CRITICAL CARE ASSISTANTS OPINIONS OF THE HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA REGISTER CLOSURE AND CHANGE IN CLINICAL PRACTICE GUIDELINES

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master in Health Science Education.

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DECLARATION

I, Frauke Rosslee, declare that this Research Report is my own, unaided work. It is being submitted for the Degree of Master in Health Science Education at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

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Frauke Rosslee

15th day of June 2020 in Johannesburg.

DEDICATION

Abba Father, You make the impossible possible.

To my daughter, Ella. I hope that I am adequately fulfilling the part of mom and role model for you as a woman that you need as you grow and navigate the world. I will always be your most avid supporter.

ABSTRACT

Critical Care Assistants (CCAs) have traditionally provided advanced life support care to patients in the prehospital field in South Africa. Training of CCAs came to an end in 2018 and their register was closed at the Health Professions Council of South Africa (HPCSA). At the same time, the HPCSA Professional Board for Emergency Care (PBEC) implemented Clinical Practice Guidelines (CPGs) for the emergency care profession. This resulted in a change in the scope of practice for CCAs. This qualitative study explored the opinions of CCAs on the HPCSA register closure and change in CPGs.

Fourteen CCAs were interviewed from South Africa's Gauteng Province. Data were collected through individual in-depth interviews, which were transcribed and analysed to derive themes and categories.

Three themes were identified. These were education opportunities, personal impact and concern for profession.

Pathways for CCAs to access Higher Education Emergency Care programmes need to be established. Communication platforms need to be developed for the effective implementation of the CPGs.

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ABBREVIATIONS

ACLS	Advanced Cardiac Life Support
AEA	Ambulance Emergency Assistant
AFEM	African Federation of Emergency Medicine
ALS	Advanced Life Support
ANT	Ambulans Nood Tegnikus
B EMC	Bachelor in Emergency Medical Care
B Tech	Bachelor of Technology
BAA	Basic Ambulance Assistant
BLS	Basic Life Support
BLS	Basic Life Support
CCA	Critical Care Assistant
CHE	Council on Higher Education
CPG	Clinical Practice Guideline
Cric	Surgical Cricothyroidotomy
DoHET	Department of Higher Education and Training
DoL	Department of Labour
EBM	Evidence Based Medicine
ECA	Emergency Care Assistant
ECP	Emergency Care Practitioner
ECT	Emergency Care Technician
EMC	Emergency Medical Care
EMS	Emergency Management Service
ETI	Endotracheal intubation
FICEMS	Federal Interagency Committee on Emergency Medical Services
HCPC	Health and Care Professions Council
HE	Higher Education
HEI	Higher Education Institution
HEMS	Helicopter Emergency Management Service
HEQC	Higher Education Quality Committee
HEQSF	Higher Education Qualification Sub-Framework
ICU	Intensive Care Unit
ILS	Intermediate Life Support
IOM	Institute of Medicine

LMA	Laryngeal Mask Airway
NCEC	National Certificate in Emergency Care
NEMSAC	National Emergency Medical Services Advisory Council
NHTSA	National Highway Traffic Safety Administration
NIPPV	Non-invasive positive pressure ventilation
NQF	National Qualifications Framework
OPAs	Oropharyngeal airway
PALS	Pediatric Advanced Life Support
PBEC	Professional Board for Emergency Care
PEP	Prehospital Evidence-based Protocols Project
PQM	Programme Qualification and Mix
PRV	Primary Response Vehicle
RPL	Recognition of Prior Learning
RSI	Rapid Sequence Intubation
RV	Response vehicle
SAHPRA	South African Health Products Regulatory Authority
SAQA	South African Qualifications Authority
SGA	Supraglottic airway
SGB	Standards Generating Body
TBI	Traumatic brain injury

1. CHAPTER 1 – INTRODUCTION AND BACKGROUND

1.1 Introduction

This study investigated the opinions of Critical Care Assistants (CCAs) on the closure of their register at the Health Professions Council of South Africa (HPCSA) and the change in Clinical Practice Guidelines (CPGs) as published by the HPCSA in July 2018.

CCAs are advanced life support paramedics who achieved their qualification by following the short course study route in pre-hospital emergency care. The short course study options are not aligned with the qualification regulations of the National Qualifications Framework (NQF) Act No 67 of 2008. This has resulted in the Health Professions Council of South Africa (HPCSA), in its role of Education and Training Quality Assurer (ETQA), to close the registers for the short courses and introduce new emergency care qualifications (NECET policy, 2017; Health Professions Amendment Act No. 29 of 2007).

The HPCSA published CPGs in July 2018 (HPCSA CPGs, 2018). These are the guidelines for the various levels of pre-hospital emergency care providers which include revised capabilities and scopes of practice. A number of medications have been added to the CCAs scope of practice and some procedures have been removed from their capabilities.

This chapter presents the background to the research problem by giving an overview and history of the pre-hospital qualifications in South Africa and how they are being aligned to the NQF. The previous and revised CCA scope of practice and capabilities are reviewed.

This chapter concludes with a description of the study purpose, research question, and research objectives.

1.2 Background to Pre-Hospital Emergency Care Training

Pre-hospital emergency care has traditionally been provided by short course qualified providers in South Africa. These providers are Basic Ambulance Assistants (BAA), Ambulance Emergency Assistants (AEA) or Critical Care Assistants (CCA).

The CCA qualification was a nine-month short course qualification, originally intended as an in-house training qualification presented by provincial Ambulance Training Colleges (HPCSA CCA curriculum, 1999c). Completion of the CCA course allowed graduates to register with the HPCSA as advanced life support paramedics. In order to have completed the CCA qualification, the BAA and AEA courses needed to be completed. The BAA course, a basic life support course, was presented over five weeks and consisted of theory related lectures and classroom practicals. After successful completion of the final examinations, candidates registered with the HPCSA as BAAs under the supervised practice category (HPCSA BAA Curriculum, 1999b).

The requirements to register for the AEA course, which was the intermediate life support level, were having completed a minimum of 1000 pre-hospital operational hours and registration with the HPCSA as a BAA for a minimum period of six months. The AEA course was presented over three months (HPCSA AEA curriculum, 1999a). The course included a theory phase, class room practicals and an experiential learning phase in the pre-hospital setting. Following successful completion of the course's final examinations, candidates registered with the HPCSA as AEAs and once again were required to work 1000 operational hours and be registered with the HPCSA for six months prior to applying for the CCA course (HPCSA CCA curriculum, 1999c). The CCA course also included a theory phase and classroom practicals followed by an experiential learning phase. Successful completion of the final examinations allowed graduates to register as independent practitioners on the HPCSA's paramedic register.

In 1987, a three-year National Diploma in Ambulance and Emergency Technology was introduced at two Technikons in South Africa (NECET policy, 2017; Dalbock, 1996). Graduates from this programme also registered with the HPCSA as paramedics. A Bachelor of Technology Degree in Emergency Medical Care (B. Tech

EMC) was introduced in 2001. National Diploma graduates could complete this degree through two years of part-time studies (NECET policy, 2017).

During 2004 to 2006, the HPCSA Professional Board for Emergency Care (PBEC) reviewed these three short course qualifications (NECET policy, 2017). The National Diploma in Ambulance and Emergency Technology and B. Tech EMC were also reviewed during this time. The review showed that the short courses were not aligned to the requirements set out by the South African Qualification Authority (SAQA) and did not comply with the qualification regulations of the NQF Act No. 67 of 2008. As a result, the HPCSA PBEC recommended that delivery of the short courses be stopped and new pre-hospital emergency care qualifications be designed. This recommendation was signed off by the Minister of Health in January 2017 (Health Professions Act No. 29 of 2007 as amended). The new higher education recognised qualifications are the Higher Certificate in Emergency Medical Care (EMC), Diploma in EMC and Bachelor's degree in EMC. A Master's and doctorate programme in Emergency Medical Care were introduced in 2005 (NECET policy, 2017).

Teaching of the short courses was phased out over the time period 2018 to 2019. Accredited training colleges could no longer offer the BAA and CCA courses from February 2018 onwards and the AEA course from February 2020 onwards (Health Professions Act No. 29 of 2007). This meant that no BAA or CCA graduates would be permitted to register with the HPCSA from February 2018 onwards and no AEA graduates from February 2020 onwards. Persons on these three registers prior to the closing dates, will remain on the relevant registers (HPCSA PBEC Communication Final Registration Dates, 2017).

The history of pre-hospital emergency care courses and the new NQF aligned courses in South Africa is elaborated on in the literature review.

1.3 Background to Clinical Practice Guidelines

In addition to stopping the pre-hospital emergency care short courses, the HPCSA PBEC has implemented clinical practice guidelines (CPGs). CPGs are defined as statements that include recommendations to optimise patient care. They are based on a systematic review of evidence and include an assessment of benefits and

harms to alternate patient care options (IOM 2011). The previous practitioner protocols for the various pre-hospital registration categories were published by the HPCSA PBEC in 2006, making the publication of the CPGs essential to ensure best patient care in the pre-hospital setting in South Africa.

The new CPGs included an addition of a number of medications and procedures for all registration categories, as well as the removal of some capabilities. One of the capabilities that has been removed from the CCA scope of practice is endotracheal intubation – non-drug facilitated or via deep sedation (HPCSA CPGs, 2018). This capability can now only be performed by Emergency Care Practitioners (ECPs) using induction and neuromuscular blockade agents with mechanical ventilation (HPCSA CPGs, 2018).

ECPs are providers who have completed a Bachelor's degree in Emergency Medical Care at a higher education institution (HEI) (SAQA, 2018b). The CPGs also include a number of capabilities that may only be performed by ECPs, such as neonatal mechanical ventilation, which previously were part of the CCAs list of capabilities. Currently there is no pathway for CCAs to be upskilled to perform these procedures other than to register for and complete the professional bachelor's degree in Emergency Medical Care.

1.4 Problem Statement

Although existing CCAs will be able to continue to practice following the closure of their registration category at the HPCSA, no direct career pathway is in place for them to upgrade their current qualification to the new NQF aligned qualifications. The proposed change in scope of practice following the implementation of the CPGs may also change career and employment opportunities for CCAs in the future.

A literature search did not identify any studies that addressed the opinions of CCAs regarding the closure of their registration category at the HPCSA and the effects the newly published CPGs may have on their employment and the future of their careers. There was also no research available to identify the needs of the CCAs with regards to upgrading their qualifications to align with the new NQF qualifications.

1.5 Purpose of the Study

The purpose of this qualitative study was to explore the opinions of CCAs on the closure of the HPCSA register and the change in CPGs in Gauteng, South Africa.

1.6 Aim of the Study

The aim of this study was to describe CCAs opinions about the closure of their register at the HPCSA and how changes in CPGs would affect their employment and career opportunities.

1.7 Research Question

What are the opinions of CCAs regarding the closure of the HPCSA register and changes in scope of practice?

1.8 Research Objectives

The objectives of this study were to:

1. Establish CCAs opinions on the closure of the ANT register by the HPCSA.
2. Explore the viewpoints of CCAs on the change in CPGs.
3. Determine the participants' perceptions about possible further study and articulation options to assist in creating a career pathway for them.

1.9 Study Significance

The study may highlight possible career opportunities and limitations for CCAs following the register closure. Their opinions about the need for further study opportunities in the field and how these may be feasible for working CCAs may contribute towards the development of policies related to the recognition of prior learning in the long term. Understanding of the revised CPGs and how these revisions can be communicated to those affected may be elicited.

1.10 Layout of research project

This research project is presented in five chapters. The following is a summary of the chapters:

Chapter 1 includes the introduction to the study and provides the background to the study problem. The chapter includes the problem statement, study aim, purpose and objectives.

Chapter 2 provides a literature overview on the history of the training of emergency care providers in South Africa and the steps taken to professionalise and align pre-hospital care qualifications to higher education requirements. The professionalisation of paramedic qualifications in Australia and the United Kingdom is also described.

Chapter 3 outlines the research design and study setting. The population, sampling method, sample size, data collection and data analysis are explained. Measures to ensure trustworthiness and ethical considerations for the study conclude this chapter.

Chapter 4 presents the findings and discussion of the qualitative data collected during the interviews. .

Chapter 5 provides a summary of the findings, recommendations for practice and further research and the conclusion.

1.11 Conclusion

This chapter provided the background to the study in terms of the history of the short course qualifications in the EMS and the formalisation of the current qualifications which are NQF aligned and are now being presented by the HEIs in South Africa. It highlighted the fact that no new CCAs would graduate through the traditional short course study route in South Africa as of the end of 2016. The problem statement, research question, study purpose and research objectives are included and an overview of the study chapters is given.

2. CHAPTER 2 – LITERATURE REVIEW

2.1 Introduction

The Critical Care Assistant (CCA) has provided advanced life support (ALS) care in South Africa since the inception of this short course qualification in the 1980s (Kotzė, 1990) until 2016 following the register closure at the HPCSA (HPCSA, 2017b). Various new emergency care qualifications have been introduced over the past years in replacement of the historical short course qualifications. These new qualifications are offered at Higher Education Institutions (HEIs). The HPCSA PBEC introduced Clinical Practice Guidelines (CPGs) in 2018 for the emergency care professions, which included a revised list of capabilities and medications (HPCSA CPGs, 2018).

This chapter presents the literature on the history of emergency care qualifications in South Africa. A comparison of the emergency care qualification developments made in the United Kingdom (UK) and Australia is described. The importance of the professionalisation of the pre-hospital qualifications is discussed including the role that South African education and health related authorities play. The background to the CPGs is described as well as its inception for the emergency care profession in South Africa.

2.2 History of Emergency Care Qualifications in South Africa

The teaching of First Aid to lay persons was started by the St John Ambulance Association in the United Kingdom in 1877. Over the next decade, this group became the St John Ambulance Brigade. Its First Aid trained personnel were valuable assets in the industrial and coal-mining regions, where accidents often occurred in the workplace. Brigade personnel were used to transport injured workers to hospitals (Beighton & de Villiers, 1997).

After the start of the war in South Africa in 1899, members from the St John Ambulance Brigade sent volunteers to South Africa to help take care of casualties at base hospitals (Beighton & de Villiers, 1997).

Emergency care remained at a First Aid level with a focus on rapid patient transport to hospitals throughout World War II and into the 1960s (Kotzė, 1990; NECET policy, 2017). The Korean War brought to light the value of providing more specialised care to patients prior to transporting them to hospital. It was during the Vietnam War that the concept of the paramedic was developed. The paramedic role was developed in that they provided emergency care while transporting injured soldiers by helicopter to field hospitals (Kotzė, 1990).

In the United States in 1965, statistics showed that more Americans had been killed in vehicle accidents than in the Korean War (Edgerly, 2013). A lack of regulations and standards was identified for ambulance operations and provider training (Edgerly, 2013). Recommendations on the standardisation of emergency training resulted in the development of a nationally recognised curriculum for the EMS. The first emergency care qualification was formalised in 1969 and was the Emergency Medical Technician – Ambulance (EMT-A) (Edgerly, 2013). Over the next few years additional procedures were proposed to be carried out in the pre-hospital setting, including advanced airway management, intravenous access and administration of medications (Edgerly, 2013). This resulted in the development of the curriculum for the Emergency Medical Technician – Paramedic (EMT-P) in the early 1970s (Edgerly, 2013).

It was during the 1970s that the paramedic concept was introduced in South Africa (Kotzė, 1990). A one-week basic ambulance and medic rescue course was hosted for personnel working on an ambulance (NECET policy, 2017). The South African College of Medicine's Pre-hospital Emergency Care Committee introduced the Emergency Medical Assistant 1 (EMA) course for non-ambulance personnel (NECET policy, 2017; Saner, 1978). This course was brought in from the United States Fire Department as a basic introductory course (Saner, 1978). Thereafter the Emergency Medical Assistant Course 2 was developed. This course served as the foundation to the Critical Care Assistant (CCA) course (NECET policy, 2017).

During the 1980s the provinces in South Africa took over the responsibility of providing ambulances and emergency care to sick and injured patients (Kotzė, 1990). Each province established its own Ambulance Training College and offered

the Basic Ambulance Assistant (BAA), Ambulance Emergency Assistant (AEA) and CCA courses (Kotzė, 1990; NECET policy, 2017).

The BAA course was presented over three weeks, the AEA course over 12 weeks and the CCA course initially over four months. (NECET policy, 2017; MacFarlane et al., 2004). A clinical road work component of five months was added to the CCA course at a later stage (NECET policy, 2017).

Table 2.1 - Overview of Subjects and Hours for Pre-Hospital Emergency Care Short Courses

Short Course Qualification Title:	**Basic Ambulance Assistant**	**Ambulance Emergency Assistant**	**Critical Care Assistant**
Entry Requirements:	Matric (post 2012)	Registration as a BAA with HPCSA for at least 6 months; 1000 hours operational work as a BAA	Registration as an AEA with HPCSA for at least 6 months; 1000 hours operational work as an AEA
Course content (Subjects and Hours)			
Professional Practice and Ethics	2 hours	5 hours	8 hours
Ambulance Theory	6 hours	45 hours	120 hours
Ambulance Traumatology	20 hours	30 hours	90 hours
Emergency Care	20 hours	30 hours	192 hours
Ambulance Technology	2 hours	15 hours	20 hours
Classroom Practical Time			
Ambulance Practice	62 hours	85 hours	100 hours

Examination/Tutorial Time			
Examinations	8 hours	20 hours	20 hours
Tutorial / Library / Class Tests	None	None	20 hours
Practical Phase			
Front line vehicle work	No practical phase included for course	120 hours	280 hours
Emergency Department		70 hours	130 hours
Obstetrics		32 hours	40 hours
Primary health care		18 hours	30 hours
Coronary Care Unit		Not applicable	35 hours
Theatre		Not applicable	35 hours
Neonatal Unit		Not applicable	30 hours
Intensive Care Unit		Not applicable	30 hours
Total Course Hours			
Theory and Practical Hours Total	120 hours	470 hours	1180 hours

(HPCSA BAA curriculum, 1999b; HPCSA AEA curriculum, 1999a; HPCSA CCA curriculum, 1999c).

