life Support/ BAA	1	**□12**
		(b) Intermediate Life Support/ AEA	2	
		(c) Advanced Life Support/ CCA	3	
		(d) Emergency Care Technician/ ECT	4	
		(e) National Diploma EMC/ NDip	5	
		(f) Bachelor Degree EMC/ B-Tech	6	
		(g) Master's in Technology/ EMC	7	
		(h) Other	8	
	Please specify "other"			
8.	**Year EMS related qualification was obtained**	(a) 1 – 5 years ago	1	**□13**
		(b) 6 – 10 years ago	2	
		(c) 11 – 20 years ago	3	

		(d) 21 + years ago	4	
		(h) Other	8	
9.	**If possible, would you wish to obtain further qualifications in emergency medical care?**	(a) Yes	1	☐**14**
		(b) No	2	☐**15**
	If "Yes: state the reason:			☐**16**

SECTION B: BASIC AND CLINICAL KNOWLEDGE

Please mark the appropriate answer with a (x)

10.	**Is your knowledge of paediatric pre-hospital care and transportation up to standard?**	(a) Yes	1	☐**17**
		(b) No	2	☐**18**
	Please state the reason for your answer above:			☐**19** ☐**20**
11.	**Do you know how to calculate paediatric blood pressure (BP)?**	(a) Yes	1	☐**21**
		(b) No	2	☐**22**
	Please state the reason for your answer above:			☐**23** ☐**24**
12.	**Do you know the paediatric age groups?**	(a) Yes	1	☐**25**
		(b) No	2	☐**26**
	Please state the reason for your answer above:			☐**27** ☐**28**
13.	**Do you know the new cardio pulmonary resuscitation (CPR)?**	(a) Yes	1	☐**29**
		(b) No	2	☐**30**
	Please state the reason for your answer above:			☐**31** ☐**32**
14.	**Do you know the paediatric choking algorithm?**	(a) Yes	1	☐**33**
		(b) No	2	☐**34**
	Please state the reason for your answer above:			☐**35** ☐**36**
15.	**Do you know how to perform Foreign Body Obstruction (FBAO) on an unresponsive paediatric?**	(a) Yes	1	☐**37**
		(b) No	2	☐**38**
	Please state the reason for your answer above:			☐**39** ☐**40**

16.	**Do you know that paediatrics (small children) are nose breathers for the first several months of life?**	(a) Yes	1	**□41**
		(b) No	2	**□42**
	Please state the reason for your answer above:			**□43** **□44**
17.	**Do you know the paediatric Glasgow Coma Scale?**	(a) Yes	1	**□45**
		(b) No	2	**□46**
	Please state the reason for your answer above:			**□47** **□48**
18.	**Do you know paediatrics has behavioural immaturity? (unable to verbalize distress)**	(a) Yes	1	**□49**
		(b) No	2	**□50**
	Please state the reason for your answer above:			**□51** **□52**
19.	**Do you know how to use the Resuscitation / Broselow tape?**	(a) Yes	1	**□53**
		(b) No	2	**□54**
	Please state the reason for your answer above:			**□55** **□56**
20.	**Do you know where to determine capillary refill time in an infant?**	(a) Yes	1	**□57**
		(b) No	2	**□58**
	Please state the reason for your answer above:			**□59** **□60**

SECTION C: BASIC AND CLINICAL COMPETENCE

Please mark the appropriate answer with a (x)

21.	**Your length of Health Professional Registration (HPCSA)?**	(a) 1 year	1	**□61**
		(b) 2 years	2	**□62**
		(c) 3 years	3	**□63**
		(d) 4 years	4	**□64**
		(e) 5 years +	5	
22.	**How many paediatric calls do you respond to in a week?**	(a) 0	1	**□65**
		(b) 1	2	**□66**
		(c) 2	3	**□67**
		(d) 3	4	**□68**
		(e) 4	5	
		(f) 5 +	6	
23.	**How many Continuous Professional Development (CPD) programmes regarding paediatric care have you attended this year?**	(a) 0	1	**□69**
		(b) 1	2	**□70**
		(c) 2	3	**□71**
		(d) 3	4	**□72**