Each provincial training college at the time presented its own courses. They had their own training approach, scope of practice and curriculum (Dalbock, 1996). As no national norms and standards existed, qualifications held by ambulance personnel were not recognised in the different provinces of South Africa. This resulted in the then Minister of Health establishing the Professional Board for Emergency Care Personnel at the South African Medical and Dental Council in 1992 (Dalbock, 1996). A national scope of practice and treatment protocols were introduced. Registers were created for the BAA, AEA and CCA qualifications. The professional board also took on the responsibility of accrediting training institutions (Dalbock, 1996). All three qualifications practised under the supervision of a medical practitioner (Dalbock,

1996) until 1999 when the then professional board published regulations that AEA, CCA and National Diploma qualified personnel could practice independently within their scope of practice (Sobuwa and Christopher, 2019) . The last revision of the curricula for the three courses was in 1999. Courses were taught by training colleges based on these outdated curricula until training was stopped in the period between 2016 and 2019.

2.3 Professionalisation

First et al. (2012) describe professionalisation as a process an occupation undergoes in which the market to a particular occupation is closed to protect its practitioners. This means that only those trained in a specific category of knowledge are able to practice in a particular occupation.

Wilensky (1964) stated that professionalisation goes through five very specific processes. The first process involves work being done in a full-time capacity creating a full-time profession. When comparing this to the emergency care field in South Africa, the origins come from First Aid volunteers after which ambulance personnel were introduced to transport the sick and injured to hospital.

The second phase Wilensky (1964) refers to is the setting up of training schools. This is usually driven out of concern about standards of training and practice for an occupation. This can be seen in the South African setting in the introduction of the first official ambulance training course, which was the Emergency Medical Assistant 1 (EMA) course and the implementation of the provincial ambulance training colleges. Wilensky (1964) states that training colleges inevitably link in with universities to develop standard terms of study, academic degrees and research programmes as this drives the expansion of the existing knowledge base. The university link typically takes place within a few decades (Williams et al., 2009). The moving away from the ambulance training environment to a higher education setting happened in South Africa as well. This is detailed under the heading ‘Professionalisation of Emergency Care Qualifications in South Africa’ later in this Chapter.

Thirdly, professionalisation is associated with the creation of professional associations (Wilensky, 1964). Professional associations define a profession’s

responsibilities and duties, and raise the quality of industry recruits. It also serves to separate the competent from the non-competent (Wilensky, 1964). Once professional associations are created, a name change of an occupation may occur. Wilensky (1964) includes the example of a newspaper reporter changing to a journalist. Name changes occurred in the South African emergency care profession as well. The profession progressed from the colloquial term 'ambulance driver' and basic ambulance assistant to paramedic, emergency care assistant and emergency care practitioner (NECET policy, 2017).

In the fourth phase, Wilensky (1964) speaks to political lobbying and legal support of occupations to protect their professional identity. This is evidenced by the review that took place by the HPCSA of the short courses and the B Tech qualification. The HPCSA PBEC review findings indicated non-compliance of the short courses with the NQF and SAQA, which were reported to the Minister of Health. This resulted in the introduction of the new emergency care NQF aligned qualifications (NECET policy, 2017) and closing of the training of the short courses as well as their registers at the HPCSA (HPCSA, 2017b).

During the fifth and final phase, a formal code of ethics is developed and implemented and licensure requirements are formalised (Wilensky, 1964). The formal code of ethics serves to eliminate unqualified and unscrupulous persons from the profession, includes rules to decrease internal professional competition, rules to protect clients and emphasise ideal service delivery (Wilensky, 1964). In the South African setting this is evidenced by the responsibilities assigned to the HPCSA which include protecting the public and guiding the professions, maintaining professional and ethical standards, registration of professionals and exercising control over education and training (Health Professions Amendment Act No 29 of 2007).

Mahony (2003) supports the importance of professionalisation of occupations. When comparing the emergency care profession to nursing or physiotherapy, their professionalisation occurred much earlier. She attributes the successful professionalisation of these occupations to their alignment to university education and professional registration. By completing a university education, no party can accuse an occupation of being inferior to them as they would have completed the same level of education (Mahony, 2003).

2.4 Professionalisation of Emergency Care Qualifications in South Africa

To professionalise the pre-hospital care industry and to align the profession to other health professions in South Africa, professional qualifications were needed (NECET policy, 2017). These qualifications were regulated and registered by the HPCSA (NECET policy, 2017). In 1987, a three-year National Diploma in Ambulance and Emergency Technology was introduced at the Technicon Witwatersrand and Natal Technicon (NECET policy, 2017; Dalbock, 1996). Graduates from this national diploma had additional medical skills and rescue capabilities. They were registered by the HPCSA as Paramedics. Initially they practiced under supervision of a medical officer (MO). This meant obtaining permission by means of two-way radio communication from the on-duty MO to perform certain patient care procedures and to administer certain medications. After a number of years, the need to obtain permission was done away with, allowing paramedics to function as independent pre-hospital emergency care providers.

The National Diploma was to replace the short courses (NECET policy, 2017). With only two technikons initially offering the National Diploma, the graduate number was relatively small and could not meet the demands of the country. As a result, the short course training continued to be offered until a sufficient number of graduates from the National Diploma were produced (Vincent-Lambert, 2011).

To further develop the professional identity of the emergency care profession in South Africa and to ensure alignment with the National Qualifications Framework (NQF), a Bachelor of Technology Degree in Emergency Medical Care (B. Tech EMC) was introduced. Graduates from the National Diploma could complete the B. Tech EMC as part-time studies over a two year period (Vincent-Lambert, 2011).

The HPCSA, as the Education and Training Quality Assurer (ETQA) and Standard Generating Body (SGB), reviewed the learning material of BAA, AEA and CCA short courses as well as the HEI qualifications from 2004 to 2006 (NECET policy, 2017). This review showed that the short courses were not aligned with the NQF Act No 67 of 2008. Revising the rather outdated curricula from 1999 for the short courses would also not make them compliant with SAQA, NQF and higher education requirements (Vincent-Lambert, 2011).

The review resulted in the creation of the Emergency Care Technician (ECT) qualification. This National Certificate in Emergency Care was registered as an NQF level 5 qualification and worth 240 credits (SAQA, 2018a). The qualification was registered with SAQA and presented by Provincial Training Colleges and Universities of Technology from 2007 onwards (Vincent-Lambert, 2011).

The National Diploma and B.Tech EMC qualifications were also reviewed and merged into a four-year professional degree in Emergency Medical Care (B EMC). The degree is a NQF Level 8 qualification with 480 credits (NECET policy, 2017; SAQA, 2018b).

By 2005, Higher Education Institutions (HEIs) had also introduced masters and doctoral programmes that B EMC graduates can complete (NECET policy, 2017). The Durban University of Technology (DUT) was the first public university to offer the Master's programme (DUT, 2020a). To date, they are also the only institution accredited to present the doctoral programme. This accreditation was received in 2014 (DUT, 2020b).

2.5 Current Emergency Care Education Qualifications in South Africa

The National Department of Health of South Africa has implemented a three-tiered Emergency Care Qualifications Framework (ECQF) to meet the emergency medical services needs of the country (NECET policy 2017). This has resulted in the establishment of three new qualifications which are aligned to the NQF and meet the requirements set out by SAQA, DoHET and CHE (See Table 2.2). Registers have been opened for these qualifications by the HPCSA. Graduates from these qualifications need to register with the HPCSA in order to practice (Health Professions Act No 29 of 2007).

Table 2.2 - Current Emergency Care Qualifications in South Africa

Qualification Name	NQF Level	Number of Credits	HPCSA Register
Undergraduate Qualifications			
Higher Certificate in Emergency Medical Care	5	120	Emergency Care Assistant
Diploma in Emergency Medical Care	6	240	Paramedic
Professional Bachelor Degree in Emergency Medical Care	8	480	Emergency Care Practitioner
Post-Graduate Qualifications			
Master's Degree in Emergency Medical Care	9	180	No change in registration
Doctor of Philosophy in Emergency Medical Care	10	360	No change in registration

2.6 Professionalisation of Emergency Care Qualifications Internationally

South Africa is not unique in undergoing professionalisation of its pre-hospital emergency care qualifications. In the United Kingdom (UK), the Department of Health has also driven the professionalisation of emergency care qualifications by moving the training into the university sectors (First et al., 2012).

Brooks et al. (2016) completed an extensive literature review on the development of paramedic education in the UK. Similar to the United States (US), an increase in road accident numbers as well as changes in the health services, led the ministry of health to review the role and training requirements of ambulance personnel (Millar Report, 1966). With advances in cardiac arrest management and trauma care, the 'Millar Report' proposed a training syllabus for ambulance personnel. The 'Ambulance Services Proficiency Certificate' was a basic training course of eight weeks for new entrants. After completing the training course, a compulsory year of operational duties was required. Following this, a four-week advanced course could be completed which included advanced competence in First Aid and para-medical

subjects. Successful candidates were awarded the 'Ambulance Services Advanced Certificate' (Millar Report, 1966). These certificate courses were offered by most UK Ambulance Trusts (Cooper, 2005).

The Millar Report (1966) also recommended a Central Ambulance Services Council that would be responsible for training staff and maintaining standards, reviewing ambulance service equipment requirements and serve in an advisory capacity to the Minister on training and equipment needs of ambulance services.

The 1970s saw the National Health Services (NHS) Reorganisation Act centralise the authority for ambulance services within the NHS in the UK and the introduction of an Advanced Life Support (ALS) trained ambulance clinician who managed pre-hospital cardiac arrests (Brooks et al., 2016).

In 1991 the first 'Ambulance Service Paramedic Training Manual' was published leading to the inception of the paramedic who was an advanced level ambulance clinician (Brooks et al., 2016). The role of the paramedic was expanded in 1998 to allow paramedics to treat patients and to make decisions regarding the transport of patients who were not suffering from serious conditions. This role required clinical decision making, thus shifting the role of the training and education of paramedics to the university setting. It saw a move away from protocol-based training received at the local trusts to higher education institutions (Brooks et al., 2016). National paramedic guidelines were published in 2000. These guidelines required clinical judgement and decision making and moved the paramedic profession away from the previous rigid protocols.

The first paramedic degree started in 1998 in the UK. In 1999 paramedics were recognised for the first time as professionals in their specialised field and were registered by the Council of Professions Supplementary to Medicine (Brooks et al., 2016).

In 2003, paramedic proficiency standards were developed for safe and effective practice by the Health and Care Professions Council (HCPC) and professional registration of paramedics with the HCPC commenced (Cooper, 2005). This was

followed by practice and accreditation requirements for paramedic educator providers in 2004 (Brooks et al., 2016).

The Emergency Care Practitioner (ECP) paramedic was proposed in 2000. This practitioner would need to complete a Bachelor of Science (B Sc) in Emergency Care and would graduate with an extended scope of practice. The first curriculum for the ECP was published in 2003 (Brooks et al., 2016).

During the years 2005 – 2012 various organisations recommended the introduction of a foundation degree or diploma at HEIs which would produce a graduate who could think critically, reason clinically, had problem-solving abilities and be a reflective practitioner (Brooks et al., 2016). In 2008, the phasing in of these entry-level qualifications commenced for paramedic registration.

Qualifying as a paramedic through the certificate route ('Ambulance Service Proficiency Certificate') came to an end in 2013, when the HCPC no longer recognised the Institute of Health Care Development (IHCD) in-house training courses offered by ambulance services (Brooks et al., 2016).

The current accepted paramedic standard qualification in the United Kingdom is the three-year B Sc (Honours) with a number of universities offering post graduate specialist programmes and master's programmes (Brooks et al., 2016).

When comparing the professionalisation of the emergency care qualifications in Australia, a vast difference in seen. A number of authors have published papers and research pertaining to the Australian paramedic discipline not being viewed as a full profession (Mahony, 2003; Joyce et al., 2009; Williams et al., 2010) prior to 2018. These authors further wrote that the paramedic discipline wanted to be recognised as a profession and that professional registration was key to this.

One essential step in the professionalisation of an occupation is for a professional association to be formed and against which qualified persons can register. In Australia, a paramedic (paramedicine) register was only opened on 1 December 2018 by the Paramedic Board of Australia under the Health Practitioner Regulation Law. The Board's role includes the regulation of paramedics in Australia. From

December 2018 onwards it became compulsory for paramedics to be registered to practise in Australia (Paramedics Australasia, n.d.). This is in stark contrast to South Africa and the UK where professional registration boards were created in 1992 (Dalbock, 1996) and 1999 (Brooks et al., 2016) respectively.

Australia provided pre-hospital emergency care training for its ambulance officers at Ambulance Officers Training Centres in its various territories. These training centres were established during 1961 – 1974 in Australia's territories and offered in-house training. These training courses were not accredited. Its first curriculum was compiled in the 1960s and was adapted from hospital-based clinical practice (Brooks et al., 2018).

In 1974 the technical and further education (TAFE) identity was established. TAFE fell under the vocational education training sector in Australia. During 1977, the National Education Committee of the Institute of Ambulance Officers developed national learning objectives for ambulance officers which played a role in curriculum development and instruction. Soon after (1978) the first Ambulance Officers Training Centre offered the Certificate in Applied Science (Ambulance Officer) (Brooks et al., 2018).

In 1978, Western Australia required all its Ambulance Officers to be ALS trained. This followed the introduction of cardiopulmonary resuscitation (CPR), advanced cardiac life support (ACLS) and ALS during the 1960s and 1970s. The Victoria territory followed suit in 1981, and the Northern territory, administered by the St John Ambulance Service, in 1995 (Brooks et al., 2018).

In the late 1980s and 1990s, more formalised programmes were introduced in the different territories. These were associate diplomas in health science qualifications. These programmes were accredited individually in each territory and were under the authority of TAFE (Brooks et al., 2018).

In 1994, Australia's Charles Sturt University offered the first programme for ambulance officers to convert their in-house training qualification to a paramedic degree qualification. This saw a general transition of paramedic training to university based programmes. The transition to university based programmes took place

without any accreditation criteria or standards being available. Only in 1999 did the Ambulance Education Committee (AEC) address the issue of developing national standards for training and accreditation of paramedic training programmes (Brooks et al., 2018). In 2010, guidelines were published for the assessment and accreditation of entry-level paramedic programmes. The Australasian Competency Standards for Paramedics were published in 2011 (Brooks et al., 2018).

From 2003 to 2014, various agencies lobbied for the professional registration of paramedics without much success. In 2015, the Council of Australian Governments Health Council agreed to include paramedics in the National Registration and Accreditation Scheme. This was followed by the inauguration of the first National Paramedic Board of Australia in October 2017, with registration of paramedics in order to practice being made mandatory in December 2018 (Brooks et al., 2018). Although it appears to have taken an extensive amount of time for the paramedic occupation to be recognised as a profession in Australia, the change from in-house vocational training to university-based programmes occurred over a time period of just under sixty years. The move of the paramedic programmes to universities and the creation of a professional register, has given this important service industry credibility and recognition within the medical fraternity as well as Australia as a whole.

2.7 Further Education Opportunities

Vincent-Lambert et al. (2014) conducted an exploratory, sequential mixed-method study to determine if further education opportunities were needed for ECTs and whether they existed or not. The ECT was a two-year, mid-level worker pre-hospital qualification offered at provincial training colleges. Many graduates with the ECT qualification would like to study further and obtain their degree in Emergency Medical Care. However, completion of the two-year ECT qualification did not allow graduates to gain entry into the third year of the degree programme. Vincent- Lambert et al. (2014) aimed to develop a framework and create a pathway for ECT graduates to be able to articulate into the four-year professional degree in EMC.

They (Vincent-Lambert et al., 2014) analysed and compared existing coursework and curricula of the ECT qualification and the degree qualification in EMC. A number of

similarities were identified as well as a number of differences in terms of the depth, complexity and scope of the two qualifications. Based on the identified differences, ECT graduates could not be placed into the third year of the degree programme. To afford an articulation option for ECT graduates into the degree programme, a bridging programme needed to be developed. Completion of this bridging programme would ensure that ECT graduates were at the same level as a second year degree student, and therefore able to register for the third year in the degree programme. In order for ECT graduates to apply for the bridging programme, they would need to be in their second year of clinical practice as this would consolidate their knowledge and improve their clinical skills (Vincent-Lambert et al., 2014).

Vincent-Lambert et al. (2014) focused specifically on the articulation of the ECT graduate into the degree programme. The ECT qualification (National Certificate in Emergency Care) is a NQF level 5 qualification and recognised by SAQA (SAQA 2018a). This bridging programme would create a further study opportunity for approximately 1129 registered ECTs (HPCSA, 2020).

Many pre-hospital care providers only hold a short course qualification, which is not NQF aligned. This means that no official pathway is in place for short course qualified personnel i.e. BAAs, AEAs and CCAs to articulate into a NQF aligned qualification. Short course qualified persons would need to apply to a HEI and commence with studies at a first year level, provided they met the entry criteria. The entry criteria for the higher certificate, diploma and degree programmes in EMC are aligned to the minimum entry requirements as stipulated by the Department of Education's policy on minimum admission requirements (DoE, 2005). In addition, the HPCSA PBEC has published curriculum documents for the Higher Certificate and Diploma in EMC. These curriculum documents include minimum entry requirements which include the subjects English, mathematics, physical sciences and life sciences with set rating codes (HPCSA 2016a; HPCSA 2016b).

Many short course qualified emergency care providers do not meet the entry requirements to the Higher Education EMC programmes. Until 2012, persons applying for the BAA qualification did not have to have a matric certificate. This was amended by the HPCSA in 2012, requiring all persons applying for the BAA course

to have a matric certificate. No specific subjects or scores were needed (HPCSA, 2012).

With there being set entry requirements now for matric subjects and results for the Higher Education EMC programmes, it has eliminated many short course qualified persons from being able to study further.

Prior to closure of the BAA, AEA and CCA registers, the career pathway for a BAA was to complete the AEA qualification after mandatory operational work as a BAA and then the CCA qualification, allowing registration with the HPCSA as an advanced life support paramedic.

With the closure of the three registers by the HPCSA, and training colleges no longer being allowed to present the three short courses, no direct articulation pathways exist to the higher education qualifications and few career growth opportunities exist for remaining short course qualified persons.

2.8 Education Authorities in South Africa

In order for a HEI to obtain accreditation to offer the new HE qualifications, accreditation needs to be obtained from various education related authorities. These are the Council on Higher Education (CHE), the Department of Higher Education and Training (DoHET), the South African Qualification's Authority (SAQA) and the HPCSA PBEC. The roles and responsibilities of each of these accreditors is summarised below. The process to apply and obtain accreditation to present a HE EMC qualification is described as well.

2.8.1 Council on Higher Education (CHE)

The Higher Education Act No 101 of 1997 stipulates the establishment of the Council on Higher Education (CHE). The CHE's main functions are to advise the minister and set up a Higher Education Quality Committee (HEQC) The HEQC is responsible for quality assurance in Higher Education (HE), the auditing of quality assurance mechanisms in Higher Education Institutions (HEI) as well as accreditation of HE

programmes. In addition, it overseas the structure and planning of HE systems, student support services and has a financial supervisory role (Higher Education Act No. 101 of 1997).

HEIs wishing to offer EMC qualifications, need to be accredited by the HEQC of the CHE. Prior to submitting an application portfolio for evaluation to the CHE's HEQC, public HEIs need to have the qualification approved as part of their Programme Qualification and Mix (PQM) by the DoHET and private HEIs must be registered with the DoHET as per the Higher Education ACT No. 101 or 1997 prior to a programme being provisionally accredited for the candidacy phase (CHE, 2004).

In order to be awarded candidacy phase by the CHE, a portfolio needs to be prepared which details the programme design, student recruitment, admission and selection procedures, staffing for the programme, teaching and learning strategies, assessment policies and procedures, infrastructure and library resources, administrative services and post-graduate policies, registration and procedures (CHE 2004).

The HEQC then appoints a panel of peers to evaluate the application for a programme. If all aspects of the candidacy phase are satisfactory, provisional accreditation is given for the programme (CHE 2004).

A year after the first student group graduates from a programme, and provided that the HEI is able to demonstrate that all HEQC conditions have been met, accreditation status is provided (CHE 2004).

2.8.2 Department of Higher Education and Training (DoHET)

The DoHET was established in 2009 after the former Department of Education was divided into the Basic Education and Higher Education and Training Departments (DoHET, 2020). Its mandate is to promote skills development, which previously rested with the Department of Labour (DoL), and provide leadership for post-school education and training (DoHET, 2020).

The DoHET is responsible for approving the addition of qualifications to the PQM at public HEIs. Private HEIs must be registered with the DoHET (Higher Education Act No. 101 of 1997) before provisional candidacy phase is awarded for programmes by the CHE HEQC (CHE, 2004).

Once a private HEI has been accredited for a programme by the CHE, HPCSA PBEC and SAQA, an application for a qualification amendment must be submitted to the DoHET (DoHET 2016).

2.8.3 National Qualifications Framework (NQF) and South African Qualifications Authority (SAQA)

The National Qualifications Framework Act No. 67 of 2008 provides for the National Qualifications Framework (NQF). The NQF has been approved by the Minister of Higher Education and Training and is a system against which quality assured national qualifications are classified, registered, published and articulated (NQF Act 67 of 2008.

SAQA is responsible for developing and implementing the objectives of the NQF. This includes ensuring that South African qualifications meet appropriate criteria, are of an appropriate standard and internationally comparable (NQF Act No 67 of 2008). In conjunction with professional bodies, SAQA is responsible for the registration of HE qualifications on the NQF (NQF Act No 67 of 2008).

2.8.4 Health Professions Council of South Africa

The HPCSA is the regulatory body in South Africa that coordinates activities pertaining to the professional boards and serves as an advisory and communications entity for the various professional boards (Health Professions Act 56 of 1974). The HPCSA is further mandated to control and exercise authority regarding education and training and uphold standards of training and education.

2.9 Accreditation Process for EMC Qualifications

Any higher education institution wishing to present the higher certificate, diploma or degree in EMC, needs to have its qualifications approved by the Council on Higher Education (CHE), the Department of Higher Education and Training (DoHET) and the HPCSA PBEC.

The HPCSA PBEC is the quality assurer of these qualifications and has a set application process which HEIs need to follow to be accredited to present these qualifications. Institutions need to submit a letter of intent to offer the qualification/s to the PBEC which needs to be acknowledged and supported by the PBEC. Thereafter, institutions need to prepare portfolios for accreditation which need to be submitted to the CHE, PBEC and DoHET for evaluation and approval (HPCSA Form 332, 2017). The PBEC appoints an evaluation panel consisting of academic peers. This panel will review the submitted portfolio and perform a site visit after which they report their recommendations for or against accreditation of a qualification to the Education Committee of the PBEC. Once all requirements have been satisfactorily met by an institution, the PBEC send their recommendation to the CHE and DoHET, and awards candidacy phase to the institution. The institution will remain in the candidacy phase until the first intake of students has graduated and favourable reports are received from the PBEC appointed moderator (HPCSA Form 332, 2017). Accredited institutions need to submit annual reports to the PBEC as a quality assurance measure and statistical reporting purposes.

2.10 Clinical Practice Guidelines

The HPCSA PBEC published Clinical Practice Guidelines (CPGs) in July 2018 (HPCSA CPGs, 2018). This was the first time that CPGs were published for emergency care providers in South Africa, following the last protocol publications in 2006 for BAAs, AEA and paramedics (CCA and N Dip) and ECPs in 2008. The CPGs included a revised list of capabilities and medication list for each of the professional emergency care registration categories.

CPGs are statements that have been developed following systematic reviews of evidence. They include an assessment of benefits and harms of alternate care

options and aim to assist clinicians in making optimal patient care decisions (IOM, 2011).

Historically, pre-hospital emergency care standards have been based on expert opinion (IOM, 2011). This has been the accepted norm for many years as little high-quality research existed in the EMS field (Lang et al., 2012). In keeping with the advances made in all medical fields, EMS also need to strengthen their clinical practice through scientific research (Lang et al., 2012). In addition to practice guidelines being strongly based on expert opinion, many EMS guidelines have been based on studies conducted in the hospital setting with no direct evidence existing that the findings of such studies are directly applicable to the pre-hospital setting (Lang et al., 2012). The HPCSA PBEC concedes to this as well (HPCSA, 2018).

CPGs were introduced across most medical professions to reduce inappropriate practices and improve healthcare quality and safety (IOM, 2011). Many international guideline developers exist. In the UK, the National Health Service (NHS) issues between three and five major evidence-based consensus statements per year. The Centers for Disease Control and Prevention (CDC) is a major contributor to guideline publications as well, with its database hosting in excess of 400 guidelines. The World Health Organisation (WHO) is also a large contributor to the development of health-related recommendations. The National Institute of Health and Clinical Excellence (NICE) serves as an organisation that provides guidelines on health, prevention and treatment of many illnesses to the UK's NHS (IOM, 2011).

In the US, the NHTSA has been influential in supporting the Federal Interagency Committee on EMS (FICEMS) and National EMS Advisory Council (NEMSAC) in developing a model for pre-hospital evidence-based guidelines (EBG). This has resulted in the establishment of a platform to promote the development, implementation and evaluation of EBGs locally and nationally in the US as well as internationally in the EMS industry (Lang et al., 2012).

In the pre-hospital setting, the focus is on generating reliable, valid and clear EBGs that are relatively easy and uncomplicated to implement (Lang et al., 2012). The establishment of an EBG model was developed in the US in 2008 where the FICEMS and NEMSAC in conjunction with subject matter experts from the EMS industry, set

up a steering committee that provided the framework for developing EMS guidelines and protocols. In broad terms, the best available science needs to be considered when developing guidelines with allowance built in in terms of flexibility for the implementation of EBGs at a local level in the EMS industry (Lang et al., 2012).

By preparing CPGs for emergency care providers in South Africa, the HPCSA PBEC has followed international recommendations. The HPCSA PBEC appointed the African Federation of Emergency Medicine (AFEM) as a service provider to review and develop emergency care guidelines (HPCSA, 2018). The researching and writing of the current CPGs took place over a period of approximately three years.

Lang et al. (2012) recommend that guidelines be established *de novo*. This is labour and resource intensive. The HPCSA PBEC included in their communique on the 2018 CPGs that the time available and scope of the CPGs did not allow for *de novo* development of the CPGs. The 2018 CPGs were based on existing local and international guidelines. The HPCSA PBEC has advised that future revisions of the CPGs are to include local and broader evidence based research (HPCSA, 2018).

The IOM recommends that published guidelines are revised and updated as and when new evidence comes to light warranting modifications and recommendations (IOM, 2011). The PBEC is following this recommendation in that it is in consultation with various stake holders to ascertain whether the recently published CPGs need refining, addition of skills and changes in the list of capabilities and medications (HPCSA, 2018).

2.11 Conclusion

This chapter presented an overview of the development of past and current emergency care qualifications in South Africa and internationally as well as the authorities involved in accrediting emergency care qualifications. The background and importance to CPGs was described and the introduction of the first CPGs in South Africa for the emergency care profession were addressed.

3. CHAPTER 3

3.1 Introduction

Chapter two discussed the literature regarding the history and development of pre-hospital emergency care programmes and how qualifications are being professionalised both in South Africa and internationally. This chapter discusses the research design, setting, sampling process, data collection process, data analysis, steps to ensure trustworthiness and ethical considerations in the study to obtain the opinions of CCAs on the HPCSA register closure and change in CPGs.

3.2 Research Design

Qualitative studies are employed when researchers want to investigate topics in regard to how people experience an event (Agee, 2009). The focus of qualitative research is to learn about a problem or issue from participants (Creswell, 2014). In addition, a qualitative research approach is advocated by Creswell (2014) where a phenomenon needs to be explored or understood when little previous research has been conducted in a certain field.

In qualitative interviews, the researcher conducts individual interviews with participants. The interviews are unstructured and make use of open-ended questions to elicit the views and opinions from participants (Creswell, 2014), allowing for the collection of rich and detailed data (Yates & Leggett, 2016).

Grossoehme (2014), refers to qualitative research as the methodical assembly, organisation, analysis and interpretation of textual material which has been collected from verbal conversations. Questions posed in qualitative research aim to ascertain perspectives of individuals, groups or different groups (Agee, 2009). Qualitative research makes use of unstructured interviews allowing participants to voice their ideas in relation to a specific social or human problem (Creswell, 2014). Squires and Dorsen (2018) state that qualitative research affords stakeholders opportunity to share their viewpoints when evaluating new policies that have been implemented which relates to this study.

A qualitative approach was suitable for this study as at the time, no research had been published on the opinions of CCAs on the closure of their register at the HPCSA and the changes in their scope of practice, in reference to the CPGs published by the HPCSA PBEC in July 2018.

3.3 Study Setting

The research setting was within the Gauteng province. The Gauteng Province is the smallest of the nine provinces (18,178km^2) in South Africa and the most densely populated (+/- 14,273,800) making up 25.3% of the national total (South Africa Gateway 2020). Toward the end of the short course era, only two training colleges in Gauteng were accredited to present the CCA course. One was a private ambulance training college and the other a provincial ambulance training college. The Western Cape and KwaZulu Natal each had one provincial ambulance training college accredited to present the CCA course.

Registration statistics provided by the HPCSA showed that the number of CCAs registered in Gauteng exceeded the numbers of CCAs registered in the other provinces of South Africa (personal communication from HPCSA, 19 February 2020).

3.4 Study Population

The study population was registered CCAs in the Gauteng province. CCAs are the group of pre-hospital care providers whose register has been closed by the HPCSA because of changes brought about by the adoption of the National Qualifications Framework and as such are the participant group that could best inform the research questions and provide understanding to the research questions (Sargeant, 2012).

3.5 Sampling

In qualitative research the desire is to obtain rich data from interviews (Rosenthal, 2016). Sampling is guided by saturation, as detailed below. For this research, purposive and snowball sampling were used.

3.5.1 Purposive Sampling

In purposive sampling, participants are specifically recruited based on their experience related to a research question and the insight they can provide (Anderson, 2010).

To obtain access to suitable participants, a privately hosted email database was used. This private email database was established by an ECP to communicate work opportunities, continuous medical education events, post-graduate short courses and research participation requests/opportunities to its members. Members who are ALS or ECP qualified can join this email database voluntarily.

The participant information sheet was sent to the host of the private email database asking for it to be sent out to members. Interested participants were asked to contact the researcher either by email or telephonically. The database was used for initial sampling where after snowball sampling was used.

3.5.2 Snowball Sampling

Snowball sampling entails asking participants for referrals to acquaintances who would qualify as participants (Robinson, 2014). At the end of each interview, the researcher asked participants if they would be able to refer her to other CCAs who would be interested in participating in the study. All participants provided names of CCAs to the researcher.

To not infringe on potential participants privacy, the researcher asked existing participants to first obtain permission from other potential participants for the researcher to contact them for an interview. Existing participants were not remunerated for any referrals.

3.6 Sample Size

In qualitative studies, a smaller number of participants are sampled and studied in depth to allow for exploration of greater detail and richness of the data collected (WASP: Sampling in qualitative research, 2019).

The sampling process in qualitative research is said to follow a spiral process in that as data is collected, analysed and interpreted, the sample size is affected (WASP: Sampling in qualitative research, 2019). Sampling is continued until no new categories/concepts/themes are identified from the collected data, which is known as saturation (Hennink et al., 2016).

In the study conducted by Hennink et al. (2016) on 'What influences patient retention in HIV care?' their aim was to determine a better guideline for the meaning of saturation, how it can be assessed and documented for estimating sample size in qualitative research. The study specifically focused on answering how many interviews were needed to reach code saturation and meaning saturation, whether code characteristics influenced saturation and what parameters influenced saturation in estimating a sample size. Their results showed that by the first interview, more than half of the codes (53%) had been identified. After six interviews, 84% of the codes had been identified and after nine interviews, 91% of all the possible codes had been established. Based on the data analysis, their results indicate that code saturation was achieved by nine interviews or sooner.

To determine meaning saturation, Hennink et al. (2016) tried to determine whether congruence could be established between code saturation and meaning saturation. For some of the codes, meaning saturation was achieved in four interviews and for some codes, after nine interviews.

In a study conducted by Guest et al. (2006), to determine how many interviews would be needed to obtain data saturation, their findings showed that 73% of codes were identified by interview number six, and the full range of codes were discovered by interview number 12.

Based on the literature, *a priori sample* size of 14 was proposed for this study. Fourteen interviews were conducted. Saturation was yielded by interview 12. A further two interviews were conducted to ensure that no additional information was forthcoming. The categories and themes identified are discussed in detail in chapter four.

3.6.1 Inclusion Criteria

Only those with the CCA qualification were interviewed as studying towards this qualification would no longer be possible and the HPCSA would no longer allow further registration of CCAs on the paramedic register.

3.6.2 Exclusion Criteria

Any participants who held the BAA, AEA or an undergraduate degree in Emergency Medical Care were excluded from the study. BAA and AEA qualified persons were not affected by the closure of their registers by the HPCSA at the time of the study preparation, and degree practitioners are not faced with their register being closed at the HPCSA.

3.7 Data Collection

3.7.1 Data Collection Method

Semi-structured individual interviews were used to obtain data for the study. In qualitative research, an interview is defined as a deliberate conversation to collect data (Knox & Burkard, 2009). Semi-structured interviews allow for increased flexibility and individual responses by participants (Jackson II et al., 2007). The interviews should also be conducted in a similar way with all participants (Knox & Burkard, 2009). Interviews encourage participants' individual expressions and do not rely on set, closed-ended questions (Cairney & St Denny, 2015).

Face-to-face interviews were an appropriate data collection method, as the researcher could guide the interview so that the prepared open-ended questions would be spoken about by participants (Creswell. 2014). Interviews also allowed participants to share their individual viewpoints without being influenced by other participants which may have occurred during focus group interviews.