		(e) 4	5	
		(f) 5 +	6	
24.	**Describe your basic competencies**			**□73** **□74** **□75** **□76**
25.	**Describe your clinical competencies**			**□77** **□78** **□79** **□80**

SECTION D: STRESS

Please mark the appropriate answer with a (x)

26.	**Do paediatric emergency calls invoke stress in you?**	(a) Yes	1	**□1** **□2** **□3** **□4**
		(b) No	2	
	Please state the reason for your answer above:			
27.	**Does a lack of paediatric training cause you to stress?**	(a) Yes	1	**□5** **□6** **□7** **□8**
		(b) No	2	
	Please state the reason for your answer above:			
28.	**Do you feel underpaid and undervalued as an emergency medical care practitioner?**	(a) Yes	1	**□9** **□10** **□11** **□12**
		(b) No	2	
	Please state the reason for your answer above:			
29.	**Does stress impact on your ability to care for paediatric patients?**	(a) Yes	1	**□13** **□14** **□15** **□16**
		(b) No	2	
	Please state the reason for your answer above:			
30.	**Do you have coping mechanism for dealing with paediatric deaths during emergency calls?**	(a) Yes	1	**□17** **□18** **□19** **□20**
		(b) No	2	
	Please state the reason for your answer above:			
31.	**Are there causes of stress in your job as emergency medical care practitioner?**	(a) Yes	1	**□21** **□22** **□21** **□24**
		(b) No	2	
	Please state the reason for your answer above:			

32.	**Does a lack of proper ambulance emergency equipment stress you?**	(a) Yes	1	**□25**
		(b) No	2	**□26**
	Please state the reason for your answer above:			**□27**
				□28
33.	**Does a lack of critical and clinical skills stress you?**	(a) Yes	1	**□29**
		(b) No	2	**□30**
	Please state the reason for your answer above:			**□31**
				□32
34.	**Does the lack of emergency medical care training stress you?**	(a) Yes	1	**□33**
		(b) No	2	**□34**
	Please state the reason for your answer above:			**□35**
				□36

SECTION E: BASIC AND CLINICAL SKILLS

Please mark the appropriate answer with a (x)

35.	**Can you assess Blood Pressure in a paediatric patient?**	(a) Yes	1	**□37**
		(b) No	2	**□38**
	Please state the reason for your answer above:			**□39**
				□40
36.	**Do you know the latest guidelines in CPR for paediatric patients?**	(a) Yes	1	**□41**
		(b) No	2	**□42**
	Please state the reason for your answer above:			**□43**
				□44
37.	**Do you know how to use the Automated External Defibrillator (AED)?**	(a) Yes	1	**□45**
		(b) No	2	**□46**
	Please state the reason for your answer above:			**□47**
				□48
38.	**Do you know how to utilize the different ventilators available to you?**	(a) Yes	1	**□49**
		(b) No	2	**□50**
	Please state the reason for your answer above:			**□51**
				□52
39.	**Do you know how to operate the incubator?**	(a) Yes	1	**□53**
		(b) No	2	**□54**

	Please state the reason for your answer above:			**□55** **□56**
40.	**Do you know how to use the 3-lead and the 12-lead ECG?**	(a) Yes	1	**□57** **□58** **□59** **□60**
		(b) No	2	
	Please state the reason for your answer above:			
41.	**Do you know how to do umbilical vein cannulation?**	(a) Yes	1	**□61** **□62** **□63** **□64**
		(b) No	2	
	Please state the reason for your answer above:			
42.	**List your main 5 basic skills**			**□65** **□66** **□67** **□68**
43.	**List your main 5 clinical skills**			**□69** **□70** **□71** **□72**

SECTION F: PROFESSIONAL COMPETENCY

Please mark the appropriate answer with a (x)

44.	**Do emergency medical care practitioners have special qualities which distinguish them from other similar occupations?**	(a) Yes	1	**□73** **□74** **□75** **□76**
		(b) No	2	
	Please state the reason for your answer above:			
45.	**Being an emergency medical care practitioner is not just a job but it is a real calling?**	(a) Yes	1	**□77** **□78** **□79** **□80**
		(b) No	2	
	Please state the reason for your answer above:			
46.	**Do you report and error even if no one else was aware of this mistake?**	(a) Yes	1	**□1** **□2** **□3** **□4**
		(b) No	2	
	Please state the reason for your answer above:			