3.7.2 Data Collection Tool

Data collection tools refer to interview guides and field notes (Hamilton & Finley, 2019). An interview guide was prepared which the researcher used to direct the individual interviews (Annexure A).

3.7.3 Interview Guide

An interview guide is a semi-structured set of specific questions related to the research that participants will be able to answer with relative ease as they are considered to be experts in their field (Hamilton & Finley, 2019). The interview questions should be written so that they invite participants to share their thoughts and insights. Interview questions should be asked in a conversational style and do not need to be asked in the same order as written in the interview guide (Hamilton & Finley, 2019). An interview guide assists in curbing bias so that questions are not posed to participants in a manner that will lead a participant to answer in a certain way (Sargeant, 2012).

Hamilton and Finley (2019) recommend preparing six to eight primary questions for individual interview guides. An interview guide (Annexure A was prepared by the researcher. The interview guide consisted of five open-ended questions with one question having two sub-questions. A list of probing questions were included in the interview guide. Probing questions are used as follow-up questions to main interview questions when further clarification or elaboration are needed to participant answers (Goodell et al., 2016). Probing questions were used from time-to-time by the researcher during interviews when further in-depth information was needed (Annexure A).

3.7.4 Field Notes

Field notes are the documentation of observations and descriptions noted by the researcher during an interview (Reeves, 2013). These can be noted down after conclusion of an interview. An example of a field note would be the emotions felt by

the researcher during an interview or details of the physical layout of the area where an interview was conducted.

The researcher kept a journal in which thoughts and feelings were recorded after the completion of interviews. Keeping this journal contributes to researcher reflexivity to assist in delineating participant contributions and researcher contributions (Nutt Williams & Morrow, 2009).

3.7.5 Data Collection Process

Participants were either obtained from the ALS database or from referral of participants. The researcher contacted suitable participants to set up a convenient date and time to conduct interviews at a venue of each participant's choice. Participants were informed that the venue would need to be private and suitable for recording the interview (Polit and Beck, 2012). Interviews were held at either a private higher education institution's boardroom, at operational bases in an office or boardroom or at participants' residences.

Prior to starting an interview, participants were provided with the information letter (Annexure B) and the Human Research Ethics Committee Clearance Certificate (Annexure C). The participants were informed that the interviews needed to be audio recorded so that transcripts could be prepared. Participants were then asked to complete the interview consent form (Annexure D) and audio-recording consent form for the interview (Annexure E). A demographic information sheet (Annexure F) was completed by all participants. The consent forms and demographic information sheet were completed voluntarily by the participants.

All participants were advised that they could stop the interview at any time if they wished to. Participants were also advised that a psychologist could be contacted should they become stressed during or after the interview (Annexure B).

Prior to starting with the questions forming part of the interview, participants were put at ease by an informal discussion between the researcher and participants and were offered some refreshment.

Once all the interview questions had been addressed, participants were given the opportunity to make additional comments. Frequently this resulted in valuable additional data.

Interviews were closed by asking participants if they could be contacted again to clarify any information provided (Polit and Beck, 2012). All participants agreed to this. Participants were also asked if they could refer the researcher to any other CCAs who would be interested in participating in the research. Most participants provided between two and three names.

The interviews were conducted over a time period of nine months. Interviews ranged from a minimum time of 11 minutes to a maximum time of 46 minutes.

3.7.6 Limitations

Using a boardroom or office created a rather formal environment for some of the interviews which may have hampered the flow of interviews at the start. After a few minutes, participants seemed to have warmed up to the researcher, and spoke more freely. A few interviews were interrupted by phone calls received by participants. Audio recordings were stopped for the duration of the phone calls which were not lengthy. The phone calls did not seem to hinder the course of interviews.

As the CCA population consists of a relatively small community, the researcher knew some of the participants beforehand.

3.8 Data Analysis

Sergeant (2012) explains qualitative data analysis as the interpretation of data and the resulting themes which facilitate understanding of the study. This is iterated by Creswell (2014) who describes that the data analysis process in qualitative research involves steps from the specific to the general. Reeves et al. (2013) state that during data analysis, three stages are followed. These are description, analysis and interpretations. Description involves the transcribing and organising of data (Reeves et al., 2013; Creswell, 2014). Analysis of the data involves the reading of the transcripts to gain an overall understanding of the data and identifying relationships

in the data through coding (Reeves et al., 2013; Creswell, 2014). Following analysis, interpretation of the data takes place which entails the explanation of themes (Reeves et al., 2013; Creswell, 2014).

3.8.1 Data Transcription

The transcribing process forms part of data analysis (Tessier, 2012). All interview audio files were transcribed verbatim into written text and anonymised by allocating code names which were Participant 1 through 14. Code names were allocated to ensure confidentiality of all participants (Rosenthal, 2016). The transcripts were then reviewed by the researcher for accuracy and corrections made where necessary.

3.8.2 Coding

Transcripts must be thoroughly read multiple times so that the researcher becomes completely familiar with the data of each transcript (Dierckx de Casterlė et al., 2011). Reading of the transcripts allows the identification of recurring ideas which are termed codes.

Coding refers to the labelling of chunks of data in transcripts (Goodell et al., 2016) which is done by writing one-word summaries in the margin of printed transcripts (Creswell, 2014). Sargeant (2012) calls this process deconstruction of data, where transcripts are read and reread to break the data down into categories or codes that describe the content.

All transcripts were manually coded by the researcher. A code list was developed during the coding process of the transcripts.

3.8.3 Identification of Categories and Themes

An inductive approach was used to identify patterns, categories and themes (Creswell, 2014; Yates & Leggett, 2016). The categories were deduced from the code list that had been prepared. Sargeant (2012) recommends that coded data and categories are compared across transcripts to purposefully identify similarities

and differences among them. Themes are the major findings in a qualitative study (Creswell, 2014).

3.9 Measures to Ensure Trustworthiness

Goodell et al (2016) define trustworthiness as the believability or trueness of data and findings. Trustworthiness is the quality of the data analysis (Sargeant, 2012). It may be equated to the terms validity and reliability in quantitative research (Goodell et al., 2016). Trustworthiness is ensured through credibility, dependability, confirmability and transferability.

3.9.1 Credibility

Polit and Beck (2012) link truth of the collected and analysed data and its interpretation to the credibility of a qualitative study. The researcher ensured credibility by asking clarifying questions during interviews and ensured verbatim data transcription of all recorded interviews.

3.9.1.1 Prolonged Engagement

Polit and Beck (2012) advise that sufficient time needs to be committed to the collection of data. This will foster a more in-depth understanding of the study and its participants. It will allow for testing against any misinformation or distortions. Prolonged engagement also ensures that saturation of data occurs in particular reference to categories identified in a study (Polit & Beck 2012). The researcher had in-depth knowledge of the CCA course as she was involved in teaching and coordinating the course for a period of eleven years.

3.9.2 Dependability

Polit and Beck (2012) term dependability as the stability of collected data over time and conditions. After conducting the 14 interviews, data saturation had been achieved, which contributed to the dependability of the study.

3.9.3 Confirmability

Confirmability in qualitative research is the likeliness that two independent persons would analyse and interpret data in a similar way and derive similar relevance and meaning from the same data (Polit and Beck, 2012). The interview transcripts were co-coded by the researcher and her supervisor which gave rise to the categories and themes.

3.9.4 Transferability

Transferability is described by Polit and Beck (2012) as judgements about the findings from a study and if they can be related or generalised to a different setting or group of people. Polit and Beck (2012) state that transferability is achieved through thick description. This entails the description of the research setting, participants as well as observed transactions. The narrative provided in Chapter four includes participant demographic information and findings of the categories identified from the analysed interview transcripts.

3.10 Ethical Considerations

3.10.1 Study Permission

Permission to conduct the study was obtained from the following committees:

- University of the Witwatersrand Faculty of Health Sciences; Title Approval (Annexure G)
- University of the Witwatersrand Faculty of Health Science Postgraduate Assessment Committee
- University of the Witwatersrand Human Research Ethics Committee (Medical); Clearance Certificate No. M171042 (Annexure C)

3.10.2 Consent

Consent forms to participate in the research (Annexure D) and for the interview to be audio-recorded (Annexure E) were signed by all participants prior to starting an interview. The consent form contained the title of the study, allowed for participants

to ask any questions and advised them that they could withdraw from the study at any time.

3.10.3 Anonymity and Confidentiality

Participants were informed in the participant information sheet (Annexure B) and verbally prior to starting the interview that their identity would remain confidential through the assigning of code names. Participants' demographic information was also kept private with only the researcher and supervisor having access to this information.

3.10.4 Study Results

Participants were advised in the participant information sheet (Annexure B) that a summary report of the study results would be made available to them by email if they wished to receive it.

3.11 Conclusion

This chapter discussed the study design and methods used by the researcher to explore the opinions of CCAs on the closure of their register and change in CPGs. The sample size and sampling methods were described. The process of how the data were analysed was discussed and the measures to ensure trustworthiness were described. Ethical considerations were addressed in the closing of this chapter. Chapter 4 presents the findings and discussions of the study.

4. CHAPTER 4 – PRESENTATION OF FINDINGS AND DISCUSSION

4.1 Introduction

In this chapter the findings of the study and a discussion of the findings are presented. Fourteen CCAs were interviewed in one-on-one interviews to determine their opinion of the register closure by the HPCSA and the change in CPGs.

During the data analysis, three main themes were identified. Each theme and their categories are discussed with supporting quotations from the study participants.

4.2 Demographic Information of Participants

Fourteen participants partook in the study. Before starting the interview, each participant was asked to complete a demographic information sheet (Annexure F). A summary of this information is presented below.

Table 4.1 - Information on Participants Gender, Age Ranges and Years of Work Experience (n=14)

Gender of Participants		
	Females	Males
	3	11
Age Ranges of Participants		
21 – 29 years	2	1
30 – 39 years	1	7
40 – 49 years	0	2
> 50 years	0	1
Years of Work Experience of Participants		
0 – 5 years	2	4
6 – 9 years	0	7
10 – 15 years	0	1

All participants held the CCA qualification. Thirteen of the participants were employed by private EMS companies and one participant worked as a volunteer. Three participants held a tertiary qualification not related to the paramedic field.

4.3 Additional Notes Regarding the Interviews

During the first two interviews, both participants mentioned that one of the concerns was the removal of the intubation procedure from their scope of practice. This prompted the researcher to ask the question “Do you feel comfortable in managing a patient’s airway using techniques other than intubation?” The question was then posed to all further participants during their interviews to gain their opinions on this.

4.4 Themes and Categories

Three main themes were identified. These were:

1. Education opportunities
2. Personal impact
3. Concern for profession

The themes were derived from the categories that emerged during the data analysis process. The categories for the three themes are presented in Table 4.2

Table 4.2 - Themes and Categories

Themes	Categories

Education opportunities	• Lack of accessible study options
	• Alternate study options
	  ○ Part-time and modular studies
	  ○ Studying out of industry
	• Recognition of prior learning
	• Affordability of further studies

Personal impact	• Job security and work availability • Growth limitation • Uncertain future • Coping with change
Concern for profession	• Loss of qualified paramedics • Best patient care concern

	• CPG evidence and South Africa • CPG communication and implementation • Change in scope of practice

4.4.1 Education opportunities

Four categories contributed to the development of the theme 'education opportunities'. Each category is discussed with supporting comments from the participants.

4.4.1.1 Lack of accessible study options

The majority of the participants stated that they felt that there was no clear pathway in place for them to upgrade their existing short course qualification to a formal HE qualification. In order to obtain an undergraduate degree in Emergency Medical Care, qualified CCAs would need to commence studies at a first year undergraduate level. Graduates from undergraduate degree programmes in Emergency Medical Care register with the HPCSA as Emergency Care Practitioners (ECPs). This acronym is referred to by participants in terms of the degree qualification.

Participants made the following comments pertaining to this:

"…it's quite hard to drop what we had and if we want to continue we've got to then start from the beginning. There is no way to really merge into the ECP scope…If you want to go do an ECP or be qualified as an ECP, you must start at day one…" (Participant 5)

Participants also expressed frustration that they were 'good enough' to teach undergraduate ECP students during their clinical learning, but would not be given any recognition for their experience as CCAs should they opt to study the undergraduate degree in Emergency Medical Care.

"Uhm, it's just difficult for me to teach a fourth-year B-Tech how to treat a patient but they want to put me in this first year, in the university" (Participant 9)

Another participant made the following remark:

"I mean, there are guys that are studying now, they've finished the course, they've done the time, they've probably trained ECP students on their cars and then they went and had to start at first year" (Participant 12)

4.4.1.2 Alternate study options – modular and part-time studies

Participants stated that they would like to continue studying in the emergency medical care field, but advised they would not be able to study on a full-time basis. They indicated that a part-time, modular approach would be ideal in order for them to obtain a HE qualification in the emergency medical care field. The following is a comment regarding part-time study option:

"I think that maybe if the four year degree had more of a leeway for it to be a part-time course, even if was a three or four months at a time, I think it would be…, if it was modular based." (Participant 8)

Regarding the modular study option, the following comment was made:

"If they do put in an upskilling programme, maybe it should be modular based because not everybody has got time to do full time studies." (Participant 11)

Another participant suggested the following option for modular studies:

"…that there is an equivalency conversion where it can be modular similar to how KZN BTech worked at one point where you did your final year of NDip / BTech over two years part-time type (of) thing." (Participant 12)

4.4.1.3 Alternate study options - studying out of industry

A number of participants indicated that they are exploring study options out of the emergency medical care field. Participants stated that they would consider studying in the management field as well as being interested in studying in the education field.

"I reckon in the next year or two years or three years even, my plan would be to definitely further my education, whatever that is in the business side, the education side." (Participant 4)

Other study options being considered by CCAs are the accounting or human resources fields. One participant commented as follows:

"If I don't want to be operational and want to be involved in whatever it is, something else in the company, well then I've got to go study something else like accounting or HR, become logistics or something like that in order to find a different realm with the greater EMS environment. Incident management or something like that, where…perhaps that is an option. Probably another option is to go more into the educational field and go teach courses. However, that's very limited now. It's going to be things like ACLS, PALS and BLS, First Aid." (Participant 5)

4.4.1.4 Recognition of Prior Learning

The majority of the participants showed frustration in that there was minimal recognition of their prior studies completed in the Basic Ambulance Assistant (BAA), Ambulance Emergency Assistant (AEA) and Critical Care Assistant (CCA) courses by HEIs. In addition, it seems that minimal acknowledgement and recognition is given to CCAs in terms of the work experience they have gained over the years working as operational paramedics. The following are comments from two participants:

"But, I would prefer…ideally like the fact that experience did play a role. So I've been qualified three years as an ALS, working full time as an ALS, got ICU, HEMS and fixed wing experience which I believe has grown quite a lot. Worked in different areas. I think if they can…if experience can give us a bit more credit in the sense of furthering our education." (Participant 3)

"If there was just a little bit of recognition for some of the stuff that we have done before. Even if it was just a practical component. I can't see anything more frustrating than going to go and sit on a government ambulance for two years where

they don't even carry a glucometer, coming from the skill set that you had and the things you were practicing." (Participant 8)

Participants also referred to Recognition of Prior Learning (RPL). It did not appear that participants had extensive knowledge regarding RPL purposes and processes.

"There's very little assurance that there will be RPL for subjects. So it's quite difficult to understand and obviously the subjects you get RPL for, you won't pay for, but it's expensive, number one. Number two: It's demanding. And I think it's a little bit unpleasant that there is very little recognition of work that's been done until now." (Participant 5)

4.4.1.5 Affordability of further studies

The majority of the participants voiced concern about the financial cost involved in pursuing HE studies in the emergency medical care field. Student loans were mentioned as a consideration to study. Participants were aware that a student loan would come with an additional expense in terms of repayment and that this would not be easily accomplished as EMC personnel were not high-income earners.

"Things are somewhat expensive. We don't get paid the best in the entire world and to have that extra pressure now…working as much as we can, but studying over the next four years in a full time capacity really…and the financial reward in the end is not something wow. You can't suddenly pay back all, you know. If you take the student loans, you're going to pay the student loans for quite some time. It's going to be very difficult and I don't know if it's going to weigh up in the end. I don't know if it's going to be beneficial." (Participant 5)

Participants also stated that employers would not be able to afford to send employees to study full time for a four year Bachelor Degree in Emergency Medical Care. Participants made the following remarks regarding this:

"No company is sending you on a four year degree. They are not going to pay you to go study a four year degree. So you're going to have to leave your company, pay

for varsity, and go back to varsity at the age of 40…it's really difficult. It's really tough." (Participant 4)

4.4.2 Personal Impact

Four categories made up this theme. These were job security and work availability, growth limitation, an uncertain future and coping with change. Each category will be described below with supporting comments made by participants.

4.4.2.1 Job security and work availability

There were differing opinions given by participants on job security and work availability. Some participants felt that there was no concern for their current jobs but that the work environment would possibly change.

"No, it's like…again with the uncertainty within the company itself, but I'm not worried about my current job. I don't think I'll be losing it…the position, because of it from what I understand and from what I've been told I am secure from where I am but going forward new CCAs will not be hired or new hires won't be CCAs, and if they are, then they will be on an ambulance, not an RV." (Participant 3)

Another participant stated the following:

"No, I was in the beginning, but with us being put on the same scope as the new ANTs, I think there will always be work. It will just be a different kind of work as to what we were used to. In the past you got CCA, BLS, ILS and ALS and ALS was on a response car and BLS and ILS were on an ambo. Now the dynamic is just changing with regard to, they'll have ALS ambulances because there'll be more of them so I think there'll always be work for ALS, it just won't be the work that I was used to when I first qualified being on a RV. "(Participant 1)

Others felt that it was already evident that fewer CCAs were being employed, with a definite preference being given to degree qualified practitioners.

"I think that number one we're all kind of stressed if we are going to have work still. It's been discussed that if you apply now for an ALS position, if you are not an N Dip or ECP or Dip EMC or ECP that they won't employ CCAs because of where do we fit anymore." (Participant 6)

International employment opportunities seem to also be affected for CCAs, as evidenced by the following comments:

"Well, I think it has already. Not necessarily for me right now, but I know for my friends it absolutely has. A lot of people have been overseas on contracts and stuff like that and those have been cancelled because of the closing of that register. So it definitely has already affected employment opportunities. I think there is going to be a lot more employment opportunities for ECPs going forward." (Participant 4)

Another participant also stated that preference was being given to degree qualified practitioners in the international market:

"What is the trend that I have seen is previously whether you had a CCA certificate or whether you had a national diploma, you could still get employment overseas. Now that has kind of tapered down and they directed it more towards the bachelors EMC candidates, so that concerns me a little bit." (Participant 2)

Concern was also voiced in regard to the CCA qualification not being as valuable as it may have been prior to the change in scope of practice.

"I think it affects more people that are…this is their sole job and it's something that they only know. It does affect them from what I understand, is that a lot of them want to immigrate or go to other places or seek other job opportunities. But because now their qualification has been so watered down that it doesn't hold any credibility in the industry they find that it's going to be difficult for them to find a job. "(Participant 11)

4.4.2.2 Growth Limitation

Participants indicated that the register closure for CCAs and the change in scope of practice had limited their opportunities in terms of obtaining management positions in

the industry or branching into the EMC education field. These are predominant areas into which degree qualified practitioners can articulate into. The following are comments made by participants:

"I do feel that the growth aspect has kind of been stunted. And I understand it completely that as a company, this is a personal aspect, it does affect me. I do feel that I will have to work a lot harder, work a lot longer to be promoted into a managerial position where an ECP for example, would easier be promoted as, like I say, in a company perspective you'd obviously want (those) who are current, up-to-date with the most amount of skills in higher positions than…" (Participant 3)

Participant 14 expressed a similar viewpoint:

"You can see that already in management positions. They only want that (degree qualified practitioners) as opposed to ten years ago they weren't too worried." (Participant 14)

Participants also mentioned that moving into more specialised areas in the pre-hospital setting was more limited following the change in scope of practice. Examples of these specialised areas include the helicopter emergency medical service (HEMS) and flying on fixed-wing ambulances to repatriate patients internationally.

"And I think job wise it affects us as well because currently in South Africa a lot of posts are, where it previously it used to be open for paramedics, now it's not open for paramedics, as well as people like HEMS and fixed wing and things…although we've got the experience to do it, what we doing, we can't get onto HEMS and Fixed Wing as easy as we used to. Basically it has been blocked for us because of the ECPs and our scope of practice change." (Participant 13)

4.4.2.3 Uncertain future

Participants stated that there was a fair amount of uncertainty since the CPGs were published. The uncertainty seems to have stemmed from there now being unsureness in terms of the revised scope of practice.

"I don't know. I don't know how it's going to affect me as yet as I feel like there is a lot of uncertainty about what this closure of the register actually means. People don't know what it actually means. We've got the new CPGs and we kind of know what the next little while is going to be. If they get approved and everything falls into place, but what happens after that I don't know." (Participant 4)

Insecurity came across regarding the management of certain patients given that the EMS in South Africa often is limited in terms of resources.

"For the CCAs I think it's quite a scary time. People are very unsure as to what's coming up. That's why I kind of went on to: where do we go from here? I don't know. I think people are uncomfortable. People are quite angry because they are feeling very insecure. They foresee difficulty. We know that we don't necessarily have the best resources out there to assist us. We're going to call for help, and there isn't the availability of 25 helicopters like they have in other countries and stuff. There's one helicopter, two helicopters around." (Participant 5)

4.4.2.4 Coping with change

The change in scope of practice for CCAs has evoked mixed feelings by participants. Generally, participants indicated that there was anger in the industry especially with regards to the deep sedation intubation procedure no longer being included in the scope of practice for CCAs. No participants showed this anger during interviews. With the change in scope of practice and revised CPGs, a number of participants indicated that they needed further clarity regarding the CPGs.

Participant 5 commented that "*it's quite confusing for me. Quite uncomfortable. I feel very unsafe in the environment. I'm not sure what I'm going to do in the next patient that I get who I'm placed in a difficult situation with…I don't know; it's quite hard. And I'm not a fan of deep sedation, so I understand. I still feel that I'm in a very difficult position because I don't know what I can do with the patient in the end.*

Participants seemed to be leaning toward accepting the change in their scope of practice.

""I'll be very honest. In the beginning I was very upset. I was like how can they do this? And then I sat down and thought about it, and one skill doesn't define you. So for instance, the big talk on everybody's minds is that CCAs may no longer intubate. But if you look at it from my standing, I actually went through cases and looked at it. Since I qualified, I deep sedated and intubated three times. And the rest of the time I wait for RSI and they come and perform the skill. So it's good in my opinion, it's very good, because if it was my mom or dad, I would want the correct medication to do the correct thing." (Participant 1)

Participants showed level-headedness in terms of their change in scope of practice. Most portrayed viewpoints in support of the CPGs and that they rightly focused on the patient's best interest.

"Personally it's not an issue for me. If I have to give up one skill to gain a whole bunch of others, I'm glad to do it anytime." (Participant 3)

One participant commented that some of the reactions by fellow CCAs appeared to be emotional about the best practice evidence used in producing the CPGs and the ensuing scope of practice not being fully considered.

"I think some of their answers are very emotional. It's just like we won't intubate anymore and patients will die. You don't understand the science behind it. I think it's childish giving a reaction like that as opposed to using scientific information to validate your argument and trying to change their mind-set is difficult. They're emotional about it." (Participant 2)

4.4.3 Concern for Profession

Five categories contributed to this theme. The categories are loss of qualified paramedics, best patient care concern, CPG evidence and South Africa, CPG communication and implementation and change in the scope of practice. Each category will be discussed below with supporting comments from participants.

4.4.3.1 Loss of Qualified Paramedics

The majority of the participants indicated that there would be a loss of qualified paramedics in South Africa to either other industries or to the overseas market such as the UK or the Middle East, affectionately dubbed by emergency care providers as "sand land". Participants said that their CCA qualification was still recognised in these countries.

"I think already so many have left the country. If I look at my class, I can't think of the numbers exactly, but somewhere around half of them are not practicing on the road anymore. That's quite a large number from one course, qualified and four years you have fourteen people, you don't have seven of them operational anymore. In four years that's quite a lot." (Participant 5)

There is also the financial attraction of doing contract work overseas and working in the Middle East.

"I mean I have already got another two that are looking at leaving. So, one wants to go to the cruise ships. They say they will just make more money there. Because, now it is obviously just a money thing for them. There is no…there is no passion to go further.' (Participant 9)

Leaving South Africa for greener pastures is not only a trend with CCAs, but also with ECPs.

"And I mean as a manager, we have lost one, two, three ECPs to the desert. They wait for two years and they are gone." (Participant 9)

The earning potential when working overseas is far more lucrative than when working for a local private or public EMS provider. Participants also mentioned that EMS salaries did not compare to what other professionals were earning. This may drive qualified EMS personnel from South Africa in search for better paying work. Participant 11 shared the following regarding EMS earnings:

"I'm giving you an example now for BTech, and you come out, and the BTech is not earning what a chartered accountant would earn or a BCom graduate would earn.

And you would have to work extra hard to get to that level but that is why the volume of BTech's are now shifting over into other countries." (Participant 11)

4.4.3.2 Best Patient Care Concern

Participants raised concern regarding the change in scope of practice for the paramedic registration category with the recommendation that patients should no longer be intubated using non-drug or deep sedation techniques (HPCSA, 2018). Only ECP registered practitioners are able to intubate in the pre-hospital setting using neuromuscular blocking agents (HPCSA, 2018). Participants indicated that in an urban setting patients could be managed without intubation as hospitals were relatively close by that patients could be transported to.

"I don't care what your qualification is, pre-hospitally in an urban setting, most patients should not be intubated on the road." (Participant 8)

A few participants voiced concern for situations where patients would need advanced airway management i.e. endotracheal intubation in an urban setting and ECP assistance not being available at times. Airway management and endotracheal intubation were said to be time sensitive in certain pre-hospital emergency cases.

"I'm worried about the one patient…in the one out of a million that we could have helped, maybe that we can't. It's nice to say that we can help the rest of them with the analgesia stuff but that one patient, it kind of gets to you when you have that patient and you can't do anything to help with airway regards. There's usually no help coming and if they do, they are really far away." (Participant 6)

Another participant shared this concern:

"Then obviously the intubation. I understand where they went with the intubation, especially in (names EMS provider), we have tried to avoid deep sedating patients, especially patients with head injuries, where we try and get ECPs for RSIs. But we have come to those cases even though we have so many in (names an area), there's still not one that can be with you. Maybe twenty minutes? Can your patient handle

that long without…if they need a definitive airway can they handle twenty minutes without a definitive airway?" (Participant 7)

Concern was raised for patients in rural settings where transport times are extensive in terms of getting a patient from a scene to an appropriate hospital. Resources are also limited in many rural areas. One participant made the following comment:

"Like I said, my primary concern around the airway management aspect is the rural settings, and in South Africa we have two hour, three hour from scene to hospital. There is no ECP. There is no heli, there is nothing. There is not even a clinic, and if you are going to stop at the clinic, you are definitely not going to find RSI drugs." (Participant 8)

Participants also raised concern that some CCAs would elect to perform a more invasive procedure to manage a patient's airway, following intubation no longer being recommended. The CPGs include the skill of surgical cricothyroidotomy on the paramedic scope of practice (HPCSA 2018). Concern exists that this procedure would be performed unnecessarily where a less invasive procedure or skill would have sufficed or that ECP assistance would purposefully not be requested.

"Because if you say I can't intubate this patient, then they are just going to be cric-ing the patient, in theory. And that's probably not as good for the patient as getting a simple intubation if the patient needs intubation." (Participant 4)

Participant 5 shared this concern:

"I feel that a lot of cric's will be done, possibly unnecessarily. So I think we will unnecessarily do a cricothyroidotomy, one because it's maybe an aggressive skill that they can do as payback because they can't do the ET intubation. I kind of suspect that."

Participants also commented that the HPCSA would struggle to control the recommendation of intubation with deep sedation no longer to be performed. One participant made the following remark:

"That's the one thing I'm worried about. How are they going to control it? Like how do you stop the guy in (names an outlying area) from giving thirty and thirty that he still draws up in the same syringe and intubating a patient?" (Participant 1)

4.4.3.3 CPG evidence and South Africa

Participants observed that the evidence included in the CPGs frequently referred to international references. Questions were raised whether these references were relevant to the South African setting and if the recommendations by the CPGs were implementable.

"I believe the CPGs are great, however there is some…you can see it's been written or not written or copied, I don't know, but not written by operational people clearly. This may be great for an Australian first world country where they have many prehospital retrieval doctors and prehospital retrieval really highly qualified paramedics compared to this country where we are really short-staffed and don't have such highly qualified people in the prehospital environment." (Participant 4)

Another participant made the following comment in terms of the CPGs being for the overseas setting:

"So coming back to your question as well, the CPGs are aligned or designed more so from an international standard. A lot of the literature we draw on is from international standards and guidelines. Have we made it specific for South Africa?" (Participant 11)

Another critique on the CPGs relevance to the South African setting included the following:

"I mean if you look at when the last update was published, it was ten odd years plus that people could have been doing proper South African based pre-hospital research as opposed to if you look at all the referees at the back it's a very Western Cape dominated document and with a lot of influence from different publications around the world. So I've always said, South Africa tries to fix third world problems with first

world solutions and we don't match what we have to what we want to have." (Participant 12)

4.4.3.4 CPG communication and implementation

The majority of the participants stated that the communication for the CPGs was done poorly by the HPCSA.

"I think from the information they have put out its not user-friendly for the end-user. I think some things are for our interpretation from the person who is reading it. I think things are maybe not as easily understood as they necessarily want it to be. I think communication has been quite poor on their part, that they haven't necessarily told us exactly what the intentions are. You know, even when they sent out that SMS fairly recently, they sent out a simple SMS, but did not have much information to the SMS. It was just like 'we're doing it'. I think people would buy into the process a lot better if they understood why and what the intentions are. So I think that could have been done a little better, not that the approach needs to be soft and cuddly, but I think it certainly needs to be something that we can understand and we can buy into because it makes sense and it's important for us. I think the guidelines were not clearly written so some confusing stuff that chops and changes a little bit. Even the format that it's been put in is something when I printed the document, it's got funny lines everywhere…it's just not a pleasant document to read, which is also a bit challenging." (Participant 5)

In addition, participants voiced concern on how the CPGs were going to be implemented as the revised medications had not been approved by the South African Health Products Regulatory Authority (SAHPRA).

"I think there is a lot of confusion. I think that is the biggest thing, because cool, they are here, and theoretically they implement it, but how? Medication (that has) not been approved by the medications board yet. Do we have the skills? Don't we have the skills? Have they been taken away?" (Participant 8)

Another area of concern mentioned by some participants was that they were experiencing difficulty at hospitals when handing patients over to doctors where an

advanced airway was indicated in patient management. When CCAs explain that they are no longer allowed to intubate patients in the prehospital setting without RSI, the doctors indicated that they were not aware of this.

"And then at the hospitals, are our biggest issue now because we are getting flak from the doctors 'why isn't this patient intubated?' I've had three doctors yell at me now 'why isn't this patient intubated?' and then I'm like well, I couldn't get an ECP, 'but don't you have ALS on the road?' But then I am the ALS. And they are not even aware of the new changes in the scope of practice because we get stepped upon at hospitals because why isn't the patient intubated? (Participant 7)

Another participant commented that some of the public hospitals at times refused to accept a severely ill or injured patient who was not intubated

"And our other issue is that we get to hospitals now and we are the ones getting into trouble because the patient doesn't have an airway or how could we transport like this or why we didn't. And some government hospitals won't even accept the patient if the patient is not intubated. So it's tricky." (Participant 6)

4.4.3.5 Change in scope of practice

In general, participants were positive about the change in scope of practice. This is echoed by the following statements:

"I think the change with the CPGs is brilliant…it will be better for the public with regard to getting better treatment." (Participant 1)

And:

"Mostly good actually. I think we can benefit a lot more patients, especially the everyday, day-to-day patients with the added medications that we got on the scope." (Participant 6)

Participants indicated that the addition of more analgesic agents to the paramedic scope of practice would allow them to provide better patient care.

"You can still do your job. You can do it better. Ninety percent of our calls are pain management. I mean where we are sitting now, there are seven old age homes around us. We used to do majority femur fractures and neck of femurs. So pain management is a big thing and they've sorted that out. You can treat patients at a better level now." (Participant 1)

Another participant said the following regarding analgesic agents:

"The fact that they have increased your analgesic drug regiments is fantastic and is really important and it's about time what we move away from just opioids and Entonox call it. It's about time." (Participant 4)

Another positive comment regarding the expanded medication scope was the addition of oxytocin for the management of certain obstetric emergencies:

"I mean oxytocin and that I think is a good thing, especially, even around here, in the urban city environment. But especially in the more rural areas if there is a paramedic that can administer it…" (Participant 10)

The majority of the participants indicated disappointment regarding the intubation skill being removed from the paramedic scope of practice with no direct opportunity being in place to obtain the neuromuscular blocking medications to continue being able to perform this skill in the prehospital setting.

Participant 1 remarked: *"I've obviously had a lot of discussions with CCAs, like a lot, and I'm not going to lie, ninety percent are against it because they are losing intubation."*

One participant questioned that as other medications were being added to the scope of practice, why were neuromuscular blocking agents not being included as well, as CCAs had been deemed competent in the past to perform endotracheal intubation in the pre-hospital setting.

"The negative part would be the intubation part. My questioning behind it is, if we are allowing the candidates to do the pharmacological upgrades to get, for example, ketamine and everything, what is the difference in allowing them to have rapid sequence induction. Understanding it's a paralytic, understanding it's deemed an anaesthetic death, but I'm sure if the practitioners have been competent enough all along to do the intubation, why all of a sudden say no, you are not competent?" (Participant 2)

One participant mentioned the following regarding the intubation procedure:

"On the intubation stuff, if you would have asked me a year ago, I would have said it doesn't matter to me because I barely do any intubations or patients that I need to, but I must say that in the last four shifts I had six patients that I called ECP assistance for and two out of the six I didn't get any and had to go to hospital without an airway which causes some issues."(Participant 6)

When asked if participants were comfortable with managing a patient's airway without being able to intubate, the majority of the participants indicated that they would be able to do so, by drawing on their previous experience and prior qualifications where intubation had not been part of their scope of practice.