47.	**Do you discuss confidential information with the appropriate people?**	(a) Yes	1	**□5**
		(b) No	2	**□6**
	Please state the reason for your answer above:			**□7**
				□8
48.	**Do you follow the code of conduct to the letter?**	(a) Yes	1	
		(b) No	2	**□9**
	Please state the reason for your answer above:			**□10**
				□11
				□12
49.	**Do you feel that some patients waste the ambulances' time?**	(a) Yes	1	
		(b) No	2	**□13**
	Please state the reason for your answer above:			**□14**
				□15
				□16
50.	**Do you communicate with other health professionals to enhance patient care?**	(a) Yes	1	
		(b) No	2	**□17**
	Please state the reason for your answer above:			**□18**
				□19
				□20
51.	**Do you assume that all the equipment is in working order?**	(a) Yes	1	**□21**
		(b) No	2	**□22**
	Please state the reason for your answer above:			**□23**
				□24
52.	**Do you delay making yourself available for the next patient call?**	(a) Yes	1	**□25**
		(b) No	2	**□26**
	Please state the reason for your answer above:			**□27**
				□28

53.	**Do you make sure that your uniform is presentable (ironed, shoes polished)?**	(a) Yes	1	
		(b) No	2	**□29**
	Please state the reason for your answer above:			**□30**
				□31
				□32

SECTION G: EQUIPMENT

Please mark the appropriate answer with a (x)

54.	**Is their 100% oxygen administering equipment available on the emergency services vehicles (Your Ambulance & Response)?**	(a) Yes	1	**☐33**
		(b) No	2	**☐34**
	Please state the reason for your answer above:			**☐35** **☐36**
55.	**Are their pulse oximetry and paediatric probes available?**	(a) Yes	1	
		(b) No	2	**☐37**
	Please state the reason for your answer above:			**☐38** **☐39** **☐40**
56.	**Are their non-invasive blood pressure (NIBP) monitoring available?**	(a) Yes	1	
		(b) No	2	**☐41**
	Please state the reason for your answer above:			**☐42** **☐43** **☐44**
57.	**Are their intraosseous needles (IO) available?**	(a) Yes	1	
		(b) No	2	**☐45**
	Please state the reason for your answer above:			**☐46** **☐47** **☐48**
58.	**Is an Automated External Defibrillator (AED) available?**	(a) Yes	1	
		(b) No	2	
	Please state the reason for your answer above:			**☐49** **☐50** **☐51** **☐52**
59.	**Is a Capnography available?**	(a) Yes	1	
		(b) No	2	**☐53**
	Please state the reason for your answer above:			**☐54** **☐55** **☐56**
60.	**Are advanced airway equipment and endotracheal equipment available?**	(a) Yes	1	**☐57**
		(b) No	2	**☐58**
	Please state the reason for your answer above:			**☐59** **☐60**

61.	**Is an Electrocardiogram (ECG) available?**	(a) Yes	1	**☐61**
		(b) No	2	**☐62**
	Please state the reason for your answer above:			**☐63** **☐64**
62.	**Is basic stabilisation equipment (splints, traction splints, spinal boards, cervical collars & scoop stretchers) available?**	(a) Yes	1	**☐65**
		(b) No	2	**☐66**
	Please state the reason for your answer above:			**☐67** **☐68**
63.	**Is the full set of self-inflating bag and reservoirs available?**	(a) Yes	1	**☐69**
		(b) No	2	**☐70**
	Please state the reason for your answer above:			**☐71** **☐72**

SECTION H: GENERAL
Please fill in the following question

64.	**In your opinion, how can emergency medical services be improved within the Free State Emergency Medical Services as far as paediatric pre-hospital emergency medical care and transportation are concerned?**	**☐73** **☐74** **☐75** **☐76**

THANK YOU FOR YOUR TIME!!