"Yes I would. It's one tool out of your arson that they are taking away. It's not that you can't manage airways, you just can't intubate. You still have LMAs. Simple head-tilt-chin-lift, jaw-thrust, turning them lateral, OPAs that type of thing." (Participant 1)

Another participant concurred with this by saying the following:

"Yes, I was a BAA and an AEA before I became a CCA. I was in the industry for five years before I had intubation available. The areas that we covered are large distances, so I turned patients lateral, suctioned. There are other options. So yes, I'm comfortable, I've done it; I've seen that it works. I'm comfortable with it, and I still do it now." (Participant 3)

This was contradicted by one practitioner who said that training would potentially be needed on the placement of supraglottic airways (SGAs). Laryngeal mask airways (LMAs) are classified as SGAs.

"Yes, maybe, because I mean, even, even putting an LMA in, you are still going to get a gag reflex. And I mean how are you going to control the gag reflex now without now starting to give paralytics and all those thing(s) and that." (Participant 10)

Practitioners also commented that the revised scope of practice no longer included the application and analysis of 12-lead ECGs, but still being allowed to administer the medication glyceryl trinitrate. Concern was raised as administering this medication could be harmful in certain patients if a 12-lead ECG could not be performed to rule out pertinent contra-indications.

"The sudden removal of the 12-lead ECG component from all other practicing ALS. Because it has been a diagnostic tool for so long. We've gotten used to it. And it has benefitted patient outcomes. So now all of a sudden it's been taken away; you can't use a 12-lead ECG but are giving a patient nitrates. It doesn't make sense. But then again just a question how they came about it." (Participants 2)

Another participant shared the same concern:

"And then there is the 12-lead which is a big concern as we're still allowed to be giving cardiac drugs in the sense of GTN. GTN we were obviously taught that you must do a 12-lead. You have to do a right-sided 12-lead as well and before you give GTN. Now allowed to give GTN, but we're not allowed to do a 12-lead. I can understand the reasoning behind it, misdiagnosis, mistreatment of that, but in the same sense how does it make sense that we are allowed to give medication but not diagnose properly to give that medication." (Participant 3)

The revised scope of practice for paramedics no longer included the application and interpretation of 12-lead ECGs, the ability to perform neonatal transfers and the ability to administer Lignocaine Hydrochloride systemically. The NDoH and HPCSA PBEC concluded after a meeting that these three capabilities/interventions would remain as part of the paramedic scope of practice (personal communication, 2018).

The HPCSA PBEC will still formally communicate these revisions. The researcher informed participants of this either during or after conclusion of the interview.

4.5 Conclusion of Findings

This part of the chapter presented the findings of the analysed interviews and their categories and themes. The derived themes are discussed in the following section.

4.6 Discussion of Findings

This study was developed in lieu of the short course pre-hospital emergency care training routes coming to an end in South Africa. This meant that AEA qualified providers would no longer be able to apply for and study toward the historically esteemed ALS CCA qualification. The focus of the study was the opinions of CCAs on the register closure and the change in CPGs. Interviews with fourteen CCAs and analysis of the interviews resulted in the development of three themes from the categories identified in the study. These themes were Education Opportunities, Personal Impact and Concern for the Profession. The various categories making up the themes are discussed below.

4.6.1 Education Opportunities

The theme ‘education opportunities’ consisted of the categories: lack of accessible study options, alternate study options, recognition of prior learning and affordability of further studies.

4.6.1.1 Lack of Accessible Study Options

Participants stated that there were no feasible study options for them to obtain an undergraduate degree in Emergency Medical Care.

The HPCSA PBEC has not published a concrete plan for the further education of CCAs. The HPCSA PBEC has advised that CCAs on the ANT register contact individual HEIs to determine their academic standing and access options to one of the HEI qualifications (HPCSA, 2019). At present it is unclear whether HEIs have

policies in place that allow CCAs access to HE EMC qualifications and if advanced placement is possible for CCAs onto these qualifications. From some participants' interview information, this does not seem to be the case.

"I have to restart, maybe get a few credits here and there, but nothing major, so I'd have to restart my studies from scratch…" (Participant 3)

Currently, the HEIs offering the professional degree programme in EMC in South Africa require full-time study. The HPCSA PBEC also requires attendance of all classes for EMC programmes (personal communication from HPCSA, 24 February 2015). Most CCAs stated that it would not be possible to attend the degree programme as a full time student as this would entail resigning from their jobs. Current employers are also unlikely to pay for CCAs to study the undergraduate degree on a full time basis. CCAs also stated that they are unable to resign from their current jobs as they are dependent on their income to support their families and provide for general living expenses.

4.6.1.2 Recognition of Prior Learning

The CHEs Policy on Recognition of Prior Learning (RPL) and Credit Accumulation Transfer (CAT) (CHE, 2016) strongly advocates for RPL and CAT. RPL is defined as the principles and processes in which prior knowledge and acquired skills of a person are evaluated to create an alternative pathway for access and admission to HE qualifications. It involves the evaluation of formal and / or informal learning completed by a person and how these can be articulated into formal equivalents (CHE, 2016). The RPL purpose is to facilitate access and admission to HE programmes for persons who do not meet the entry criteria to HE programmes based on their matric results. RPL is also considered for advanced standing or exemption from modules/subjects that make up certain qualifications.

CCAs fall into the cohort of persons for RPL. They have completed a number of hours during their studies related to emergency care and have accumulated a wealth of experience as operational CCAs. It would be encouraging to see the development of RPL policies by HEIs that specifically focus on creating accessible pathways for access and admission of CCAs into HE EMC programmes, in particular the professional degree programme. Specific RPL policies would support the

undertaking of the CHE which views RPL as being a critical component in South Africa to promote access to and progression of persons within the Higher Education Qualification Sub-Framework (HEQSF). The CHE also finds that RPL will ensure the promotion of life-long learning as well as protect qualifications and the standards of qualifications on offer by HEIs (CHE, 2016).

A potential barrier to RPL is that the CHE imposes a maximum intake of RPL candidates into programmes at 10% of student intake numbers (CHE, 2016). This would potentially limit the number of CCAs in attaining access to HE EMC programmes. The HPCSA PBEC requires an academic staff to student ratio of 1:15, with most institutions being accredited for student intake numbers of between 30 to 45 students (HPCSA Form 332, 2017). This would mean that only three to five CCAs would be eligible for admission to HE EMC programmes per student intake.
The CHE does note, however, that the HEQC may make allowances to exceed this 10% limit in exceptional circumstances (CHE, 2016).

Through the creation and implementation of RPL policies by HEIs, access to the HE programmes may become more feasible for CCAs. The granting of exemption for some of the modules, through RPL and competency assessments, may allow for advanced placement of CCAs on the degree programme. This would potentially decrease the amount of class time for CCAs, reduce the cost of tuition fees and allow them to continue working in their current jobs.

Cermak (2016) conducted qualitative research using focus groups and semi-structured interviews to investigate RPL within the National Certificate in Emergency Care Programme (NCEC) in the Western Cape. He interviewed both RPL assessors and RPL applicants for the NCEC from the Cape Peninsula University of Technology (CPUT) and the Western Cape College of Emergency Care (WCCEC) who were offering the NCEC. The RPL processes conducted by these two institutions made allowance only for advanced standing into the programme. Cermak (2016) found that academic staff, in their role as RPL assessors, had not received formal training in guiding applicants in the preparation for RPL or on assessing RPL portfolios, resulting in academic staff only having superficial knowledge of RPL processes.

Another aspect highlighted was that both RPL assessors and applicants believed that RPL was based on years of experience which may have resulted in inaccurate assessment of RPL. He states that RPL for advanced standing should predominantly focus on awarding credits for prior learning and not experience alone. Cermak (2016) cautions against awarding credits for core modules, such as EMC modules, as this may result in theoretical and practical knowledge gaps that are paramount for EMC graduates. He recommends that more than one assessment should be used when evaluating RPL candidates and to possibly consider re-assessment of RPL candidates during their studies to ensure that no knowledge gaps have developed.

The CCAs interviewed indicated that they were aware of RPL, but did not show in-depth knowledge of the RPL processes and options. Credits for work done was only briefly mentioned by some participants. Having information rich RPL policies in place at HEIs, will allow potential RPL applicants to be well informed of the process. Cermak (2016) recommends this is his findings to eliminate any false expectations on RPL.

Castle and Atwood (2001) identified a number of challenges for institutions with regard to RPL. RPL is time consuming and demanding for both RPL applicants and assessors. HEIs also did not seem to place great value on learning that could come from experience and being awarded credit. In some instances, institutions almost display a hostile stance toward RPL as it may negatively influence existing standards. A potential loss of fees exists where successful RPL candidates are exempted from modules in a programme. A further concern noted when RPL for credit is awarded is that the curriculum of a programme does not add value or deepen knowledge and understanding to RPL candidates (Castle & Atwood, 2001).

To have effective RPL processes in place, HEIs need to ensure that academic staff involved in RPL receive the necessary training (Cermak 2016, Castle & Atwood, 2001). HEIs also need to make provision for academic staff involved in RPL to have sufficient time available for this and not just make it an additional work responsibility alongside teaching, research and other administrative responsibilities. Involved staff may otherwise become demotivated and frustrated with the RPL process (Castle & Atwood, 2001).

4.6.1.3 Alternate Study Options

CCAs suggested that the EMC degree perhaps should be offered as modules or on a part time basis. Should CCAs be able to register as part-time students, they would not carry a full subject load in an academic year. As the EMS involves shift work, CCAs could possibly negotiate their shifts in such a manner to allow them to attend compulsory classes. A part-time study programme may also afford candidates who stay in outlying and rural areas an opportunity to further their studies and qualification.

Accreditation of a HE programme does not automatically include the option to offer a programme as full-time and part-time. In order for HEIs to offer a programme as part-time studies, they would need to apply for accreditation to the CHE, DoHET, HPCSA and SAQA. This would take institutions a fair amount of time to develop such a programme, arrange staff to teach the programme and obtain the various accreditations. Another inhibitive factor to a part-time degree programme is that EMC programmes include large amounts of practical hours in the classroom and the clinical setting. The minimum requirements for these are included in the minimum standards documents for the various HE programmes as per the HPCSA (HPCSA, 2016a; HPCSA, 2016b). Special arrangements would need to be made for part-time students to complete these and meet the minimum requirements of a programme.

A study completed by Vincent-Lambert et al. (2014) developed an articulation framework for ECT graduates to gain access to the degree programme. ECTs were required to work for one year as operational ECTs after obtaining their qualification. During their second post-qualification year, ECTs could register for the bridging programme which would allow for advanced placement on the degree programme. Successful completion of the bridging programme would ensure that ECT graduates were at the same academic level as second year degree students, meaning that they could enter the third year of the degree programme. Consideration should be given to the potential development of a bridging programme for CCAs to obtain advanced placement on the degree programme similar to what has been implemented for ECT graduates.

4.6.1.4 Affordability of Further Studies

CCAs also voiced concerns regarding the financial burden of having to take on full-time studies. When completing the short course study route, most persons were able to support themselves or rely on family support while studying the six-week BAA course. Traditionally, employers would fund the course fees for the AEA and CCA qualifications. Over the last few years of the short course offerings, most candidates needed to fund their own tuition fees and living expenses as employers showed reluctance in sending employees for these two courses. Many candidates had managed to source funding for their studies independently. The guarantee of being employed almost immediately in either the public or private EMS sectors, allowed many candidates to resign from full-time employment positions in the case of further study to complete the AEA and CCA courses. The time frame for completing the AEA course of four months and the CCA course which was one year, made it feasible for candidates to do so.

Obtaining a student loan would be an option for CCAs to complete the degree programme. However, this would not resolve the aspect of needing financial resources to support their families and living expenses. Mdepa and Tshiwula (2012) confirm that student loans do not cover living expenses and therefore hinder access to HE. A student loan would also be an additional burden for CCAs in terms of needing to repay this loan on completion of their degree studies.

By creating access pathways and advanced placement of CCAs onto the HE EMC programmes through RPL or part-time studies, life-long learning opportunities will be supported and a potential loss of CCAs from the South African workforce prevented. Although requiring a conceivable amount of additional resources in terms of time and staff, HEIs may benefit in the long-term in that potential graduate numbers may be increased by offering part-time programmes and facilitating advanced placement into existing EMC programmes.

4.6.2 Personal Impact

The theme ‘personal impact’ was developed from the following four categories: job security and availability, growth limitation, uncertain future and coping with change.

4.6.2.1 Job security and work availability

Participants differed on their thoughts regarding job security and work availability. Some of the participants stated that they were not concerned regarding their current employment. Participants were concerned in terms of obtaining employment as a CCA as 'the word out there' was that EMS providers were no longer employing CCAs and would rather employ diploma and degree graduates.

The National Department of Health in consultation with the HPCSA PBEC, established a three tier Emergency Care Qualification Framework (ECQF). The three qualifications are an entry-level qualification, mid-level qualification and professional degree. This is in line with other health professions qualifications in South Africa (NECET policy, 2017). The entry-level qualification is the Higher Certificate in EMC. Graduates from this programme will register as ECAs with the HPCSA. The mid-level qualification is the Diploma in EMC. Graduates from this qualification register with the HPCSA as paramedics. This is the register under which CCAs also have been registering. Following the release of the CPGs and revised scope of practice, the HPCSA advised that CCAs and diploma graduates would be placed on the same register as their scope of practice was the same. This register is the ANT register at the HPCSA (HPCSA, 2017). Degree graduates register as ECPs with the HPCSA (HPCSA, 2019). These three registers will cater for the new EMC graduates. The previous registers which provided for registration of short course graduates, namely the BAA, AEA, CCA and OECO registers will remain open for these graduates. No new graduates will be added to these registers (HPCSA, 2019). CCAs do not need to worry about their registration eventually lapsing and their qualification being voided.

One participant commented that "*Now the dynamic is just changing with regard to, they'll have ALS ambulances because there'll be more of them so I think there'll always be work for ALS, it just won't be the work that I was used to when I first qualified being on a RV. "(Participant 1)*

In line with the HPCSA communication regarding the CCA registration category remaining for currently registered providers, CCAs would need to adapt to the

working environment in which they are more likely to execute their emergency care for patients working on an ambulance instead of a response vehicle (RV). Working on an ambulance will potentially allow for better and more efficient patient care. Patients will receive ALS care by paramedics staffing an ambulance which for the past many years was not the case. Ambulances were staffed by BAA and AEA crews having limited medical knowledge based on their predominantly skills-based short course qualifications. These crews had and will continue to have a lesser scope of practice in comparison to ALS qualified persons. Continued ALS care will be given to patients when CCAs and diploma paramedics crew an ambulance.

Public and private EMS providers will need to adapt the manner in which they staff their ambulances, by changing from two BAAs or a BAA and AEA crew to an ALS and an AEA or in the future ECA crew.

In terms of international work for CCAs, some participants stated that it was not as easy as before to find work in this market anymore. One candidate stated this may be due to the CCA qualification being "diluted" in terms of the scope of practice. It stands to reason that international EMS companies would follow best practice recommendations and accept that the revisions made to the South African pre-hospital EMC scope of practice to be in the best interest of patients. The CCA qualification has in the past always been held in high regard internationally and should continue to be as graduates from this respected qualification received robust training.

A number of CCA graduates have and still are leaving South Africa to settle and work in the UK. The researcher, in her current role at a private HEI that used to present the CCA course for many years prior to its cessation, needs to complete and verify qualification documentation for CCAs who wish to register with HCPC in the UK. A steady request for these verifications have been received over the past three years with a large number of these applicants having migrated to the UK, often with their families. A similar trend is being seen with CCAs opting for contract work in the Middle East and Africa for which the researcher also provides academic transcripts.

4.6.2.2 Growth limitation

Participants stated that with the offering of the CCA course coming to an end and the release of the CPGs and their scope of practice changing, fewer promotion opportunities existed in management positions in EMS companies. Moving into the education environment was also limited. Working in specialised areas of EMC such as HEMS or fixed wing has also become less achievable. Participants stated that these roles had become reserved for ECPs.

Historically as EMS personnel moved from the BAA qualification to the AEA and then CCA qualification, it was common practice for CCAs with a number of years of experience to become a “base manager” when vacancies arose. A base manager is responsible for the oversight and functioning of an EMS base in terms of staffing, schedules, vehicle and medical equipment logistics, human resource related matters, such as leave and disciplinary matters that may arise.

The CCA curriculum included minimal outcomes on administration and legislative matters (HPCSA, 1999c). CCAs who were promoted to base managers in the past typically had not received any formal training in management. The EMC degree programme includes, as part of the exit level outcomes, areas such as analysis of operational needs, problem solving, decision making, budgeting, labour legislation, and human resource management, system designs for equipment maintenance, stock control and fleet management and indicators for effective service delivery (SAQA, 2018b). These formal outcomes tend to equip the ECP better for a management role.

CCAs with a keen interest in management could consider studying in this field to create a career pathway for themselves.

HEMS is a specialised area of expertise where specialist emergency care is provided to ill or injured patients at a prehospital incident or for patients needing to be transferred from one hospital to another for an upgrade in care. As the scope of practice of ECPs is broader than that of the CCAs, it is reasonable that such a specialised service needs to be staffed with suitably qualified EMC providers. The ECP is such a provider based on the outcomes of the EMC degree programme and

scope of practice. HEMS function as an experienced team consisting of one or two pilots, an ECP and an ALS paramedic. Opportunities are still available for CCAs to contribute to this specialised service, even if not in a full-time capacity. As operational CCAs work shifts, opportunity still exists for them to work HEMS shifts during their off-time if desired. Similar practice would apply for the fixed wing EMS. In terms of the education field of EMC, this avenue has been limited for CCAs for some time. Form 169 (HPCSA, 2015) included the accreditation criteria to present the historical short courses. All facilitators needed to be educationally prepared at a minimum level of ALS qualification. CCAs were only able to teach on the BAA and AEA programmes. Only ND EMC or degree qualified providers were able to teach on the CCA programme.

CCAs have in the past contributed extensively during the experiential learning of students of the various pre-hospital EMC programmes. CCAs took on the role as mentors and taught EMC students 'the ropes' of the practical, real-life application of EMC in the pre-hospital setting. The researcher hopes that this will continue as the expertise on offer by CCAs is invaluable to students coming through the ranks of the new HE programmes in EMC.

4.6.2.3 Uncertain future

Participants mentioned that they felt rather unsure regarding the way that they should practice since the publication of the CPGs. Alderson and Maconachie (2018) state that CPGs should be viewed as useful tools to encourage improvement in quality care of patients and to reduce incorrect variations in practice of patient care. CCAs as well as other EMC providers, need to carefully study the published CPGs to become familiar with their content and practice recommendations. With close study of the CPGs and completing accredited CPD CPG update programmes, CCAs should become more settled with the current CPG recommendations.

The insecurity CCAs are experiencing was also likened to the change in scope of practice and the limited resource availability in South Africa. Pre-hospital EMS is likely to remain under-resourced in South Africa for the next foreseeable future as South Africa is classified as a LMIC. Once a larger number of graduates are produced from the three HE EMC programmes who will hopefully then enter the

South African EMS industry, the burden of insufficient EMS provider numbers should be alleviated.

The change in scope of practice was implemented by the HPCSA PBEC in the best interest of patients and based on the recommendations included in the CPGs. As further research is published, it should be expected that the scope of practices for all registration categories of EMC may change. The HPCSA PBEC in its 2019 newsletter affirmed that both the CPGs and scope of practice will be amended and updated (HPCSA, 2019). This is in line with recommendations that CPGs should be updated as new important evidence becomes available (IOM, 2011).

4.6.2.4 Coping with change

Participants seemed to have contradictory opinions of the CPGs. A number of the participants mentioned that there seemed to be anger in the industry following the introduction of the CPGs and the associated change in scope of practice for CCAs. This was in particular reference to the intubation capability. Many participants also stated that the CPGs were needed for the EMS industry and were long overdue.

During the interviews no anger was evidenced in the voice or tone of participants or in their body language. Anger may be more evident among CCA groups during informal discussions. The anger referred to by the participants was predominantly related to the change in scope of practice and not being permitted to perform endotracheal intubation anymore. It appears that a loss of status is associated with no longer being able to perform endotracheal intubation. Another contributing factor to the potential status change of the CCA is the change in the anticipated working environment where the CCA will be working on an ambulance and no longer in a primary response vehicle.

Some participants also stated that they needed further clarity on the CPGs as there were confusing aspects creating feelings of insecurity and even of feeling unsafe with the various changes of the CPGs.

EMC providers in South Africa have been used to strict protocols in the past. The CPGs require extensive reading of the recommendations based on the included

literature and articulation of this wide content. This is something that existing providers to a large degree would not be used to.

Jensen et al. (2009) recommend that evidence included in practice guidelines be linked to a clinical care algorithm to ensure implementation of best practice pre-hospital care protocols. The HPCSA has included this in their 2018 communique in which they recommend that EMS providers develop practical algorithms and protocols that are tailored to the various professional registration categories based on the CPGs (HPCSA, 2018). This is a task that still needs to be implemented by EMS providers across South Africa. A collaborative effort by public and private EMS providers could achieve this.

4.6.3 Concern for Profession

The theme 'concern for profession' was derived from the following five categories: Loss of qualified paramedics, best patient care concern, CPG evidence relevant to South African setting, CPG communication and implementation, and change in scope of practice.

4.6.3.1 Loss of Qualified Paramedics

Participants stated that they believed the closure of the CCA register and revised CPGs with the associated change in scope of practice, would result in CCAs leaving South Africa. Two South African studies have focused on paramedics/ALS practitioners leaving the country to work overseas or immigrate with their families. Both studies showed that many paramedics were in fact leaving South Africa.

In his PhD study Gangaram (2015) investigated the recruitment, retention and motivation of ALS practitioners in South Africa. He stated that ALS practitioners were trained to provide a high level of care to patients in the pre-hospital setting and were in great demand internationally. The Middle East and Africa offer attractive work packages financially and make provision for families as well. These factors contribute to shortages of ALS practitioners in South Africa. He found that remuneration, EMS management and available resources contributed to practitioners remaining with a South African EMS provider. His research also showed that career

development opportunities played a large role in recruiting and retaining ALS practitioners. Growth opportunities were found to be minimal and caused practitioners to become demotivated.

Govender et al. (2012) looked at “push” and “pull” factors in terms of what would retain ALS practitioners in South Africa and what would influence them to leave. The greatest factors were working conditions, physical security and remuneration. Respondents in the study stated that it was quite easy to migrate. They were also not concerned with making a decision to migrate or not, but rather with the decision of when to migrate. International work was also made attractive as a number of countries did not require professional registration for ALS from South Africa and many work opportunities include accommodation, flights and visas. Govender et al. (2012) also stated that no formal measures had been put in place to encourage ALS paramedics to remain in South Africa. One potential factor that was considered in this study as a motivating factor for staff to stay in South Africa was training of lower level staff to ALS level within the EMS. This opportunity now does not exist anymore following the closure of the short courses as training opportunities. Govender et al. (2012) concluded that the retention strategies to retain ALS paramedics in South Africa were inadequate and that new and additional strategies needed to be devised to prevent a severe shortage of ALS paramedics in South Africa.

4.6.3.2 Best Patient Care Concern

Participants voiced concern that best patient care could be negatively affected following the change in scope of practice for CCAs. This was particularly referenced to the capability of endotracheal intubation (ETI) – non-drug facilitated or via deep sedation no longer being included as a skill for CCAs.

Airway management in the pre-hospital setting requires providers to be technically competent, capable of making critical patient care decisions as well as being able to manage complications that may arise during airway management (Lossius et al., 2012). When ETI is unsuccessful it may result in life-threatening complications which include hypoxic brain injury and / or death (Lossius et al., 2012). Lossius et al. (2012) conducted a systematic search of medical databases for articles that reported on pre-hospital intubation in adult patients. The aim was to determine success rates

of ETI by various pre-hospital care providers. Their study showed that in physician EMS systems, fewer pre-hospital ETI failures were evident when compared to non-physician EMS systems. They concluded that when RSI was performed by non-physicians, significant patient safety concerns existed. Reasons for this may be that physicians receive more training and perform a large number of ETIs in relation to their clinical work.

A study that contrasts Lossius et al.'s (2012) findings was conducted by Bernard et al. (2010). Bernard et al. (2010) investigated whether pre-hospital RSI performed by paramedics improved the outcome for patients with severe TBI. The study was a prospective, randomised controlled trial, conducted in Australia's Victoria territory over a time period of four years in an urban setting. Patients with severe TBIs were randomly allocated to either receiving RSI in the pre-hospital setting or to be transported to an Emergency Department for intubation by a physician. In preparation for the study, intensive care paramedics attended an additional 16-hour training programme. This programme included classroom lectures and manikin practice, practical experience in theatre under the supervision of an anaesthesiologist and a simulation based exam.

Results of the study showed that adult patients with severe TBIs who had received RSI by paramedics had a favourable neurological outcome six month post-injury when compared to patients who were intubated in-hospital by physicians.
When referring to the CPGs, extensive reference is made to alternative airway management options for many patient conditions. In the asthma patient, intubation is only indicated in set clinical criteria with clinical judgement being needed. The CPGs recommend non-invasive positive pressure ventilation (NIPPV) as this may delay or eliminate the need for intubation entirely in the critical asthma patient (HPCSA CPGs 2018). For the chronic obstructive pulmonary disease (COPD) patient NIPPV is also recommended as a first-line management option to avoid intubation in these patients (HPCSA CPGs, 2018). The same recommendation is in place for patients suffering from acute heart failure. Use of NIPPV may result in fewer patients requiring intubation (HPCSA CPGs, 2018).

In patients who are in cardiac arrest, insertion of a supraglottic airway (SGA) is rated as equivalent to intubation as it is faster to place and associated with less disruption in compressions when being placed (HPCSA CPGs, 2018).

For a premature newborn in respiratory distress, the use of a laryngeal mask airway (LMA) is advocated as an alternate means to ventilate the newborn when face-mask ventilations are not successful or intubation is not possible. In the spontaneously breathing preterm infant who is in respiratory distress, the use of continuous positive airway pressure (CPAP) is recommended instead of routine intubation. Even in meconium stained amniotic fluid deliveries, routine intubation to suction the newborn's airway is no longer recommended (HPCSA CPGs, 2018).

A potential grey area to intubation is the critically injured trauma patient. For this patient, the CPGs state that endotracheal intubation remains the airway intervention of choice (HPCSA CPGs, 2018). Controversy however exists regarding the required skill and training needed to perform endotracheal intubation, skill maintenance and management of a difficult airway or failed intubation attempt.

For the hypotensive trauma patient and multiple injuries patient, no clear alternative treatment options to intubation have been included. The CPGs recommend BLS techniques with c-spine precautions where intubation is not possible or where a provider is not permitted to perform intubation as part of their scope of practice (HPCSA CPGs, 2018). Most participants affirmed that they would be able to manage a patient's airway using BLS interventions as they were only able to practice at that level prior to obtaining the CCA qualification.

In patients with TBI, intubation with the aid of neuromuscular blocking agents is not recommended in urban settings (HPCSA CPGs, 2018). Transportation of TBI patients should take place within 60 minutes to an appropriate facility for RSI. It seems that participants are in agreement with this recommendation as it is best practice for these patients. Where patient transport times are in excess of 60 minutes and a patient's airway cannot be maintained using basic airway manoeuvres and adjuncts, the patient should be taken to the nearest trauma facility for RSI before continuing with patient transportation (HPCSA CPGs, 2018). The CPGs also allude to this not being possible in rural regions of South Africa. This validates the concern

of participants that patients' airways are at risk of not being managed appropriately in rural areas.

Further studies, ideally conducted in the South African setting, should be undertaken to determine whether RSI should be performed at all in the South African pre-hospital setting or if there is room to expand the scope of practice for CCAs (and paramedics) to perform RSI in certain patients.

4.6.3.3 CPG Evidence and South Africa

Participants critiqued the evidence included in the CPGs. A number of them stated that they felt the evidence was based on international and high income countries (HIC) standards and was not applicable to South Africa with its unique health dilemmas.

CPGs are guidelines that are developed based on scientific evidence and not, as historically has been the case, on general consensus and expert opinion (Lang et al., 2012; IOM, 2011). The development of CPGs typically is *de novo* meaning that brand new guidelines have been developed based on primary research evidence (IOM, 2011). Establishing *de novo* guidelines is however expensive and time consuming (Dizon et al., 2016). With South Africa being categorised as a resource-poor country, the development of *de novo* guidelines was not practicable (McCaul et al., 2018). In this setting, it was more feasible to develop guidelines based on existing, high-quality CPGs and adapt, adopt and contextualise these to the South African setting (Dizon et al., 2016; McCaul et al., 2018).

The HPCSA PBEC appointed the AFEM to review and develop CPGs for emergency care providers in South Africa (HPCSA, 2018). The AFEM CPG panel used a descriptive approach to search global and local databases for CPGs relevant to emergency care. The AGREE II tool was used to validate evidence obtained from searches. The AGREE II tool is an international tool developed to assess the quality and reporting of practice guidelines (McCaul et al., 2018).

The AFEM CPG panel researched eight focus areas relevant to emergency care. These focus areas were acute pain, airway management, altered mental status,

dangerous fever, respiratory distress, resuscitation and ventilation, trauma and shock and dehydration (McCaul et al., 2018). The search resulted in identifying 276 guidelines which were relevant to the emergency care setting. Almost all guidelines included stemmed from high income countries (HIC). Only two guidelines were from LMIC. None of the guidelines were specific to the pre-hospital emergency care. The AFEM CPG panel conceded to the HIC guidelines not being easily adapted to the South African setting based on contextual differences (McCaul et al., 2018). This explains and supports the opinions of participants who said that they found the CPGs written more for HICs. The AFEM CPG panel as well as the HPCSA PBEC both agreed that future projects need to include broader as well as local research in the South African CPGs (HPCSA, 2018; McCaul et al., 2018).

4.6.3.4 CPG Communication and Implementation

Some participants expressed frustration around how the CPGs were communicated and implemented. The HPCSA PBEC included a brief communication in 2018 on the purpose and development of the CPGs, revised scope of practices for the various levels of emergency care providers and the envisioned implementation of the CPGs (HPCSA, 2018).

Lang et al. (2012) made recommendations on the dissemination of guidelines. Recommendations included publishing guidelines in journals and textbooks that are consulted by the industry professionals. Videos and podcasts should be prepared and material published on the internet to ensure it is readily available. The CPGs are available on the HPCSA website under the PBEC subsection. Lang et al. (2012) further recommended that guidelines are included in national EMS education standards as well as accreditation of programmes. Education providers need to adapt their teaching and learning material to include the revised guidelines to support implementation and knowledge retention. CPGs should also be included in continuous education requirements for registration to practice (Lang et al., 2012). Brouwers et al. (2018) recommend the implementation of tools to support high-quality CPGs. Examples include the preparation of a summary document, quick reference guides, educational tools, flow charts and computer supported platforms.

The HPCSA PBEC has proposed that existing Continuing Professional Development (CPD) accreditors and service providers implement the new CPGs. This is a labour intensive process, as service providers need to develop appropriate learning content themselves for the various levels of emergency care providers and then have this accredited by a PBEC accreditor.

Lang et al. (2012) concede that the implementation of guidelines in the pre-hospital setting is challenging. They cite insufficient training and lack of resources as well as a lack of governance as barriers to guideline implementation. This was also raised as a concern by some participants when they referred to the lack of monitoring of whether CCAs had stopped using deep sedation for intubation. Implementation of guidelines can also be made difficult because of operational, political, financial, administrative and ethical motives (Lang et al. 2012). Lang et al. (2012) advise that these barriers can be resolved through certification of providers to practice, accreditation of agencies and by providing funding.

The HPCSA PBEC has delegated the accreditation for CPD activities of the CPGs to accreditors and service providers. Certification to practice is currently being explored by the HPCSA which will entail a move away from obtaining a set number of CPD points annually by registered emergency care providers and requiring maintenance of licensure.

The new medications included in the various scopes of practice have not been approved by SAHPRA as yet. The HPCSA PBEC will issue a communication once the medications have been approved. The CPG document includes the statement that the current proposed medication list may be amended by SAHPRA. It may seem that the CPGs were released prematurely if the medications had not been approved. However, the CPGs include important and best patient care statements that need to be implemented once the CPGs have been made available and reviewed by the HPCSA PBEC.

A consideration for the HPCSA PBEC would be to host an online forum where registered EMC providers can post comments, questions and suggestions regarding the CPGs. This would allow the right persons to respond to queries and potentially

alleviate some of the confusion that providers say exists. This may also serve as a better communication tool to mass email communications (Jensen et al., 2009).

4.6.3.5 Change in Scope of Practice

The general comments made by participants in terms of the change in scope of practice was positive. This was particularly voiced with the addition of analgesic agents and medications important in the management of obstetric cases.

As the intubation skill was deemed as a loss as part of their scope of practice, participants were asked if they would be able to manage a patient airway without the skill of endotracheal intubation. Most participants stated that they would be able to manage a patient's airway using basic techniques. These basic techniques are what they had practiced in patient care prior to becoming CCA qualified.

From some of the comments made regarding the use of SGAs, it appears to be imperative that CPG update sessions include aspects on the role of SGAs in the management of patient airways. This may instil confidence in CCAs in the use of alternative airway management options in patient care and potentially avoid the unnecessary performance of surgical airways which was raised as a concern by some participants.

The application and interpretation of 12-lead ECGs was published as a capability that CCAs should no longer perform. This decision was rescinded by the HPCSA PBEC showing that the scope of practice remains an adaptable tool based on evidence and EMS needs.

In the Canadian Prehospital Evidence Based Protocols Project (PEP), paramedics and EMS physicians were encouraged to submit references of articles relevant and of interest to the pre-hospital profession to the project coordinator for consideration (Jensen et al., 2009). This could be a platform that the HPCSA PBEC could create for the EMS industry in South Africa.

4.7 Conclusion

This chapter presented the findings of the research study. The themes education opportunities, personal impact and concern for profession were discussed. Participant quotes provided illustrations for the various categories that had been identified during analysis of the interviews.

Chapter 5 provides a summary of the research findings, makes recommendations based on the research findings for practical implementation and future research, states limitations of the study and the conclusion.

5. CHAPTER 5 – CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The purpose of the study was to explore the opinions of CCAs on the register closure at the HPCSA and change in CPGs. The aim of the study was to identify how CCAs believed the closure of their register at the HPCSA and CPGs would affect their employment and career opportunities as well as obtaining a HE qualification in EMC. A qualitative research approach using individual interviews was used to address the research objectives, as detailed in Chapter three. Fourteen CCAs were interviewed. Three participants were female and eleven participants were male. Their ages ranged from 25 years to 53 years. Years of experience ranged between three and 11 years.

The themes education opportunities, personal impact and concern for profession were identified. A detailed discussion of the themes is included in Chapter four.

This chapter provides a summary of the findings and makes recommendations for further education opportunities for CCAs. Considerations to ensure successful implementation of the CPGs in South Africa are also suggested. Recommendations for future research considerations are highlighted. Potential limitations related to the study are described.

5.2 Summary of Findings

The findings of the research study show that there are no direct access pathways for CCAs to HE EMC qualifications that are now being offered at HEIs. CCAs would need to start in the first year of study of the undergraduate B EMC programme if accepted into the programme at a HEI. Minimal recognition would be given by HEIs for the experience gained since obtaining the CCA qualification.

CCAs would like to further their education in the EMC field, but would only be able to do so on a part-time basis or a modular basis. Full time studies at an HEI would not be possible for most CCAs given the financial cost of the studies, while needing to

support families and lifestyles, as CCAs tend to be mature members of the target population with established families and responsibilities.

Specific RPL policies do not seem to be in place for CCAs to gain advanced standing on the B EMC programme at HEIs.

In terms of the register closure, a number of concerns were voiced by CCAs. Some stated that they were not worried about their current employment positions but were cognisant that their work environment would change. They would most likely be working on ambulances going forward and no longer on primary response vehicles. Mixed thoughts were given regarding international employment opportunities for CCAs. Some participants stated that overseas employment opportunities were still readily available and others stated that there had been a decline in employment offers internationally because of the change in scope of practice for CCAs. The change in scope of practice seems to have also limited growth opportunities for CCAs in terms of promotion into management positions and moving into the education field or specialised EMS areas such as HEMS, fixed wing and the prehospital ICU transfer field.

With the publication of the CPGs, some CCAs were unsure how this would affect their management of certain patients in relation to the change in scope of practice and South Africa being a resource-limited country. They felt that the recommendations in the CPGs would not be practicable. This was in particular reference to the patients needing endotracheal intubation which now is only on the ECPs scope of practice using RSI. The concern was in regard to ECPs not always being available for cases where ETI was needed for patients.

Disappointment and anger at the change in scope of practice regarding endotracheal intubation was shared by a number of participants. The scope of practice no longer permits CCAs to perform ETI by deep sedation. No anger was evidenced during the interviews. The anger regarding this particular change may be more evident during informal discussions among CCAs. There seems to be a lack of understanding as to why ETI with deep sedation has been removed as a capability for CCAs. Even though ETI not being available for CCAs to perform in airway management of patients, most confirmed that they would be able to manage a patient's airway using

basic techniques. They owed this to their experience whilst practicing as BAAs and AEAs before obtaining their CCA qualification which allowed them to perform ETI prior to the revised scope of practice being published in 2018. Some participants indicated that they would appreciate further training in the use and inclusion of SGAs in airway management for patients in the pre-hospital setting.

Generally CCAs were happy with the CPGs and revised scope of practice especially with regards to the analgesic agents being added and medications to manage potential obstetric associated complications.

Concern was raised that CCAs would leave South Africa because of the change in scope of practice. Some participants stated that their qualification was still recognised in countries such as the UK and Middle East. Working overseas was also described as being financially more worthwhile.

In terms of ETI, participants were worried that patients would not receive optimal care when advanced airway management was necessary for certain trauma and head injured patients. With this procedure only being on the ECP scope of practice and ECPs being more readily available in urban settings, concern existed for patients in rural settings needing ETI. Another concern raised was that some CCAs would opt to perform a surgical airway when it potentially would not be necessary and less invasive management options could be used or even in retaliation to no longer being able to perform ETI.

With reference to the CPGs, participants stated that they were mostly internationally referenced and questioned how they related to the South African setting. The fact that the new medications had not been approved by SAHPRA at the time of the publication of the CPGs was noted as an ambiguity. A further disheartening aspect for some participants was that hospitals and medical doctors in the emergency departments were not aware of the change in scope of practice for CCAs regarding no longer being able to perform ETI. A number of participants had been given a hard time when handing patients over at hospital where ETI was indicated but not being performed as per the revised capabilities.

Some participants voiced concern that the application and analysis of 12-lead ECGs was no longer part of the CCAs capabilities. This decision has since been revised by the HPCSA PBEC and reinstated as part of the scope of practice for CCAs. The use of systemic lignocaine hydrochloride and transfer of neonatal patients has also been included on the scope of practice again.

5.3 Recommendations and Future Research

The following recommendations and future research considerations are suggested:

5.3.1 Recommendations

5.3.1.1 Education opportunities

Govender et al. (2012) found in their study that full time programme studies to becoming a paramedic dissuaded older already working candidates who may be eligible for RPL from studying in the pre-hospital field, as they were already settled in their jobs.

RPL policies should be developed by HEIs which focus specifically on access to and potential advanced standing of short course qualified EMC providers. This would allow some applicants to obtain credits toward HE programmes in EMC and reduce the cost associated with HE studies.

The number of students permitted into a programme through RPL is limited to 10% per intake as per CHE regulations. The CHE does note, however, that the HEQC may make allowances to exceed this 10% limit in exceptional circumstances (CHE, 2016). CCAs have indicated that they are interested in furthering their studies to obtain HE qualifications. HEIs should possibly consider submitting motivations to the HEQC for permission to allow a greater number of CCAs to be considered for admission to the HE EMC programmes than the limited 10% of candidates.
By creating access pathways to HE programmes for short course qualified EMC providers, the continued professionalisation of the EMS industry is ensured as is taking place internationally. Creating access pathways to HE EMC programmes is an essential plan as this will potentially retain CCAs in the EMS profession and not

further contribute to the loss of experienced paramedics to the overseas market. Developing articulation plans to HE EMC programmes may also be cost-saving as CCAs with advanced standing would not need to complete a full programme.

In line with Vincent-Lambert's research (2011) which developed an articulation framework for ECTs to the B EMC programme, consideration should be given to establishing a similar programme for CCAs to articulate onto the B EMC programme.

5.3.1.2 Clinical Practice Guidelines

The background to CPGs and methods and processes to develop guidelines should be formally written up in reference to South Africa's EMS setting and be made available on the HPCSA website for easy access (Alderson & Maconachie, 2018). This would allow emergency practitioners an opportunity to better understand the context and benefits of CPGs.

To promote acceptance and adoption of the CPGs, a communication channel to allow emergency care practitioners to give feedback should be established (Lang et al., 2012) by the HPCSA. By giving practitioners an opportunity to provide feedback, the acceptance of the CPGs and change in scope of practice may be more readily effected.

Consideration should be given to creating a more user-friendly CPG document with an index and quick-user guides (Lang et al., 2012). CPGs could also be hosted on computer supported platforms such as an App. This would allow practitioners to easily access information when caring for patients and would allow for an efficient method to publish necessary updates as new research becomes available.
The preparation of practice algorithms needs to be established for common pre-hospital conditions based on the CPGs and scope of practice for the various registration categories.

The HPCSA PBEC should consider more frequent communication to registered practitioners on updates and implementation of the CPGs. This could be achieved through online publications and hosting an online forum where practitioners would be able to post comments, ask questions and make suggestions on the CPGs.

The HPCSA should prepare communication that can be disseminated to public and private hospitals in South Africa to inform medical doctors and nursing staff about the CPGs and scope of practice for the various emergency care practitioner categories.

5.3.1.3 EMS Provider Management Responsibilities

With the anticipated change in work environments for both the public and private EMS providers, management should communicate plans on how the CPGs will be implemented and incorporated into the daily operations. Plans should be put in place to facilitate staff CPG CPD updates for all registration categories. Plans should also be prepared and communicated to staff in terms of the sourcing of additional equipment and medications to meet the requirements of the CPGs and revised scope of practices.

EMS Management should also develop proposals on how they will be able to support staff in obtaining HE EMC qualifications. This could be in the form of bursaries, study loans and flexible working hours to attend classes. Consideration should also be given to preparing staff in attaining access to HE and support to complete HE EMC qualifications.

In preparing plans for further studies and communicating the way forward for the implementation of the CPGs at an operational level, staff may not feel as insecure about the changes being brought about with the CPGs and changes in scope of practice.

5.3.2 Future Research

Based on the findings of this research study, the following are areas for further research:

1. CPGs were published for the first time by the HPCSA PBEC in 2018. A study to determine whether EMC practitioners are compliant with the recommendations of the CPGs and the revised scope of practice for all registration categories would be of value to determine if the CPG implementation is successful.

2. A study should be conducted to determine whether or not EMC practitioners are completing required CPD CPG updates in order to practice.
3. The impact that the CPGs are having on patient care and outcomes in South Africa in terms of the published recommendations.
4. Exploration of access pathways by HEIs for BAA, AEA and CCA qualified providers to obtain HE NQF aligned qualifications.
5. Local pre-hospital RSI studies should be conducted to determine if this capability should form part of the scope of practice or not and whether its addition should be considered for the paramedic scope of practice.

5.4 Study Limitations

The following potential limitations are associated with this research study:

The study was conducted only in the Gauteng province of South Africa. Although this province has the highest number of registered CCAs with the HPCSA, it is plausible that CCAs from other provinces may have had different opinions to the research question. This may be especially applicable to CCAs working in rural settings in South Africa.

All but one of the participants worked for a private EMS provider. No provincial or local authority employed CCAs responded to the request to participate in the study. Participants from these EMS sectors may have had different viewpoints to contribute to the study.

Generally the participants portrayed positive viewpoints on the changes in scope of practice. It is plausible that the researcher's qualification as an ECP may have influenced these positive responses.

5.5 Conclusion

The formalisation of the pre-hospital emergency care qualifications into the HE setting is contributing extensively to the professionalisation of the emergency care industry in South Africa. Various pathways should be considered to facilitate access

to and advanced placement of CCAs into the HE programmes to afford them an opportunity to obtain a professional degree in emergency care.

By introducing CPGs to the South African EMS industry, the HPCSA is following current best practice recommendations which have been implemented internationally in the EMS and most other medical fraternities as well. It is inevitable that the implementation and adoption of the CPGs and change in scope of practice for emergency care providers will experience some forms of discomfort and disruption. With support from EMS management and the HPCSA PBEC, the adoption of the CPGs can be facilitated. Creating online platforms will allow for communication avenues between emergency care providers and the HPCSA and possibly decrease the frustration experienced by providers in terms of the interpretation and insecurities experienced.

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7. ANNEXURES

7.1 Annexure A – Interview Guide

Interview Protocol

Date	
Place	
Interviewer	
Interviewee	
Assigned Code Name	

1. How do you believe the closure of the paramedic register will affect you?
2. How do you see the revised clinical practice guidelines (CPGs) affecting you?
    a. Have you had any discussion with colleagues about the CPGs?
    b. What do you know about the proposed revised CPGs?
3. What career options do you see for yourself in the future?
4. What study options are available to you to further / upgrade your qualification?
5. What study options do you think are appropriate to further your qualification?
6. Can you suggest other paramedics who I could contact to learn more about my questions?

<u>Probing questions:</u>

1. Tell me more about ….
2. How do you feel about that?
3. What do you mean when you say …?

Thank you for meeting with me today and sharing your viewpoints with me. Would I be able to contact you again if further questions develop that your input would be valuable for?

Yes	
No	

Once transcripts have been prepared and specific themes have been identified, could I contact you to verify that you find them to be accurate?

Yes	
No	

7.2 Annexure B – Participant Information Letter

Participant Information Letter
Centre for Health Science Education
University of the Witwatersrand

CCAs Opinions of the HPCSA Register Closure and Change in Clinical Practice Guidelines: A Qualitative Study

Dear Critical Care Assistant Alumnus

My name is Frauke Rosslee and I am enrolled at the University of the Witwatersrand for the Master of Health Science Education. As part of my studies, I need to complete a research project.

As you may know, the Minister of Health in consultation with the Health Professions Council of South Africa (HPCSA) has promulgated the closure of the paramedic register. The HPCSA Professional Board for Emergency Care (PBEC) is also in the process of implementing revised clinical practice guidelines. Since these announcements have been made, no formal research has been conducted on how these changes may affect paramedics. The aim of my research project is to explore CCAs opinions on the closure of the HPCSA register and changes in scope of practice.

I am asking you to meet with me to discuss your perceptions about the register closure and forthcoming change in scope of practice for you as a paramedic. I will need to audio-tape our discussion which will take the form of an interview. This will be done at a mutually convenient place and time. The interview will take approximately one hour.

I will be taking notes during the interview and also audio-recording the interview to use in the preparation of transcripts and analysis of the transcripts.

Your participation in this study is voluntarily and your identity will be kept confidential by assigning you a code name. You may withdraw from this study at any time.

By participating in this study, you are aware that this will not result in an upgrade in your scope of practice. No compensation is available for participating in this study and referring me to potential other participants.

Should you feel distressed by the discussion, please contact Mrs Marilyn Saunders, clinical psychologist, on 082 – 793 – 7983.

A summary of the final research report will be communicated by email to you should you wish to receive it.

This study has been approved by University of the Witwatersrand Postgraduate Office and the University of the Witwatersrand Human Research Ethics Committee. The ethics clearance number is M171042.

Should you have any questions or concerns regarding this study, please contact me either telephonically on 083 – 520 – 9343 or by email at fdillschnitter@gmail.com or contact my research project supervisor Associate Professor Trish McInerney on 011 – 717 – 2073 or by email at Patricia.McInerney@wits.ac.za or the Chairperson of the Human Research Ethics Committee Professor Peter Cleaton-Jones by email at peter.cleaton-jones1@wits.ac.za or the Human Research Ethics Committee office administrators Ms Zanele Ndlovu / Mr Rhulani Mkansi / Mr Lebo Moeng on 011 – 717 – 2700 / 2656 / 1234 / 1252 or by email at HREC-Medical.ResearchOffice@wits.ac.za.

If you would like to participate in this study, please contact me either telephonically or by text message on 083 – 520 – 9343 or by email at fdillschnitter@gmail.com.

Sincerely,

Frauke Rosslee

7.3 Annexure C – Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Mrs Frauke Rosslee

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M171042

NAME: (Principal Investigator)	Mrs Frauke Rosslee
DEPARTMENT:	Centre for Health Science Education
PROJECT TITLE:	Paramedics' Opinions of the Health Professions Council of South Africa Register Closure and Change in Clinical Practice Guidelines: A Qualitative Study
DATE CONSIDERED:	27/10/2017
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Patricia McInerney
APPROVED BY:	Professor CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	15/02/2018

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

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301, Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in October and will therefore be due in the month of October each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

7.4 Annexure D – Consent Form to be Interviewed

Consent Form – Interview
Centre for Health Science Education
University of the Witwatersrand

CCAs Opinions of the HPCSA Register Closure and Change in Clinical Practice Guidelines: A Qualitative Study

I hereby confirm that the research has been explained to me and that I understand the purpose of the research in that I will meet with the researcher for an interview to discuss my opinions on the closure of the HPCSA paramedic register and the change in the proposed clinical practice guidelines. I have had the opportunity to consider the information about the study, ask questions and have had these answered satisfactorily.

I may withdraw from the research at any time.

I hereby consent to participating in the interview for this research.

Participant Name:	
Date:	
Signature:	

Researcher Name:	
Date:	
Signature:	

7.5 Annexure E – Consent Form to be Audio-Recorded

Consent Form – Audio-Recording of Interview
Centre for Health Science Education
University of the Witwatersrand

CCAs Opinions of the HPCSA Register Closure and Change in Clinical Practice Guidelines: A Qualitative Study

I hereby consent to my interview to discuss my opinions on the closure of the HPCSA paramedic register and the change in the proposed clinical practice guidelines to be audio recorded. I understand that my identity will be kept confidential in that a code name will be assigned by the researcher for reporting purposes.

Name:	
Date:	
Signature:	

Researcher Name:	
Date:	
Signature:	

7.6 Annexure F – Demographic Information Sheet

Participant Demographics Information Sheet

Date of Interview					
Name of Participant					
Contact Number of Participant *					
Email Address of Participant *					
1.	Participant Qualification				
2.	Month and Year Qualification Obtained				
3.	Years of Practice				
4.	Age (in years)				
5.	Gender	Female		Male	
6.	Current employer: Private				
	Government				
	Unemployed				
7.1	Are you an operational paramedic?	Yes		No	
7.2	If no, which sector do you work in?				
8.1	Other tertiary qualification/s?	Yes		No	
8.2	If yes, bachelor, master's or doctoral degree				

* I am requesting your contact number and email address should there be any additional questions to discuss with you and to send you the research report once it is completed.

7.7 Appendix G – Research Title Approval

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

10 February 2020
Person No: 1270478
TAA

Mrs FR Rosslee
Po Box 32412
Kyalami
1684
South Africa

Dear Mrs Frauke Rosslee

Master of Health Sciences Education: Change of title of research

I am pleased to inform you that the following change in the title of your Research Report for the degree of **Master of Health Sciences Education** has been approved:

From:	**Paramedics' opinions of the HPCSA register closure and change in Clinical Practice Guidelines: a qualitative study**
To:	**Critical care assistants opinions of the HPCSA Register closure and change in clinical practice guidelines a qualitative study**

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences