The Clinical Transition of Graduate Paramedics from Dependent to Independent Practice: A Critical Participatory Action Study

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DECLARATION OF ORIGINALTY

I, Andrew Rammu Mosiane, hereby declare that this work is entirely my own and not that of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Durban University of Technology or to any other institution for assessment or for any other purpose.

Signature:

Date: August 2024

ETHICAL CLEARANCE

This is to certify that this study received ethical approval from the Institution Research Ethics Committee (IREC) of the Durban University of Technology (DUT) in KwaZulu-Natal.

The ethical clearance number is: **IREC 293/21**

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ABSTRACT

INTRODUCTION

Independent clinical practice is the pinnacle outcome for graduate paramedics in South Africa and abroad. Undergraduate paramedic students train under supervision to acquire clinical skills, knowledge and competencies deemed essential to independently manage critical patients. Irrefutably, there is a paucity of research in the South African Emergency Medical Care (EMC) milieu exploring the clinical transition of graduate paramedics from supervised students to independent practitioners.

AIM

Through a Critical Theorist stance, this study aimed to explore the clinical transition of graduate paramedics from dependent to independent practice at a selected university in KwaZulu Natal, South Africa. The focus was on how graduate paramedics transition from dependent to independent clinical practice and what mechanism/s should be instituted within the South African EMC profession to support the transition.

METHODOLOGY

An exploratory sequential mixed method design was adopted. Semi-structured interviews, focus group discussions and reflective journals were used to collect qualitative data. A Delphi study was conducted to validate the recommended support mechanisms. Thematic analysis was used to analyse and interpret qualitative data. Descriptive statistics were used to set a consensus level for the Delphi study.

RESULTS

Three themes and seven sub-themes were identified in the qualitative data. The identified themes included: i) transitioning into independent practice, ii) employee and employer relations and iii) quality assurance. The Delphi experts reached a consensus on eight recommended praxes that may support the clinical transition of graduate paramedics into independent practice: i) introduction of an internship period, ii) introduction of a workplace clinical mentorship program iii) restructuring of the BHSc EMC program, iv) incorporation of non-clinical workplace orientation program, v) implementation of a clinical case review system, vi) implementation of a clinical

consultation system, vii) EMS management competency development and viii) introduction of psychological and emotional support services for graduate paramedics.

CONCLUSION

The transition from students to professional practice is a crucial phase for graduate paramedics. This study highlights a need for all EMS stakeholders in South Africa to ensure consistent and standardized approaches to guide and support graduate paramedics as they transition to independent practice. Active involvement by the statutory regulators through the development of policies and systems to guide this critical stage of graduate paramedic's professional development is paramount.

Key words: Clinical Transition, Paramedic Graduates, Internship, Independent Clinical Practice, Mixed Methods, Critical Theory, Critical Participatory Action Research, Delphi Study.

DEDICATION

This thesis is dedicated to my wife and kids who have always supported me throughout all my studies. My heartfelt appreciation is conveyed for all the patience you had with me. I know at times I could not immediately avail myself for our family and the extended family's activities. However, you guys understood, supported and continued to encourage me through it all, for that I am eternally indebted and I don't take your sacrifices for granted. I do hope that achieving this milestone will serve as a motivation to the family and affirm that through dedication and hard work great things are possible.

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ABBREVIATIONS

AR	Action Research
ARS	Action Research Spiral
BHSc EMC	Bachelor of Health Sciences in Emergency Medical Care
CA	Content Analysis
CoP	Communities of Practice
CP	Critical Paradigm
CPAR	Critical Participatory Action Research
CT	Critical Theory
ECP	Emergency Care Practitioner
EMC	Emergency Medical Care
EMS	Emergency Medical Service
FGD	Focus Group Discussions
HIC	High income countries
HPCSA	Health Professions Council of South Africa
IREC	Institute Research Ethics Committee
KZN	KwaZulu Natal
LMICs	Low- and middle-income countries
NDoH	National Department of Health
NQF	National Qualifications Framework
PAR	Participatory Action Research
PBEC	Professional Board of Emergency Care
SA	South Africa
SAQA	South African Qualifications Authority
Stat SA	Statistics South Africa
TA	Thematic Analysis
UJ	University of Johannesburg
UMIC	Upper-middle-income countries
USA	United States of America
UK	United Kingdom
WHO	World Health Organization
WIL	Work Integrated Learning

CHAPTER ONE: STUDY INTRODUCTION

1.1 Introduction

This thesis focuses on the clinical transition of graduate paramedics from a selected university in KwaZulu Natal, South Africa, into independent practice. A paramedic is defined as a prehospital emergency medical provider who responds to the patient site to assess and treat urgent medical and trauma conditions (Bowles, Beek & Anderson 2017). In this study, a paramedic refers to a prehospital health care provider who has completed a four-year Bachelor's Degree in Emergency Medical Care from South Africa. This introductory chapter presents an overview of the research background, problem statement, research question, sub-questions, adopted theoretical framework and significance of the study. In addition, an overview of the research design and researcher positionality are also presented. Concluding this chapter is the thesis layout.

1.2 Research Background

Graduate clinical transition is a concept that has been extensively studied within the health sciences field, particularly in nursing and medicine (Kramer 1975; Casey et al. 2004; Duchscher 2008; Dyess & Sherman 2009; Clipper & Cherry 2015; Duchscher & Windey 2018). An earlier study introducing this concept dates back almost five decades (Kramer 1975). Even though nursing and medicine have advanced in research focusing on graduates' clinical transition, there is still a paucity of research within Emergency Medical Care (EMC), particularly from the African context (Mould-Millman, Sasser & Wallis 2013).

Predominantly, the phenomenon of graduate paramedics' clinical transition is explored from the perspective of high-income countries (HIC), i.e. New Zealand, the United States of America (USA), the United Kingdom (UK), Canada and Australia (Wyatt 2003; Willis, Williams, Brightwell, O'Meara & Pointon 2010). Accordingly, these countries have well-developed economies and health systems; consequently, their EMS is advanced (Mould-Millman et al. 2013). EMC studies from HIC exploring the clinical transition of graduate paramedics report that university-produced graduate paramedics are ill-prepared to work as independent practitioners (Wyatt 2003; Willis

et al. 2010). Graduate paramedics cannot meet the EMS operations clinical competency standards and immediately work as independent practitioners (Wyatt 2003; Willis et al. 2010). Graduate paramedics clinically function at a novice level on the Dreyfus & Dreyfus (1980) and Benner's (1982) skills development model, thus conflicting with the EMS profession competency expectations for independent practice (Willis et al. 2010). This implies a dichotomy between the EMS profession's expectations of graduate paramedics' clinical capabilities and the university production standards. The EMS profession expects graduate paramedics to clinically perform at a higher standard than they are capable of as novice practitioners (Wyatt 2003; Willis et al. 2010).

From an African EMS perspective, particularly the South African EMS, i.e. Upper-Middle Income Country (Matandare 2018), there is a paucity of research focusing on the graduate paramedics' clinical transition to independent practice, as already alluded to. This research paucity is observable within the entire African continent (Mould-Millman et al. 2013). South African EMS is perceived to be more advanced than other African countries (MacFarlane, van Loggerenberg & Kloeck 2005; Mould-Millman et al. 2017). However, there is still research paucity addressing this phenomenon. Due to such limitations, published undergraduate paramedics' studies reporting on pre-hospital clinical development and practices were reviewed. This South African EMS-based research reported the lack of exposure to some critical clinical skills that undergraduate paramedics were expected to acquire during work-integrated learning (Stein 2010; Moodley 2016; Smith 2018; Mariano 2022). Graduate paramedics were also reported to lack clinical exposure and confidence, which are paramount for their employability and independent practice (Mariano 2022).

Consequently, Moodley (2016); Smith (2018) and Mariano (2022) concluded that South African undergraduate paramedics are ill-prepared to transition to independent clinical practice. Emanating from these South African EMC studies is substantial evidence regarding the undergraduate paramedics' clinical development challenges. With this background, it became paramount for this study to explore the clinical transition of graduate paramedics to independent practice.

Regrettably, the impact of ill-prepared South African graduate paramedics on pre-hospital patient care safety is unknown (Mould-Millman et al. 2013). Internationally, most of the publications regarding pre-hospital clinical practices originate from HICs, as already highlighted above. Due to differences in EMS systems, protocols, and practitioner capabilities between the HICs and South Africa, adopting some of these studies' recommendations is not always contextually viable. To highlight some of these differences in EMS systems, Denton et al.'s (2021) study conducted in the UK-based EMS system confirmed the safe clinical practice of advanced critical care practitioners as independent practitioners working as part of a team with nurses and medical doctors, conducting inter-facility transfers with ambulances. This is not a common practice in SA. South African paramedics also work independently, having completed a four-year bachelor's degree. Furthermore, they are mostly partnered by lower qualified prehospital personnel, not nurses or doctors. In this study, graduate paramedics possessing a four-year bachelor's degree in EMC were the key participants. Their transition to independent practice was limited to prehospital patient care in the ambulance setting.

1.2.1 Bachelor's Degree in Emergency Medical Care Program

The Bachelor's degree in EMC is a four-year undergraduate professional degree offered in South Africa by four universities, i.e. the Cape Peninsula University of Technology, Durban University of Technology, Nelson Mandela University and the University of Johannesburg (SAQA 2018; Sobuwa & Christopher 2019). This program is pitched at the National Qualification Framework (NQF) level 8 with a minimum of 480 credits (SAQA 2018; Professional Board for Emergency Care 2020). The BHSc EMC program design includes theoretical lectures, classroom practicum, a research project and work-integrated learning (WIL) opportunities (SAQA 2018; Professional Board for Emergency Care 2020). Upon successful completion of this program, the graduates are eligible to register with the Health Professions Council of South Africa (HPCSA) as Emergency Care Practitioners (ECPs) and practice independently (Professional Board for Emergency Care 2020). As of December 2023, the HPCSA had 1046 registered ECPs (Health Professions Council of South Africa 2023). However, not all the registered ECPs practice within South Africa, as some seek employment opportunities outside the country (Govender, Grainger, Naidoo &

Macdonald 2012; Gangaram 2015). The actual number of expatriates ECPs practising outside of SA is unknown (Gangaram 2015).

Statistics South Africa (Stats SA) recorded a population estimate of 62,027 503 people in the 2022 census (Statistics South Africa 2023). This equates to approximately 1 ECP per 59 300 people, a very high ratio even though anecdotal, as the registered number of ECPs excluding expatriates is unknown. Amongst some of the skills and capabilities, ECPs are expected to perform highly invasive interventions such as drug-facilitated advanced airway management, external jugular cannulation, administration of an extensive array of emergency medications and the use of sophisticated mechanical equipment such as ventilators (Health Professions Council of South Africa 2018a; Health Professions Council of South Africa 2018b). While ECPs independently manage various cases during their daily clinical practice upon registration, there is no compulsory supervision, mentorship, or internship in the South African EMC profession. Furthermore, most employment services do not have a compulsory quality assurance system for newly graduated ECPs. In South Africa, ECPs have the option to either be employed by a public or private ambulance service and immediately be responsible for their clinical practice and patient safety as they assume their professional roles. ECPs are also expected to supervise and monitor the clinical practice of the less qualified ambulance crews.

1.2.2 Patient Safety

South African paramedics have an elaborate skill set and expertise, practised independently by novice practitioners with unknown implications on patient safety. Preventable harm to patients resulting from healthcare is reported as primarily a clinical practice and a healthcare systems problem (Kohn, Corrigan & Donaldson 2000; Wilson et al. 2012; Hagiwara et al. 2019). An estimated 440,000 patient fatalities per annum are reported to be caused by unsafe patient care across American hospitals (Kohn et al. 2000; Allen 2013). In South Africa, Maphumulo & Bhengu (2019) reported that the accurate number of patient fatalities as a complication of unsafe patient care is unknown. However, millions of patients in South African healthcare facilities are estimated to suffer undocumented, preventable daily harm, partly due to healthcare systems and clinical practice inefficiencies (Maphumulo & Bhengu 2019). KwaZulu Natal Department of Health (KZN DoH) is reported to have the highest

number of patient fatalities in South Africa (Maphumulo & Bhengu 2019). Linked to that is a massive amount of medical litigation claims due to patient mismanagement in KZN DoH compared to other provinces in South Africa (Maphumulo & Bhengu 2019). This study focused on graduate paramedics from the University of Technology in KwaZulu Natal. These graduate paramedics were employed by either a public or private EMS organisation operating in KwaZulu Natal province and clinically practising independently.

The World Health Organisation's (WHO) efforts to improve patient safety have focused mainly on hospital settings (Kohn et al. 2000;Kohn, Corrigan and Donaldson, 2000; Hagiwara et al. 2019). However, the pre-hospital EMC setting has a significant role in improving patient safety as part of the healthcare system delivery (Hagiwara et al. 2019; Mould-Millman et al. 2021). Promoting evidence-based policies and mechanisms that will improve patient safety is one of the actionable resolutions from the World Health Assembly (World Health Assembly 2002;Donaldson 2004; Wilson et al. 2012). There is a paucity of EMC-related empirical studies regarding patient safety globally and in South Africa (Mould-Millman et al. 2013). Therefore, this study intends to contribute to the inception of evidence-informed mechanisms that will promote patient safety in the pre-hospital settings as it relates to the clinical transition of graduate paramedics to independent practice.

1.3. Researcher's Interest in the Studied Phenomenon

As a South African-educated paramedic, I recall moments where, immediately after graduating as an independent practitioner, I was expected to assume professional duties as the senior personnel on my shift. Interestingly, a few weeks earlier, I was working as a student under supervision. Now, I was solemnly entrusted with the clinical responsibility for decision-making, safe patient care and supervision of less qualified personnel on my shift. However, this experience was not unique to me as my classmates expressed similar utterances as we shared experiences post-graduation.

Subsequently, during my tenure as a paramedic lecturer, I witnessed a parallel occurrence encountered by students upon completing their studies. Most individuals needed clarification and direction within the autonomous clinical practice environment. While a few individuals showed the fortitude to seek mentorship after completing their studies, others persisted as independent practitioners, hoping that circumstances would turn out favourably. Most of us engaged in the latter after completing our studies. While reflecting, I found it amusing to realise that even after more than ten years since my graduation as an independent practitioner and experiencing this phenomenon, the South African EMS profession still permits the continuation of the current situation. In this situation, graduate paramedics are thrown to independent clinical practice without control or support measures. This occurrence piqued my curiosity and motivated me to delve more into it through this doctoral study.

1.4. Research Problem

In just over a decade, four studies conducted in the South African pre-hospital milieu identified challenges with undergraduate paramedics' clinical practice development (Stein 2010; Moodley 2016; Smith 2018; Mariano 2022). Furthermore, these studies concluded that graduate paramedics are ill-prepared to practice independently (Moodley 2016; Smith 2018; Mariano 2022). Due to a paucity of research, as highlighted above, it remains unknown from these studies' findings how novice paramedics adjust within the South African EMS system as independent clinical practitioners.

Several South African-based studies (Moodley 2016; Smith, 2018 and Mariano 2022) have highlighted concerns regarding the inadequate preparedness of newly graduated paramedics to undertake independent clinical practice. These findings mirror those reported in high-income countries (HICs), which similarly describe the challenges faced by graduate paramedics during their transition into autonomous roles (Wyatt 2003; Willis et al. 2010; Lazarsfeld-Jensen, Bridges and Loftus, 2011). Specifically, HICs have witnessed further research advancements focused on developing and evaluating interventions to support this clinical transition (Devenish et al. 2016; Reid, Street, Beatty, Vencatachellum & Mills 2019; Caudle, Schuwirth & Sweet 2019). Unfortunately, there has been a paucity of such research advancement in low-middle-income countries, particularly the South African EMS. This study aimed to contribute

to that evidential research gap by identifying support mechanisms to aid the clinical transition of graduate paramedics to independent practice.
Some HICs like Australia, the UK and the USA have developed a compulsory one – two years supervised clinical practice period for graduate paramedics with a degree in EMC (Pozner, Zane, Nelson & Levine 2004; Devenish et al. 2016; Reid et al. 2019; Caudle et al. 2019). In South Africa, as already highlighted, there is no compulsory clinical supervision or internship period for graduate paramedics. Interestingly, within the South African Health System, medicine and nursing expect their graduates to complete either a period of internship and/or community service as part of their independent clinical practice development, thus aligning with their international counterparts (Meintjes 2003; National Department of Health 2005; National Department of Health 2017).

Jansen Van Vuuren (2019) explored the necessity of having an internship model for South African novice paramedics; his findings confirmed the need for an internship and highlighted safe clinical practice as one of its benefits. While the Jansen Van Vuuren's (2019) study sparked the discourse within the South African EMS to align with international best practices, endorsement from the statutory regulator (i.e. HPCSA) and the National Department of Health (NDoH) was paramount to realise the internship model in the South African pre-hospital milieu – four years later the statutory regulator has communicated no endorsement. In this study, the HPCSA and NDoH representatives' participation in identifying support mechanisms to aid the clinical transition of graduate paramedics was advantageous.

Willis et al. (2010) highlighted the dichotomy between EMS operations expectations and novice paramedics' capabilities, creating a risk for an unsafe clinical practice environment. This risk is not limited to the HIC EMS. South African EMS employers regularly recruit newly graduated paramedics against the backdrop of highly competitive international recruitment of South African paramedics (Gangaram 2015). As the experienced paramedics leave for better employment opportunities abroad, novice paramedics are left to function as seniors within the operational environment; most EMS employers expect them to practice in the clinical space without any clinical support or guidance (Gangaram 2015). Observable in circulating job advertisements for paramedics from both public and private EMS in South Africa - even though

intended to cater for a wider paramedics' community, is the inclusion of roles and responsibilities not cognisant of the novice paramedics capabilities and needs such as supervision and training of other ambulance crews including paramedic students (South Africa Department of Public Service and administration 2021). These job adverts might reflect a lack of understanding by EMS employers regarding novice paramedics' needs as expressed by Benner's (1982) skills development model. Relatable to that is the unknown impact on patient safety these graduate paramedics have upon their inception to independent clinical practice.

In summary, within the South African EMS milieu, it is unknown how graduate paramedics experience their clinical transition to independent practice. In addition, it is not fully understood what mechanisms should be instituted to support graduate paramedics during their clinical transition to independent practice. This study intended to contribute to this evidential research gap.

1.5 Research Aim

Through a Critical Theorist stance, the study aimed to explore the transition of graduate paramedics from dependent to independent clinical practice at a selected university in KwaZulu Natal.

1.5.1 Research Question

1. How do graduate paramedics transition from dependent to independent clinical practice?

1.5.2 Research Sub-Questions

1. What is the interplay between the work environment and the transition of graduate paramedics to independent clinical practice?

2. What mechanism/s must be instituted within the South African EMC profession to support the transition of graduate paramedics to safe, independent clinical practice?

1.6 Theoretical Orientation

Critical Theory (CT) guided this study in exploring the clinical transition of graduate paramedics from dependent practice (i.e. students) to independent practice (i.e. professionals). Intrinsic to CT is the development of praxis to guide the graduate paramedics' clinical transition process in the South African EMS milieu (Kellner 1993; How 2003; Asghar 2013). For this study, the term "praxis" refers to an accepted practice as a solution to an experienced unfavourable material condition (Kemmis 2010). CT, as a Social theory, assumes the existence of hegemony among the members of a society (How 2003); in this study, the perceived hegemony was between the graduate paramedics as novice practitioners and the South African Emergency Medical Service (EMS) employers and representatives as authoritarians. In the application of CT, the experiences of the graduate paramedics were advanced while their agency to self-determined changes was also encouraged (How 2003; Friesen 2008; Scotland 2012). The application of CT in this study is unique within emergency medical care. Chapter Three provides a detailed description of the study's theoretical orientation.

1.7 Research Design

This Critical theory-guided study was conducted using an exploratory mixed method research design. During the qualitative phase, critical participatory action research (CPAR) methodology was adopted to explore the clinical transition of the 2021 BHSc EMC graduates from one of the HEIs that offer the program. The qualitative data collection took place over a period of one year, thus making this a longitudinal study. The methods used to collect qualitative data were semi-structured interviews, focus group discussions and self-written reflective journals. Qualitative data were analysed using the Braun & Clarke (2006) thematic analysis method. All recommendations regarding the support mechanisms were subjected to a quantitative phase through a Delphi study. Using a Delphi study, the qualitative research findings were quantitatively validated by the South African EMC experts. Chapter Four provides a detailed description of the study design and methodology.

1.8 Study Significance

There has yet to be a known study within the South African EMS milieu that has explored the same phenomena, i.e. the clinical transition of graduate paramedics to independent practice. Thus, conducting this study contributes to the body of knowledge within the UMIC context in understanding this phenomenon. In addition, the application of Critical theory in exploring this phenomenon within the South African EMS context is unique, as no known studies have applied CT in this context. Furthermore, the applied research design and methodology, i.e. sequential exploratory mixed methods research with a qualitative phase of CPAR and a quantitative phase of a Delphi study, are also unique features of this study, thus contributing to their versatility.

Lastly, this study explored the clinical transition of graduate paramedics to gain a deeper understanding of this phenomenon. It developed verified support mechanisms to aid this crucial clinical development milestone for graduate paramedics, thus adding to the South African EMS professional practice.

1.9. Thesis Structure

This thesis is composed of eight chapters, outlined as follows:

1.9.1 Chapter One

The current chapter introduced the context of the study, including the research aim and questions. The significance of the study is advanced and the chapter concludes with an overview of the thesis layout.

1.9.2 Chapter Two

This chapter presents the appraised literature that informed this study. Key concepts related to graduate clinical transition to independent practice are presented.

1.9.3 Chapter Three

This chapter presents and justifies the adopted theoretical framework and paradigm that guided this study, i.e. Critical Theory (CT) and Critical Paradigm (CP).

1.9.4. Chapter Four

This chapter presents the adopted study design and methodology. This longitudinal study used an exploratory sequential mixed methods design with the qualitative phase adopting critical participatory action research methodology while the quantitative phase adopted a Delphi study.

1.9.5 Chapter Five

This chapter presents the conducted qualitative data analysis and findings. Braun & Clarke's (2006) thematic analysis method was applied.

1.9.6 Chapter Six

This chapter presents the quantitative data analysis and results. A Delphi study was adopted to validate the qualitative findings, i.e. recommended support mechanisms that will aid the clinical transition of graduate paramedics in South African EMS.

1.9.7 Chapter Seven

This chapter presents a discussion and integration of this study's qualitative findings and quantitative results.

1.9.8 Chapter Eight

This chapter presents the study's conclusion, recommendations and limitations.

1.10 Conclusion

This introductory chapter presented the study's background and context. While the phenomenon of graduates' clinical transition to professional practice is not new and is well researched from the perspective of high-income countries, an argument is advanced to explore it from the South African EMS context to fill the evidential research gap. An overview of the methodology and theoretical framework unique to this study were also presented. Concluding this chapter is an overview of this thesis layout.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents the reviewed literature that informed this study. A literature search was conducted using electronic databases, i.e. PubMed, Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL) complete, and ScienceDirect, research libraries i.e. EBSCOhost, ProQuest and Sabinet including online search engines, i.e. Google Scholar and ResearchGate (Randolph 2009; Winchester and Salji 2016). Grey literature was also searched from the university repositories that offer at least a master's degree in the Emergency Medical Care (EMC) program and government publication sites (Randolph 2009; Denney and Tewksbury 2013). Lastly, reference lists from key readings were further explored in the form of snowballing to retrieve literature relevant to the research focus (Randolph 2009; Denney & Tewksbury 2013).

The literature search included terms and a combination of terms related to the development of independent clinical practice by graduate paramedics. These search terms were "clinical practice development", "independent clinical practice", "skills development", "clinical skills development", "independent clinical skills development", "clinical transition", "patient safety", "communities of practice", "reflective practice" and "emergency medical care". Other search terms included words such as "paramedic*", "advanced paramedic*", "graduate paramedic*", "novice paramedic*", "emergency care practitioner*", "medicine" and "nursing". Boolean operators "AND" and "OR" were used to develop a search string. The search was conducted from 2020 to 2021 during the development of the research proposal and updated in 2023 until 2024 as the thesis was written.

Key concepts related to the clinical transition of graduate paramedics to independent practice were identified and presented as sub-topics. The paucity of research focusing on the clinical transition of graduate paramedics to independent practice impacts the narrative presented in this chapter. Most of the identified key concepts are explored from the perspective of the extensively researched areas, i.e. Medicine and Nursing, with inferences drawn to this study's area of focus i.e. graduate paramedics. Dated

seminal literature reviewed and deemed pertinent to advance specific arguments under the relevant sub-topics is referenced where applicable. The argument advanced in this chapter is the exploration of graduate paramedics' clinical transition to independent practice as a continuum of their clinical development from undergraduate supervised practice and not as an isolated phenomenon. Thus, the holistic focus on paramedic clinical skills development and its related concepts are presented in this chapter.

2.2. Skills Development

Dreyfus and Dreyfus (1980) argued that new skills are acquired through trial and error or by instruction, the latter being more efficient with high acuity skills. There are five reported distinct dynamic stages related to the acquisition of skills through instruction and are designated as novice, advanced beginner, competent, proficient and expert (Benner 1982; Dreyfus and Dreyfus 1986; Dreyfus 2004; Benner, Tanner and Chesla 2009). These stages are at the centre of the proposed skills acquisition model, as presented by Dreyfus and Dreyfus (1980) and the skills development model, as presented by Benner (1982). The characteristics of these skill acquisition stages are based on the performers' description of perceived changes in the task environment while acquiring a higher complex skill (Dreyfus and Dreyfus 1980). An argument is advanced by Dreyfus and Dreyfus (1980) that concrete experience is essential for the progressive development of skills acquisition. Although abstract rules produce skills, only concrete experience creates a higher level of performance (Dreyfus and Dreyfus 1980). Benner et al. (2009), as proponents of the Dreyfus and Dreyfus (1980) skills acquisition model, stated that the model is rooted in situated performance and learning through experience. Dall'Alba and Sandberg (2006) oppose the conception of the Dreyfus and Dreyfus (1980) skills acquisition model, although they acknowledge its extensive application. Dall'Alba and Sandberg (2006) caution against its limitation as it focuses entirely on the process or steps rather than the skill acquired. Likewise, Peña (2010) questions the general applicability of the Dreyfus and Dreyfus (1980) skills acquisition model, especially in medicine.

The Dreyfus and Dreyfus (1980) skills acquisition model was developed by observing chess players, pilots and drivers. Benner (1982) applied the Dreyfus and Dreyfus (1980) model to clinical nursing. She contextualised the five stages within clinical nursing and expanded on the characteristics of the actual skill as it applied to clinical nurses (Benner 1982). Dall'Alba and Sandberg (2006) commended Benner for her application of the Dreyfus skills acquisition model, particularly her focus on actual skills as displayed by the clinical nurses.

In an attempt to characterise the skills acquisition stages, researchers agree that novices are inexperienced; they acquire skills context-free and within the confinement of an instruction (Dreyfus and Dreyfus 1980; Benner 1982; Dreyfus 1986; Dreyfus 2004**;** Rousse & Dreyfus 2021). An advanced beginner has limited situational experience and notices recurrent patterns within a specific context but remains rule and instruction-bound (Benner 1982; Dreyfus 1986; Dreyfus 2004**;** Rousse & Dreyfus 2021). Competence is acquired through additional experience, holistic situation appreciation as well as the ability to set goals based on prioritising activities and the use of maxims to action skills (Dreyfus and Dreyfus 1980; Benner 1982; Dreyfus 1986; Dreyfus 2004; Benner et al. 2009; Rousse & Dreyfus 2021).

Proficiency requires goal setting beyond rules and maxim; it includes situational involvement and identifying salient features (Benner 1982; Dreyfus 1986; Dreyfus 2004; Benner et al. 2009; Rousse & Dreyfus 2021). However, the proficient performer remains rule and instruction bound on actions needed to achieve the set goals (Benner 1982; Dreyfus 1986; Dreyfus 2004; Benner et al. 2009; Rousse & Dreyfus 2021). The earlier classification of the Dreyfus and Dreyfus (1980) skills acquisition model identified expert performance as the final and highest stage of skills development. In this stage, the expert relies on intuition and vast experience to discriminate and action situational goals (Dreyfus and Dreyfus 1980; Benner 1982; Dreyfus 1986; Dreyfus 2004; Benner, Tanner and Chesla 2009; Rousse & Dreyfus 2021). When intuition and experience fail, an expert defaults to mental analysis, rules, instructions and maxim (Dreyfus and Dreyfus 1980; Benner 1982; Dreyfus 1986; Dreyfus 2004; Benner et al. 2009; Rousse & Dreyfus 2021). Dreyfus and Dreyfus (1980) and Benner et al. (2009) caution that not everyone will reach the expert stage within their professional settings. However, more recently, Rousse & Dreyfus (2021) stated that when performing

everyday skills required for daily activities, the majority can develop expertise. In their recent developments, Rousse & Dreyfus (2021) revisited the stages in the skills acquisition model and introduced the sixth stage termed mastery. The mastery stage is a higher progression from the expert stage of skills acquisition (Rousse & Dreyfus 2021). In this stage, the master is highly motivated to function beyond intuition on what ordinarily works and makes sense (Rousse & Dreyfus 2021). The master questions the status quo, pushes boundaries on what is accepted as practice and aims to continuously refine skills acuity and precision (Rousse & Dreyfus 2021).

Benner (1982) argues that identifying and documenting the level of performance by clinical nurses, using the Dreyfus and Dreyfus (1980) skills acquisition model, improves patient care and allows for guidance and career progression within clinical nursing. However, Peña (2010) challenges the accurate applicability of the Dreyfus and Dreyfus (1980) and Benner (1982) skills acquisition and development models within the health sciences, particularly on high-order skills such as critical-decision making and problem-solving. Critical decision-making and problem-solving are skills required for one to be deemed an expert within the medical profession. The reliance on intuition to describe a skilled expert is perceived as an oversimplification of a complex psychological and neurological learning process (Peña 2010). The use of reason for clinical decision-making and clinical problem-solving is key for skilled medical experts (Peña 2010). Lyon (2015) and Kubsch (2020) stated that multiple publications question and challenge the construction and applicability of the Dreyfus and Dreyfus (1980) skills acquisition model; however, there is also a large and varied adoption of this model proving its versatility and robustness across multiple professions, including health sciences with nursing being at the helm. In their defence, Rousse & Dreyfus (2021), argue the term intuition is adopted to describe the observable psychomotor aspect of skill performance by experts; however, it does not imply the negation of the cognitive process. Experts to a higher degree have refined their skills performance, making some components that constitute the execution of skills such as the cognitive domain and psychomotor performance indistinguishable (Rousse & Dreyfus 2021). This high level of skill performance resembles an action-reaction process that is intuitive even though the cognitive process is highly involved (Rousse & Dreyfus 2021). Rousse & Dreyfus (2021) thus argue for the possible

application of the skill acquisition model even in the most elaborate specialities in medicine such as neurosurgery.

Applicable to the emergency medical care settings, Willis et al.'s (2010) study on graduate paramedics in Australia reported that universities produce paramedics that function at a novice level of the Dreyfus and Dreyfus (1980) skills acquisition model. Already highlighted in Chapter One, EMS operations expect graduate paramedics to at least function at the clinical competency stage; this creates a dichotomy between the university production level and EMS operations expectations (Willis et al. 2010). Wyatt (2003) argues that the EMS operations clinical environment is crucial for novice graduate paramedics to acquire experience and develop their clinical competency. The inference of the findings presented by Wyatt (2003) and Willis et al. (2010) indicate the complementary relations between university education and the EMS operational environment in the clinical development of graduate paramedics. Dreyfus and Dreyfus (1980), Benner (1982) and Rousse & Dreyfus (2021) emphasise the importance of experience in aiding the advancement of healthcare practitioners through the skills acquisition and development model stages. In the next section, the concept of experience as a source of learning is explored further.

2.3. Experiential Learning Theory

Experiential Learning Theory (ELT) originates from the seminal work done by earlier scholars like Kurt Lewin, John Dewey and Jean Piaget (Kolb 1984; Kolb & Kolb 2009). ELT enhances the learning process by advancing a holistic approach to learning through integrating experience, cognition, perception and behaviour (Kolb 1984; Miettinen 2000; Johnson, Khan & Saeed 2021). Learning from and through experience plays a significant role in aligning ELT with the earlier work done by Lewin, Dewey and Piaget (Kolb 1984; Kolb & Kolb 2009). Kurt Lewin is acknowledged as an early contributor to action research (Kolb 1984; Adelman 1993; Burnes 2004). In his argument, Lewin reiterates that core to action research is the recognition of the current experienced injustice, leading to the reflection of such an experience, followed by drawing abstract perceptions and then re-living the experience based on the new understanding (Kolb 1984; Adelman 1993; Burnes 2004). Kolb (1984) acknowledges two key aspects of Lewinian action research as: i) validation of the concrete experience and ii) creating mechanisms for feedback while re-experiencing the new

understanding. Lewin, as a social psychologist, prioritised the exploration of marginalised groups' lived experiences through action research with the intention of learning from and changing their experiences (Burnes 2004).

According to John Dewey, learning is socially constructed and connected to personal experiences (Roberts 2003). Real-life experiences provide context for learning and organise knowledge (Roberts 2003). At the core of Dewey's theory is the quality of the experience that the learners interact with during teaching. This experience should impart knowledge and skills applicable to different situations in the future (Roberts 2003). Based on Dewey's experiential learning theory, the new knowledge and capabilities are at a higher level than the preceding and will further aid in developing the next higher level of knowledge iteratively (Roberts 2003). Key to Dewey, similar to Lewin, is the social process in which this acquisition of new knowledge occurs; the social nature of this process renders it a conducive learning space (Roberts 2003; Burnes 2004). When education is allowed to be social, experts and novices interact, mature and immature people interact, it is during this social interaction that experiences are exchanged and a higher level of knowledge and performance is attained (Roberts 2003).

Like Kurt Lewin, John Dewey's description of learning emphasises the dialectic process that integrates experience, observation and action (Kolb 1984). Kolb (1984) explains this by referring to an impulse of an experience giving rise to an idea, an idea giving direction to the impulse; by allowing crucial time for observation and judgment, a purposeful action is attainable. Through the integration of opposing but symbolically related processes, a mature purpose results from a blind impulse (Kolb 1984). John Dewey believed that people learn from previous experiences, which allows them to shape their future experiences (Roberts 2003). New experiences must be relatable to previous experiences but must be able to create a conflicting, unsettling dilemma to facilitate learning and acquisition of new experience and knowledge (Roberts 2003).

Jean Piaget's learning and cognitive model starts at infancy and extends to adulthood (Kolb 1984). It is based on experience and concept, reflection and action (Kolb 1984). Kolb (1984:23) states that this developmental approach:

"Moves from (a) concrete phenomenal view of the world to an abstract constructionist, from an active egocentric view to a reflective eternalized mode of knowing".

Like Kurt Lewin and John Dewey, the experiences of an individual interacting with the environment are key to this cyclic learning and development process (Kolb 1984; Kolb & Kolb 2009). In Piaget's model, two concepts dictate learning from experience, i.e. accommodation and assimilation; an intelligent balance of the tension between these two concepts is critical (Kolb 1984; Kolb & Kolb 2009). Kolb (1984) cautions that when accommodation processes dominate assimilation imitation develops, i.e. wanting to become what the environment dictates. The opposite of this is when the assimilation process dominates accommodation rigidity ensues, i.e. imposing your concepts and schema, disregarding the environmental realities (Kolb 1984). Meaningful learning is therefore, the mutual interaction between the process of accommodating schemas experienced in the world and the process of assimilation of experiences from the world into existing concepts and schema (Kolb 1984). Cognitive growth from concrete to abstract and from active to reflective is through an iterative interaction of assimilating and accommodating the new with the old experiences to form a higher level of cognition and performance (Kolb 1984).

Highlighting pertinent characteristics of ELT based on the three theories presented above, it is permissible to state that learning is perceived as a process, not an outcome (Kolb 1984; Kolb & Kolb 2009). The ELT assumes a philosophical and epistemological posture that ideas are not absolute elements of thoughts, but they are conceptualised and re-conceptualised through experience (Kolb 1984). Through experience, there is a continuous modification of these ideas to improve knowledge and performance (Kolb 1984; Kolb & Kolb 2009). Furthermore, learning is a continuous process grounded in experience where learners derive and test their learning from their own experiences (Kolb 1984; Kolb & Kolb 2009). This concept of learning from experience and with experience reiterates the argument already presented above through Dreyfus & Dreyfus's (1980) skills acquisition and Benner's (1982) skills development models.

Experiential learning is therefore intrinsic to the skills acquisition and development models.

The ELT is dynamic, and it is based on an iterative process that intends to resolve its dual dialectics of action/reflection and experience/abstraction (Kolb & Kolb 2009). These dimensions describe the ELT nature of learning, where learning is a transaction that takes place between the individual and the environmental experiences (Kolb & Kolb 2009). According to Kolb & Kolb (2009), ELT defines learning as a process where knowledge is created through experience. To create this knowledge, experience is captured and transformed into a higher level of understanding and capabilities (Kolb & Kolb 2009). The Experiential Learning Cycle (ELC) is one such diagrammatic representation model that depicts that process; refer to Figure 2.1 below. As depicted in the ELC, the ELT comprises of two dialectically related modes of capturing experience i.e. concrete experience and abstract conceptualization and two dialectically related modes of transferring the experience which are reflective observation and active experimentation (Kolb & Kolb 2009). Experiential learning is centered around creating tension amongst these four dialectically related modes to create knowledge and skills (Kolb & Kolb 2009).

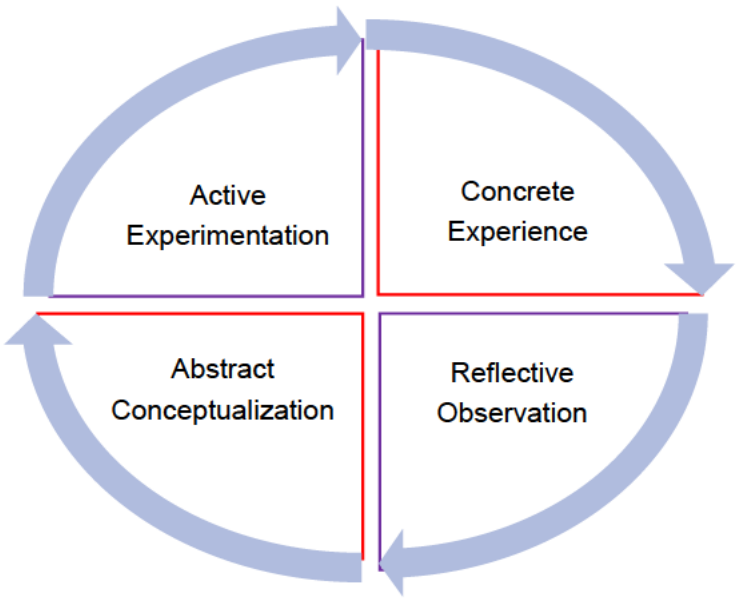

Figure 2. 1: Experiential Learning Cycle, adapted from Kolb & Kolb (2009)

Miettinen (2000) advances an argument that Kolb (1984), in his conception of the ELT adopted eclecticism; thus Kolb grouped theories that were taken out of context to support his construction of ELT. Furthermore, the ELC duplicates the Lewinian Model of Action Research (Miettinen 2000). Johnson, Khan & Saeed (2021) argue that even though the theoretical underpinnings of the Kolb (1984) ELT are questioned by some scholars; the majority of scholars have accepted it as evidenced by the myriad applications and citations across various fields of study, thus proving its popularity based on its versatility and pragmatic application. Kolb (1984) explicitly refers to the theories that informed the conception of the ELT and further acknowledges their contributions and limitations (Johnson et al. 2021). Kolb & Kolb (2009) concede that ELT is not conceptualised to be a panacea for adult teaching and learning, however through its wide acceptance and application amongst scholars across a broad spectrum of professions, it does prove to be filling an area of need within the learning space. In the next section, the paramedics' clinical competency development is explored.

2.4. Clinical Competency Development in EMC Education

Clinical competency is fundamental to the education and development of paramedics in South Africa and the international emergency medical care programs (Hou, Rego & Service 2013; Mould-Millman et al. 2017; Reid, Street, Beatty, Vencatachellum & Mills 2019). In South Africa, the undergraduate paramedics enrolled for the bachelor's degree in EMC are exposed to simulated patient care using skills trainers and high-fidelity mannikins as part of their clinical skills and competency development (Vincent-Lambert & Douglas 2019; Professional Board for Emergency Care 2020; Sobuwa 2023). Additionally, undergraduate paramedics are subjected to work-integrated learning opportunities under supervision in hospital and pre-hospital settings as part of their clinical competency development (Smith 2018; Professional Board for Emergency Care 2020).

The HPCSA as the regulator, prescribes the minimum standards for clinical skills to be completed by all undergraduate paramedics across all EMC education institutions in South Africa (Smith 2018; Professional Board for Emergency Care 2020). Furthermore, the HPCSA has input on the clinical skills and simulated patient care assessments to be conducted by the EMC education institutions (Professional Board

for Emergency Care 2020). Although the acquisition of clinical skills and clinical hours are closely related, in the South African EMC education system the core emphasis is the acquisition of clinical skills for clinical competency development (Professional Board for Emergency Care 2020). Nevertheless, the HPCSA still requires that an undergraduate paramedic enrolled in the BHSc EMC program complete a minimum of 1200 work integrated learning hours and 660 classroom practicum hours, spread over the four years of study as part of their clinical skills competency development (Smith 2018; Professional Board for Emergency Care 2020).

Furthermore, all undergraduate paramedics are also expected to complete a clinical skills logbook, recording all performed skills as prescribed by the HPCSA (Professional Board for Emergency Care 2020). In this logbook, the documented clinical skills are linked to the taught curriculum outcomes (Professional Board for Emergency Care 2020). Undergraduate paramedics are allocated to specific clinical learning sites to work under supervision and acquire clinical skills. These clinical sites include prehospital settings: ambulance and primary response units; hospital settings: in-hospital units and clinics e.g. emergency department, obstetric units, theatres, intensive care unit and primary healthcare facilities. It is worth noting that the HPCSA doesn't prescribe the number of hours to be spend in clinical sites by students, however, emphasises on the acquisition of clinical skills and competencies as prescribed in the curriculum (Professional Board for Emergency Care 2020). Logbooks contain performed skills such as peripheral venous canulation, patient vital signs, patient clinical examination, delivery of a newborn baby, administration of emergency medications and advanced airway management, documented by the student and signed off by the supervisors during work-integrated learning shifts (Smith 2018; Professional Board for Emergency Care 2020). It is a common occurrence to find undergraduate paramedics working additional hours beyond the rostered work-integrated learning shifts, either to cover clinical skills gaps or address clinical competency deficiencies identified by either their mentor or clinical supervisor as part of their clinical development. However, there are also reports of challenges experienced by undergraduate paramedics in South Africa during their work-integrated learning, hindering them from acquiring expected clinical exposure and skills (Stein 2010, 2017; Maake, Millar, Christopher & Naidoo 2021). These challenges range from lack of opportunities to perform high-risk skills and less frequently

encountered skills (Stein 2010, 2017). Discrimination practices based on race, gender and language use have also been reported to affect clinical exposure and opportunities afforded to students during their work-integrated learning, thus affecting their exposure and acquisition of clinical skills (Maake et al. 2021).

Publications from Hou et al. (2013) and Reid, Street, Beatty, Vencatachellum & Mills (2019), reported on the earlier emphasis regarding the completion of clinical hours by undergraduate paramedics in Australia, New Zealand and the UK. A subsequent development is a regulatory publication from the Australian Paramedicine Board, emphasising the importance of clinical skills acquisition and the development of clinical competency beyond the completion of clinical hours (Paramedicine Board of Australasia 2020). Even though there is an incongruent focus regarding clinical competency development from EMC programs, Reid et al. (2019) report that the graduate paramedics in the HICs are not ready to commence with independent clinical practice, thus requiring a period of internship. Evidently, on average, a South African undergraduate paramedic spends a longer clinical time with patients, acquiring practical skills and developing clinical competency. Reid et al. (2019) conclude that an increase in time spent by supervised undergraduate paramedics in an ambulance during work-integrated learning doesn't translate into work readiness, there is still a need for internship. Although the South African EMS regulatory body places emphasis on the acquisition of clinical skills and clinical development rather than time spent during work-integrated learning (Professional Board for Emergency Care 2020); it remains unknown whether this program design and focus translates into work readiness for graduate paramedics. This evidential research gap is a focus area of this study. In the next section, graduates' clinical transition to independent practice is explored.

2.5 Graduate Clinical Transition

Graduate paramedics' clinical transition into professional practice is the essence of this study. Kramer (1975) explored graduate nurses' clinical transition and coined a concept termed "*Reality Shock*". Duchscher (2001) re-explored this concept in the 21st century and termed it "*Transition Shock*". Transition shock is a phenomenon associated with new graduates as they develop from students to professionals, moving from a familiar tuition environment into an unfamiliar professional work setting (Casey

et al. 2004; Duchscher 2008; Dyess & Sherman 2009; Clipper & Cherry 2015; Ivins, Copenhaver and Koclanes 2017; Duchscher & Windey 2018; Cai 2021). Transition shock is an internal conflict experienced by the new graduate in an attempt to reconstruct a new professional sense of self, from the perceived ideals of the received education system, aligning with the contextualized realities of the professional practice (O'Brien, Moore, Dawson & Hartley 2014; Duchscher & Windey 2018; Cai 2021). During the transition phase, the novice practitioner is confronted with a broad scope of experienced physical, intellectual, emotional, developmental and sociocultural factors (O'Brien et al. 2014; Duchscher & Windey 2018; Cai 2021). However, central to the experienced transition shock are the conflicting ideas and beliefs held by the novice practitioner regarding the relationships, roles, responsibilities, knowledge and performance expectations between the academic and professional settings (O'Brien et al. 2014; Duchscher & Windey 2018; Cai 2021).

Duchscher & Windey (2018) argue that novice graduates experience transition shock with varying impacts on their emotional, psychological, intellectual and physical well-being. Thus, not all novices will experience the transition shock similarly. During the initial 12 months of professional practice, novice practitioners experience transition shock and develop through multiple stages (Duchscher & Windey 2018; Graf, Jacob, Twigg & Nattabi 2020; Cai 2021). According to Duchscher & Windey (2018), the stages of transition shock are identified as doing, being and knowing. These stages are not linear, prescriptive or strict in progression, but they are evolutionary and eventually transformative (Duchscher & Windey 2018).

The doing stage is the first stage of transition shock immediately after the initiation of professional practice by graduates and it may last 3-4 months (Duchscher & Windey 2018; Graf et al. 2020). During the doing stage, the novice graduate has transitioned from the familiar educational context into the unfamiliar professional work settings (Duchscher & Windey 2018; Graf et al. 2020). There is a heightened sense of anticipation and expectations from the professional work settings, which might create anxiety for the graduates due to uncertainty (Duchscher & Windey 2018; Graf et al. 2020). The novice professional is emotionally and psychologically vulnerable during this period due to their desire to be accepted within the professional setting as a fellow professional (Duchscher & Windey 2018; Graf et al. 2020). There is a lot of real

practice development that must be attained by the novice during this stage, which might expose the quality of undergraduate training received and thus create a risk for anxiety and self-doubt, loss of credibility with colleagues and high-stress levels (Duchscher & Windey 2018). During this stage, the novice professional will have to learn new things, perform new tasks, adjust to new challenges and accommodate new experiences (Duchscher & Windey 2018).

The being stage is the second stage of transition shock and occurs between the 4th and 8th months after the transition begins (Duchscher & Windey 2018; Graf et al. 2020). During this stage, there is a rapid advancement in thinking, knowledge level and skills competency exhibited by the novice professional, translating into the novice being comfortable with their professional roles and responsibilities (Duchscher & Windey 2018; Graf et al. 2020). It is during this stage that the novice professional will search for a deeper meaning and understanding, examine, question and critique the effectiveness of work systems and functionality (Duchscher & Windey 2018).

The knowing stage is the third and final stage of evolution during the transition shock experienced by novice graduates (Duchscher & Windey 2018; Graf et al. 2020). During this stage, the novice professionals work to be distinguishable from the other experienced colleagues around them, and they can now function as professionals in their rights (Duchscher & Windey 2018; Graf et al. 2020). They will critique the conditions of their work environment and become aware of their powerless nature to foster meaningful changes within the workplace (Duchscher & Windey 2018; Graf et al. 2020). It is during this stage that the novice professional might exhibit some degree of exhaustion due to their commitment to improving themselves within the work environment (Duchscher & Windey 2018). Due to an unhealthy work-life balance from the second stage, novice professionals might start to critique the work environment and become impatient with their inability to effect change as they realise the bureaucratic work environment and systems (Duchscher & Windey 2018; Graf et al. 2020). Diligence is required during this stage from colleagues and line managers to guide the novice in finding work meaning, purpose and a balanced work-life (Duchscher & Windey 2018). Development through the transition stages is not linear; there can be regression; however, the experienced work environment has an impact on its success (Duchscher & Windey 2018).

Related to the experienced transition shock, are expectations the medical graduates have from their future employers during their inception of professional practice (Pomaranik & Kludacz-Alessandri 2023). In a Polish study of young medical students and graduates, Pomaranik & Kludacz-Alessandri (2023) reported that the greatest expectations medical graduates have of their future employers are related to the organisational aspects of employment. Graduates expect future employers to provide a good and conducive work environment, assistance with achieving a balanced work-life environment and support from their line managers (Pomaranik & Kludacz-Alessandri 2023; See, Koh, Baladram & Shorey 2023). Graduates expect employers to afford them an opportunity for workplace orientation (See et al. 2023). Personal motivators such as salaries, seniority and material benefits were reported as least important for the graduates (Pomaranik & Kludacz-Alessandri 2023).

Specific to organisational aspects, medical graduates expected their future employers to have policies in place that will guide their professional development (Pomaranik & Kludacz-Alessandri 2023). Furthermore, employers should have learning and development programs that aim to develop skills, talent and professional competencies (Hirst, Stares & El-hussein 2022; Pomaranik & Kludacz-Alessandri 2023). Additionally, medical graduates expect their future employers to have a friendly and caring work environment, managers should create a professional and supportive workspace with mutual respect for all staff members (Pomaranik & Kludacz-Alessandri 2023). The terms and conditions of employment should allow for a balanced work-life with flexible working hours (Pomaranik & Kludacz-Alessandri 2023; See et al. 2023). The balanced work-life expectation was more prevalent in Generation X, Y and Z compared to baby boomers (See et al. 2023).

Specific to the remuneration systems, medical graduates expected that their future employers should provide fair staff remuneration and financial benefits like medical and housing allowances (Pomaranik & Kludacz-Alessandri 2023). The employer should provide job security and remuneration should correlate with attained qualifications and duties performed (Pomaranik & Kludacz-Alessandri 2023). Lastly, medical graduates expected their future employers to provide all necessary clinical equipment to perform duties according to their expertise (Pomaranik & Kludacz-Alessandri 2023).

There are documented reports on the challenges experienced by medical graduates during their inception to professional practice (O'Brien et al. 2014; Thompson 2015; Hanna, Jordan, Stern & Pearce 2021; Hirst et al. 2022). These challenges are related to the clinical transition of medical graduates, including paramedics, into independent practice (Thompson 2015; Hanna et al. 2021). Graduate paramedics face a multitude of daily obstacles. These include personal, legal, organisational, clinical, professional and moral challenges while also functioning in a complex and challenging prehospital setting (Thompson 2015; Hanna et al. 2021). Thompson (2015) argues that newly graduated paramedics lack confidence in their clinical capabilities, particularly clinical decision-making and the delegation of lower qualified crews with more clinical experience than them. The graduate paramedics relate their lack of confidence to the sudden realisation that they are clinical seniors and there is no "safety net or back-up" to guide them (Thompson 2015). Graduate paramedics have also been reported to experience fear of clinical malpractice that can lead to their practice licence being revoked by the statutory regulator in an instance where medical errors are committed (Thompson 2015). Lack of communication skills and inability to deal with the emotional aspects of the profession are some of the reported challenges experienced by graduate paramedics (Hanna et al. 2021). Thompson (2015) and See, Koh, Baladram & Shorey (2023) highlight that graduates experience challenges in applying theory to practice at their inception to independent clinical practice. This theory-practice gap is suspected to be associated with a lack of clinical exposure during undergraduate training while they undertake work-integrated learning (Thompson 2015; Kennedy et al. 2015). Furthermore, graduate paramedics are unable to cognitively comprehend a holistic patient care strategy, exacerbated by their inability to adapt as they transition from a controlled classroom-practice environment into a dynamic pre-hospital care environment as independent practitioners (Thompson 2015). These experienced clinical transition challenges are not unique to graduate paramedics as they are observed among other healthcare professionals, including nurses and medical doctors.

Scholars unanimously agree that for graduates to have a purposeful and meaningful transition into their professional roles, an ongoing support system is essential while acquiring workplace experience (Kramer 1975; Casey et al. 2004; Duchscher 2008; Dyess & Sherman 2009; Clipper & Cherry 2015; Thompson 2015; Duchscher &

Windey 2018; Harrison, Birks, Franklin & Mills 2020). As part of the support mechanisms, nursing in Australia adopted a one-year internship period to support the clinical transition of graduate nurses (Harrison et al. 2020; Graf et al. 2020). Additional mechanisms include programs to capacitate preceptors to better support graduate nurses (Casey et al. 2004; Duchscher 2008; Dyess & Sherman 2009; Clipper & Cherry 2015; Duchscher & Windey 2018; Kaihlanen et al. 2020). Workplace orientation on policy and operational procedures is reported to reduce transition stress and anxiety, resulting in high retention of novice practitioners in the healthcare profession (See et al. 2023). This type of support structure is not unique to nursing as medicine adopted a similar approach, to support medical graduates (Chotirmal et al. 2009; Scicluna et al. 2014; Kulkarni 2017). The majority of the studies conducted on the clinical transition of healthcare professionals focused on nursing and medicine (Kramer 1975; Dyess & Sherman 2009; Thompson 2015; Graf et al. 2020; Pleshkan & Hussey 2020; Kaihlanen, Elovainio, Haavisto, Salminen & Sinervo 2020; Cai 2021). This study's unique focus on graduate paramedics is novel and adds to the body of knowledge.

Kennedy, Kenny and O'Meara (2015) and Thompson (2015), reiterated the paucity of EMC research on the transition of graduate paramedics into professional practice. In their scoping review, Kennedy et al. (2015) identified eleven articles that addressed their inquiry. There were no papers retrieved from the lower and upper-middle-income countries addressing this area (Kennedy et al. 2015). With their limited evidence, they inferred the emergence of transition shock to be experienced by graduate paramedics (Kennedy et al. 2015). Earlier studies in the EMC milieu have identified the need for novice paramedics to be supported by employers and the profession (Wyatt 2003; Willis et al. 2010; Thompson 2015). However, it remains to be explored and understood what kind of support should be offered to novice paramedics, considering the global differences in EMS systems and the unique working environment in South Africa. Filstad & McManus (2011), from their Norwegian-based study of graduate paramedics in the workplace, recommended social interaction and participation within an established organisational culture as valuable to the transition of novice paramedics. Graduate paramedics getting access to colleagues and participating in established workplace practices provides them with support mechanisms to enact their educational knowledge into professional practice (Filstad & McManus 2011). Preceptors should be made available for graduate paramedics during their inception

to independent practice (Thompson 2015). Preceptors are defined as experienced professionals who are designated to support and guide new graduates, to enable their transition from student to professional practice (Thompson 2015). Graduate paramedics have been reported to rely on their colleagues for guidance and support as they navigate their clinical transition journey (Thompson 2015). A one-year internship period for graduate paramedics in some HICs is a practice already established (Devenish *et al.* 2015; Reid et al. 2019). This will be discussed in more detail below.

The only documented support mechanism within the South African EMS settings addressing the phenomenon of transition shock experienced by graduate paramedics is from Jansen Van Vuuren (2019). He recommended the introduction of an internship for graduate paramedics to foster a supportive environment and build relations within the profession (Jansen Van Vuuren 2019). The evidential research gaps regarding transition shock, including its support mechanisms, were areas of interest explored by this study within the context of paramedic practices in South Africa as an upper-middle-income country. The following section explores communities of practice as a form of support mechanism for graduate paramedics as they transition into independent practitioners.

2.6 Communities of Practice

The concept of communities of practice (CoP) is an extension of the apprenticeship model (Lave 1991; Smith 2003). Smith (2003) clarifies that organisational development acknowledges apprenticeship as a formal training and development model while learning organisations highlight the significance of informal groupings and communities that promote learning. CoP is a site of learning through social interaction, based on situated learning within an established hierarchy of participants (i.e. peripheral and core) driven by mutual participation, experience and mastery of key community knowledge and skills (Lave 1991; Jenkins, Palermo, Clark & Costello 2024). In a CoP context, learning shifts beyond the acquisition of skills and knowledge to social participation as members develop from peripheral (newcomers) participants to core (old-timers/experts) participants over time (Smith 2003; Jenkins et al. 2024). As these newcomers move from peripheral towards full participation, their knowledge

and socio-cultural practices within the community also grow (Smith 2003; Jenkins et al. 2024).

Novice paramedics are confronted with the need to belong as they transition into professionals. Social models such as the CoP can serve as a guide to navigate the challenges brought by transitioning into independent clinical practice. Through the concept of CoP, an argument is advanced that learning is a situated social process influenced by the cultural and historical practices an individual must interact with (Farnsworth, Kleanthous & Wenger-Trayner 2016). Specific to the South African EMS systems, the graduate paramedic will work in either a public or private EMS environment. Under these services, the graduate paramedics automatically participate in various groupings that fulfil the role of a CoP. An example thereof is the paramedic group which is composed of only paramedics with a varying level of experience, ranging from novice to highly experienced. The shift group is another example composed of the paramedic and other EMS personnel at a lower level of qualification than the graduate paramedic. In these groups, the graduate paramedics fulfil various roles and responsibilities while also exercising a varying degree of authority. An applicable example is when the graduate paramedics are peripheral participants within the paramedic group - the graduate paramedics will look up to the experienced paramedics for guidance and support. At the same time, they provide them with the latest literature and practices. Secondly, when the graduate paramedics are core participants within the shift group - the graduate paramedics will clinically guide and support lower qualified personnel within the shift system while they learn the organisation systems and processes from them.

Unless these groupings are recognised as CoP and social learning sites, able to assist the graduate paramedic in transitioning into independent clinical practice, their actual value and strength might not be fully realised. Lave & Wenger (1991), like John Dewey, argued that learning is a social practice that includes the whole person in relation to social communities. This implies that to become a full participant, a member is involved in new activities and functioning to eventually master new understandings (Lave & Wenger 1991). Furthermore, activities, functions and understanding don’t occur in isolation; they are part of a system and the relation within the system gives them meaning (Lave & Wenger 1991). As graduate paramedics transition into a professional

EMS system, they need to function in a clinical space within that system. The following section explores internship and community service as legislated support mechanisms for graduate paramedics.

2.7 Internship and Community Service

The majority of healthcare programs with an exit-level outcome of independent clinical practice, incorporate requirements for graduates to complete some form of internship and/or community service period, in addition to the work-integrated learning as part of the clinical transition (National Department of Health 2005; Chotirmal et al. 2009; Scicluna et al. 2014; Bola, Trollip and Parkinson 2015; Kulkarni 2017; National Department of Health 2017; Swaid, Elhilu & Mahfouz 2017; Ross, Naidoo and Dlamini, 2018; Zhao et al. 2021). An internship is a period of supervised clinical practice that newly graduated medical professionals complete before their registration as independent clinical practitioners (Health Professions Council of South Africa 2017). A community service program is also a clinical transition period where newly graduated medical professionals are expected to serve the community in public healthcare facilities as part of capacitating the underserviced and marginalised communities while simultaneously developing their independent clinical practice under supervision (Nkoane & Mavhandu-Mudzusi 2020; Mabusela & Ramukumba 2021).

The internship and community service models are based on the apprenticeship model (Bola et al. 2015; Kulkarni 2017; Ross, Naidoo & Dlamini 2018). Lave & Wenger (1991) argue that apprenticeship models afford the necessary learning environments to acquire such expertise whenever high levels of knowledge and skills are a prerequisite. Currently, in South Africa, medical doctors and nurses are subjected to a legislated period of internship and/or community service enforceable by their independent regulatory bodies (National Department of Health 2005; Chotirmal et al. 2009; Scicluna et al. 2014; Bola, Trollip and Parkinson 2015; Kulkarni 2017; National Department of Health 2017; Swaid, Elhilu & Mahfouz 2017; Ross, Naidoo and Dlamini, 2018; Zhao et al. 2021). As highlighted in Chapter One, South African paramedics with a bachelor's degree in EMC have an extensive range of high-acuity clinical skills. However, they are expected to perform independently upon licensing with the HPCSA without the legislated requirement to complete an internship or community service period.

Numerous studies internationally report on internship and medical undergraduates' experiences (Chotirmal et al. 2009; Scicluna et al. 2014; Swaid, Elhilu and Mahfouz 2017; Swaid, Elhilu & Mahfouz 2017; Ross, Naidoo and Dlamini, 2018; Zhao et al. 2021; Carlsson, Nilsdotter, Bergman & Liljedahl 2022). In formulating a discourse on this research, I will highlight pertinent emergent findings from relevant studies representing both high and low-income countries. Studies in high-income countries report that medical students are ill-prepared to commence with independent clinical practice after completing an internship (Chotirmal et al. 2009; Scicluna et al. 2014; Carlsson, Nilsdotter, Bergman & Liljedahl 2022). Furthermore, the increase in medical litigation in most HICs affects how medical students are supervised as undergraduates during their work-integrated learning period, including during their internship (Swaid et al. 2017). Supervisors are reportedly reluctant to allow medical students and novice medical graduates the opportunity to practice clinical skills due to the high risk of medical litigation (Swaid et al. 2017). The high rate of litigation against medical professionals in the HICs affects the quality of clinical practice exposure for undergraduates and novice medical professionals, thus making them unprepared for independent clinical practice (Swaid et al. 2017). Beyond the high medical litigation risk, an internship is also perceived to be very stressful for medical students, thus resulting in personal health problems and high work absenteeism by novice practitioners (Teo et al. 2011; Zhao et al. 2021). Consequently, this negatively impacts the quality of patient care rendered (Teo et al. 2011; Zhao et al. 2021). In an attempt to mitigate the negative experiences encountered by medical students, Carlsson, Nilsdotter, Bergman & Liljedahl (2022) recommended the implementation of an extensive support system for medical students during the internship to reduce high stress levels and overall negative experiences.

South African medical students are expected to complete two years of internship followed by one year of community service as part of their clinical competency development and transition into independent practice (Meintjes 2003; Nkabinde et al. 2013; Bola et al. 2015; National Department of Health 2017; Ross et al. 2018). Similarly, nursing students are expected to complete one year of community service as part of their clinical competency development and transitioning into professional practice which is preceded by an extensive period of undergraduate work-integrated learning and classroom practicals (National Department of Health 2005; Abiodun,

Daniels, Pimmer & Chipps 2019). Contrary to the research findings from the HICs, the majority of publications from South Africa report that medical students expressed satisfaction with their internship and felt adequately prepared for independent clinical practice (Nkabinde et al. 2013; Bola et al. 2015; Mofolo & Botes 2016; Ross et al. 2018). Even though medical litigation is a reality in the South African health system, students and novice graduates are still allowed to practice in the clinical setting under supervision by experts in the public sector training institutions (Nkabinde et al. 2013). However, the emergence of a concerning trend of self-reported depression and suicidal thoughts, experienced by medical interns is an alarming situation that calls for the South African health system to mitigate (Naidu, Torline, Henry & Thornton 2019).

Regarding the pre-hospital milieu, paramedics from HICs (i.e. Australia, the UK and the USA) are required to complete one to two years internship or supervised period with an EMS provider post-registration as independent practitioners (Pozner et al. 2004; Devenish *et al.* 2015; Devenish et al. 2016; Reid *et al.* 2019; Caudle, Schuwirth and Sweet 2019; Copson, Eaton & Mahtani 2024; Brennan et al. 2024). Paramedics are reported to have experienced an increased exposure and performance of critical clinical skills during their internship period, thus assisting with their skills development and proficiency (Bury, Janes, Bourke & O'Donnell 2007; Alrazeeni 2018; Copson et al. 2024). In addition, paramedics are also afforded an opportunity to be orientated within the work environment (Bury et al. 2007; Caudle et al. 2019; Reid *et al.* 2019; Copson et al. 2024), thus assisting them with the understanding of the organisational culture and practice (Caudle et al. 2019). Specific to Ireland, paramedics during their internship are allocated personal mentors who work closely with them and also assist with formal patient debriefing and reflection (Bury et al. 2007). Furthermore, special time is allocated to paramedics during their internship to conduct patient follow-ups in the hospital settings to gain insight into their progression and the impact of the pre-hospital patient care rendered (Bury et al. 2007). Evident from the above HIC EMS practices are the deliberate efforts to establish support mechanisms for graduate paramedics during their clinical transition into independent practice similar to medicine and nursing practices.

Two studies within the South African EMS context have recommended the introduction of an internship or a period of supervised clinical practice for newly graduated paramedics (Moodley 2016; Jansen Van Vuuren 2019). These studies' recommendations intend to advance a safe and supportive clinical transition for South African graduate paramedics, similar to the EMS systems in the HICs. However, their local application remains an area to be explored. Furthermore, although these studies' recommendations were made 5 to 10 years ago, there hasn't been any form of endorsement or rejection by both the South African National Department of Health (NDoH) as the custodians of health services and the Health Professions Council of South Africa as the regulating authority. Interestingly, in 2023 the Kwa-Zulu Natal Department of Health circulated an advert recruiting unemployed graduate paramedics with a bachelor's degree in EMC for an internship opportunity (KwaZulu Natal Department of Health 2023). Most recently in 2024, the Gauteng Department of Health also circulated a recruitment advert for EMS internship opportunities (Gauteng Department of Health 2024). Even though both these government departments recruited interns, the Gauteng EMS internship aimed to recruit unemployed Basic Ambulance Assistants and Ambulance Emergency Assistants (Gauteng Department of Health 2024), who are graduates from the discontinued short courses (Sobuwa & Christopher 2019). Additionally, Gauteng EMS also aimed to recruit Emergency Care Assistants (Gauteng Department of Health 2024), who are graduates of the newly developed one-year EMC program (Sobuwa & Christopher 2019). The differences in the targeted cohorts depict an inconsistent interpretation and application of the perceived South African EMS internship program as there is no legislation and guidance from regulating authorities. As part of this study, the proposed recommendations regarding the supported clinical transition for graduate paramedics through the introduction of an internship and/or a period of supervised practice were explored during data collection and will be discussed as part of this study's findings. Refer to Chapters Five and Seven for this study's findings and discussions.

2.8 Reflective Practice

Reflection is a metacognitive process that occurs pre, during, and after an experience; it aims to enhance oneself and the experience of future occurrences (Mann, Gordon & MacLeod 2009; Sandars 2009; Barley 2012). Sandars (2009) and Barley (2012) argue that reflection is a crucial part of learning, and when it occurs within professional practice, it is termed reflective practice. Reflective practice is pivotal for professionals to develop clinical expertise and mastery (Sandars 2009). Dreyfus and Dreyfus (1980) stated that experience is important in skill acquisition, while Lave and Wenger (1991) argued for the importance of reflection in situated learning to enhance the experience. Sandars (2009) extended these discourses by arguing that to learn from experience, it must be interpreted and integrated into one knowledge schema to construct meaning and develop from it. Therefore, reflective practice becomes a crucial activity for the active learning process to occur. Sandars (2009) refers to Kolb's (1984) experiential learning cycle to illustrate the importance of reflection to facilitate learning from experience. In addition, Sandars (2009) highlighted the work of Mezirow's (1981) transformative learning theory when he argued that a "*disorientating dilemma*" is a trigger for reflective practice; however, not every professional has the inherent ability to reflect.

Guided reflection occurs when peers, supervisors and mentors provide the necessary support to facilitate reflection (Sandars 2009; Barley 2012). Sandars (2009) highlighted that the essence of reflection is to challenge the "*disorientating dilemma"* and identify the change that must inform future actions and experiences, therefore transforming the practitioner. Individual reflections, group reflections and reflective journals are some techniques and methods that can be adopted to facilitate reflective practice (Sandars 2009; Barley 2012). It is key to note that reflective practice must be conducted in a safe, conducive environment for learning rather than presenting fear and shame, which might have the opposite effect (Sanders 2009). Nonetheless, Mann et al. (2009) expressed that there is a paucity of evidence that suggests that reflective practice improves clinical practice, although they did agree that it enhances deeper learning and understanding of both clinical knowledge and skills. Sandars (2009) and Barley (2012) challenged this notion and argued that evidence is emerging that reflective practice increases clinical skill and diagnostic capabilities.

Within the South African emergency medical care undergraduate education, there is an extensive application of patient simulation using high-fidelity manikins (Vincent-Lambert & Douglas 2019; Sobuwa 2023). During this kind of clinical training, scenario debriefing and reflection are conducted to enhance clinical development from that experience. In this study, reflective journals were adopted to foster self-reflection by the graduate paramedics, and interviews were also conducted using guided reflection with a mentor.

2.9 Patient Safety

Safe patient care is at the centre of clinical practice. Reports show that 10% of patients in HIC's hospitals experience an adverse medical event with a 2% mortality rate (Kohn, Corrigan and Donaldson 2000; Welzel 2012; Wilson et al. 2012; WHO 2019; Oura 2021). However, reports from upper and low-middle-income countries depict that 8.2% of patients in hospitals experience medical adverse events with a 30% mortality rate (Welzel 2012; Wilson et al. 2012; WHO 2019). Even though the upper and lower-middle-income countries figures are likely to be under-represented due to poor reporting structures and documentation, the lack of resources contributes significantly to the mortality rate (Kohn, Corrigan and Donaldson 2000; WHO 2019).

In the seminal report on patient safety "To err is human", the financial costs of medical errors in the USA in 1999 were estimated at $37.6 billion per annum (Kohn et al. 2000; Meckler, Leonard and Hoyle Jr. 2014). Almost two decades later, an updated report showed a reduction to $19.5 billion per annum (Andel, Davidow, Hollander & Moreno 2012). The reduction in medical costs is attributed to the interventions imposed by the USA government focusing on the reduction of medical errors (Andel, Davidow, Hollander & Moreno 2012). The use of advanced medical technology and systems that allowed for early detection and documentation of potential and actual medical errors contributed to the observed reduction in the costs of medical errors in the USA (Anderson & Abrahamson 2017).

The South African government reported an expenditure of R498 million towards medical litigation claims in 2015 (Maphumulo & Bhengu 2019). KwaZulu Natal (KZN) Department of Health was the highest at R153 million (Maphumulo & Bhengu 2019). KZN is particularly interesting as this study is grounded and focused on graduate paramedics from a university in KZN. These graduate paramedics were exposed to the KZN health system as part of their undergraduate clinical work-integrated learning. Consequently, post-graduation, these paramedics were practising within the KZN health system as part of the public or private EMS organisations. South African healthcare is regulated by the National Department of Health (NDoH), within the prescripts of the National Health Act, No. 61 of 2003 (Republic of South Africa 2003). This ensures that the citizens are afforded quality healthcare with recourse to report adversities to either the department or the office of the health standards compliance (OHSC) as prescribed in the amended National Health Act, No. 12 of 2013 (National Department of Health 2013). All the provincial departments of health in South Africa, including KZN and the EMS are accountable to the NDoH, the HPCSA and the OHSC.

Few studies have explored patient safety in the pre-hospital milieu, with even fewer studies focusing on the UMICs (Bigham et al. 2012; Meckler et al. 2014; Fisher et al. 2015; O'Connor, O'Malley, Lambe, Byrne & Lydon 2021). Paramedics practice within a complex and unstable work environment, at times with little information available to aid clinical decision-making, limited resources and pressure to perform prompt, accurate life-saving interventions (Bigham et al. 2012; Meckler et al. 2014; Fisher et al. 2015; O'Connor, O'Malley, Lambe, et al. 2021). Medical errors in the prehospital settings can be classified under three categories namely: i) skill-based errors, defined as the inability of paramedics to execute clinical skills; ii) rule-based errors, defined as the inability of paramedics to follow clinical guidelines and protocols and iii) knowledge-based errors, defined as, the inability of paramedics to cognitively identify indications and contra-indications, benefits and risks of performing or withholding treatment (Chalgham 2019).

In their systematic review focusing on the reporting of adverse events in the EMS, O'Connor, O'Malley, Oglesby, Lambe & Lydon (2021) reported that there are no systems in place for paramedics to report adverse events. This lack of standardised systems in EMS to report adverse events creates a blind spot in the prehospital care to monitor patient safety (O'Connor, O'Malley, Oglesby, et al. 2021). Most studies in EMS that reported on prehospital patient safety were based on retrospective reviews of patient care records (Bigham et al. 2012; Chalgham 2019; O'Connor, O'Malley, Lambe, et al. 2021). Pap (2022) argues that measurement of quality is central to quality improvement and assurance in healthcare services. Furthermore, the prehospital setting should develop beyond the measuring of response times as a quality indicator but begin to incorporate systematically developed quality indicators with key characteristics acceptable to the modern prehospital settings (Pap 2022). Pap (2022) argues that prehospital quality care is characterised by timely access to appropriate, safe and effective care, responsive to patient needs and equitable to the population. Thus, it becomes paramount to develop patient safety monitoring beyond retrospective chart reviews (Pap 2022). It is reported that one in 10 patients is exposed to a patient safety incident in the prehospital setting (O'Connor, O'Malley, Lambe, et al. 2021). A UK-based study reported that one safety incident in every 168 000 calls resulted in a patient death (Yardley & Donaldson 2016). The cause of death in these incidents was categorised as follows: 1. Delayed response times, 2. Shortfalls in clinical care and 3. Injury during transportation (Yardley & Donaldson 2016). Patient death due to shortfalls in clinical care was a result of paramedics' failure to provide appropriate clinical care due to clinical misjudgement or medical equipment failure (Yardley & Donaldson 2016).

The extent to which the current South African graduate paramedic's clinical transition practice impacts patient safety is unknown. The monitoring of patient safety within the South African EMS as part of quality assurance systems is still in its infancy (Howard, Cameron, Wallis, Castrén & Lindström 2020). The larger private EMS companies with a national footprint have initiated proactive quality assurance mechanisms to review patient care records per their internal protocols as informed by medical schemes payment claims criteria and the HPCSA clinical practice guidelines (Howard et al. 2020). However, public EMS still needs to develop beyond the monitoring of response times as a measure of quality service delivery and safe patient care (Howard et al.

2020). In general within the South African prehospital settings, medical errors are underreported, limiting the opportunity to adequately address them effectively (Holgate 2015).

2.10 Conclusion

This chapter presented the reviewed literature that informed this study. Transition shock experienced by graduates during their inception of professional practice to the workplace has been widely reported. This transition shock warrants a supportive and nurturing professional environment for graduates to integrate successfully into the professional setting. These supportive initiatives can be informal through communities of practice or formal as in internships and community service. At the centre of this clinical transition into independent practice is safe patient care by graduate paramedics in the prehospital setting. This clinical development journey, when efficiently executed, nurtures the graduate paramedics' independent practice development from novices to competent and beyond, as expected by the employing EMS organisations. The following chapter presents the theoretical framework adopted in this study.

CHAPTER THREE: THEORETICAL FRAMEWORK

3.1 Introduction

In this chapter, Critical Theory (CT) is presented and justified as the adopted theoretical stance to explore the clinical transition of graduate paramedics from dependent to independent practice. Furthermore, the Critical Paradigm (CP), a philosophical orientation aligned with Critical Theory, is also presented. CT and CP are described and related to the studied phenomena by aligning them to the research question and sub-questions. Lastly, practical examples are used where applicable without losing the research rigour.

3.2. Critical Paradigm

The choice of a study's philosophical underpinnings is influenced by the ontological and epistemological orientation that I embodied and identified as appropriate to answer in-depth the research question. Ontology refers to the nature of reality and being, while epistemology refers to the construction of knowledge (Mack 2010; Al Riyami 2015). Al Riyami (2015) presents these concepts as questions to be answered by the researcher. Regarding ontology, she asks, what is the nature of the knowable/ reality? (Al Riyami 2015). While of epistemology, she asks, what is the relationship between the enquirer and knowledge? (Al Riyami 2015).

In this study, I adopted a Critical ontological stance focusing on clinical transition as narrated through the multiple lived experiences of the paramedic graduates, i.e. DUT, BHSc EMC 2021 graduates (Rehman and Alharthi 2016). These graduates' lived experiences were contrasted against inputs from various key role players in that clinical transition process, i.e. EMC educators, EMC policymakers and EMC operations managers. Furthermore, the study's epistemological assumptions positioned the researcher as an active participant in the research process, capturing these graduate paramedics' subjective clinical transition experiences as a social phenomenon (Rehman and Alharthi 2016).

Mack (2010) described a paradigm as a collection of logically related assumptions, concepts and propositions orientating thinking and research. These assumptions include the ontology, epistemology, methodology and methods adopted to study and understand reality (Mack 2010; Rehman and Alharthi 2016; Scotland 2012). Literature presents three major paradigms, namely Positivist, Interpretive and Critical (Mack 2010; Shah and Al-Barji 2013; Rehman and Alharthi 2016). This study is orientated to the Critical Paradigm (CP).

The CP ontological position is based on historical realism (Scotland 2012). Historical realism refers to a view that the nature of reality is shaped by interaction between social experiences, politics, economy, ethnic and gender values (Scotland 2012). Beyond these interactions and unseen, is a power dynamic that is intended to marginalise or advance some members within the society (Scotland 2012). Evidently, the CP underpins its belief that research is conducted for the emancipation and empowerment of individuals and groups in a society affected by the power dynamics within the value system (Mack 2010; Scotland 2012;Shah and Al-Barji 2013; Rehman and Alharthi 2016) . Furthermore, the CP challenges socially constructed meaning and practices created under hegemonic conditions by affording the marginalised an opportunity to express themselves and transform their situations (Scotland 2012; Shah and Al-Barji 2013; Rehman and Alharthi 2016).

The CP orientates the view of reality as a socially created phenomenon, susceptible to constant influences and changes (Scotland 2012). I aligned the CP with this study's aim, which was to explore the clinical transition of graduate paramedics during their vulnerable state of independent clinical practice inception, i.e. transitioning from students to novice clinical practitioners. This transition happened in the South African EMS, within pre-existing value systems and practices that the graduate paramedics clinically had to navigate and function within (Scotland 2012). These historical value systems and practices are socially contracted, composed of particular power dynamics and impacts on the clinical transition of novice paramedics (Scotland 2012). This study presents the graduate paramedics clinical transition challenges and proposes a possible practical praxis generated from their lived experiences.

It is acknowledged that the CP is not without its limitations and challenges. Highlighted here are some of the shortcomings of the CP as a transformative paradigm, this includes the researcher's ambitions to introduce radical changes with bias to the studied phenomena and the marginalised community (Scotland 2012; Shah and Al-Barji 2013). Furthermore, critical enquirers often lack guidance and a roadmap to attain the desired transformative outcomes (Scotland 2012; Shah and Al-Barji 2013).

During this study, an attempt to mitigate frequently reported shortcomings of the CP through mechanisms and mitigation strategies were as follows: (i) Critical Participatory Action Research (CPAR) was the adopted study methodology, which is discussed in further detail in Chapter Four. CPAR allowed the participants to take an active role within the research processes, namely: confirming and/or amending the research aim, question and sub-questions. (ii) CPAR also allowed for implementing all the pertinent changes participants expressed as meaningful and paramount to the action of the research design. (iii) The research process aligned to CPAR and the Lewinian action spiral was clearly defined, shared and agreed upon between the study participants and I.

These strategies mitigated the potential researcher's bias and manipulation of the research processes, procedures and findings. In addition, the continuous engagement and dialogue between the researcher and the participants became empowering and afforded an opportunity to the participants to address their clinical needs while it ensured that the participants did not feel marginalised but part of an ongoing engagement with the researcher and the project (Scotland 2012; Rehman and Alharthi 2016).

3.3 Critical Theory

In this study, Critical Theory (CT) refers to the CT of the Frankfurt School. I adopted CT as the theoretical framework to guide this study. A theoretical framework refers to a formal theory used to conceptualise and explain empirical work (Ravitch and Riggan 2017). Ngulube, Mathipa and Gumbo (2015) argue that once a theoretical framework is adopted for a study, it is imperative to describe it, including its origin and provide rational for selecting such a theory. The following section presents the origins of CT and its philosophical orientation and justifies its relevance for this study.

Historically, the Institute of Social Research was established at Frankfurt University under the directorship of Carl Grunberg from 1923 to 1929 (How 2003). Even though the institute was housed within Frankfurt University, it was neither a department nor a faculty of the university as it was independently funded (How 2003). During the Carl Grunberg period, CT was heavily influenced by the Marxist ideology, as it resonated with the political and social era of that time, i.e. post-World War I (How 2003). Grunberg established the institute as neither university bound nor a politically affiliated organisation, it, however, became the home for the intellectual advancement of the dying leftist ideologies (How 2003).

From 1930, under the directorship of Max Horkheimer, the institute drifted away from the Marxist-influenced Critical Theory to a more agency-driven, interdisciplinary Social Theory (How, 2003:16; Kellner, 1993:16). Horkheimer's CT acknowledged the Marxist ideology dilemma of human resistance and subjectivity, it further identified agency as more than a reflex to objective economic conditions (How 2003). Horkheimer argued that Marx's political economy is not the only social aspect that affects the society (How 2003). These views became paramount to the reconstruction of Critical Theory under the influence of Horkheimer. Horkheimer and his colleagues (i.e. Theodor Adorno, Herbert Marcuse, Franz Neumann, Walter Benjamin and Jürgen Habermas) explored the interconnections between diverse daily social experiences of the marginalised related to the wider societal concepts like economy and politics, with a desire to have a supra disciplinary approach to research (How 2003). This approach resulted in their bestowed concept of totality, which in simple terms refers to the generation of knowledge that is beyond the face value of things and facts, however, moves towards the development of a complete picture of societal experiences (How 2003).

The Frankfurt school believed that recognising interrelatedness, ultimate unity, and contradictions of concepts is methodologically superior and more practical in comparison to the purist Marxist ideology (How 2003). These Critical Theorists emphasised dialectics in social philosophy, they sought to understand the multitude of connections and discerning contradictions in the ordinary aspects of marginalised peoples' lives related to societal structures and practices (Kellner 1993; How 2003; Asghar 2013; Al Riyami 2015).

Beyond dialectics, the Frankfurt School of Critical Theorists focused on the relationship between theory and practice, including generating a praxis (Kellner 1993; How 2003; Friesen 2008; Scotland 2012). Critical Theorists aimed to balance theory and praxis (How 2003; Friesen 2008; Scotland 2012). How (2003) argued that Critical Theorists believe solutions to societal problems should not necessarily be technically correct but rather guided by what promotes justice, happiness and freedom. This belief by Critical Theorists reflects the idea that theory alone cannot dictate what must occur in practice to achieve a just outcome. It must be validated through real-world action, or praxis (How 2003). Horkheimers' perspective of Critical Theory is about action on human emancipation and liberation from oppressive circumstances, thus promoting agency (Asghar 2013; Kellner 1993; How 2003).

Horkheimer's Critical Theory emphasises the need to extend beyond observing, articulating and reporting on the dialectics between social factors (i.e. politics, economics, societal structures, cultural structures and individual experiences) of the studied phenomena to providing meaningful changes (i.e. praxis) to the lives of the marginalised (Kellner 1993; How 2003; Asghar 2013; Al Riyami 2015).

This study operationalised Critical Theory social factors as follows:

a) **Individual experiences** refer to the lived experience of the graduates, i.e. DUT BHSc EMC 2021 graduates. Their lived experiences, focusing on their clinical transition from dependent practice (as students) to independent practice (as novice paramedics), for the first 12 months of independent clinical practice.

b) **Social structures** refer to the South African EMS (public and private) as the profession that the paramedic graduates practice pre-hospital clinical care. This includes the interaction between the graduate paramedics and other paramedics at different or the same level of clinical scope of practice. Furthermore, the interaction between graduate paramedics and other clinical practitioners outside of EMS during their clinical practice, i.e. nurses and doctors.

c) **Cultural structures** refer to the professional practice within the South African EMS related to clinical care. This extends to the hierarchy within EMS, which links paramedic qualifications to certain levels of clinical care expectations by employers, colleagues and other clinical practitioners.

d) **Economics** refers to the employee/ employer relations within the South African EMS profession and how this relationship impacts the clinical transition of novice paramedics.

e) **Politics** refers to the South African EMS rules and policymakers, including EMS regulators that govern the professional practice, i.e. HPCSA and NDoH. This extends to how South African EMC education and EMS operations are structured and practised.

This study further argues that the dialectics between the operationalised social factors would produce an in-depth understanding of the clinical transition by paramedic graduates and generate a praxis that can guide this crucial step into professional clinical practice for novice paramedics. Figure 3.1 illustrates the interaction between these social factors; the use of bidirectional arrows depicts the interrelated nature of these social factors in this study. Positioning the “individual experience” in the centre of the illustration in Figure 3.1 is synonymous with the study’s bias towards the graduate paramedics as a marginalised grouping in the process of independent clinical transition.

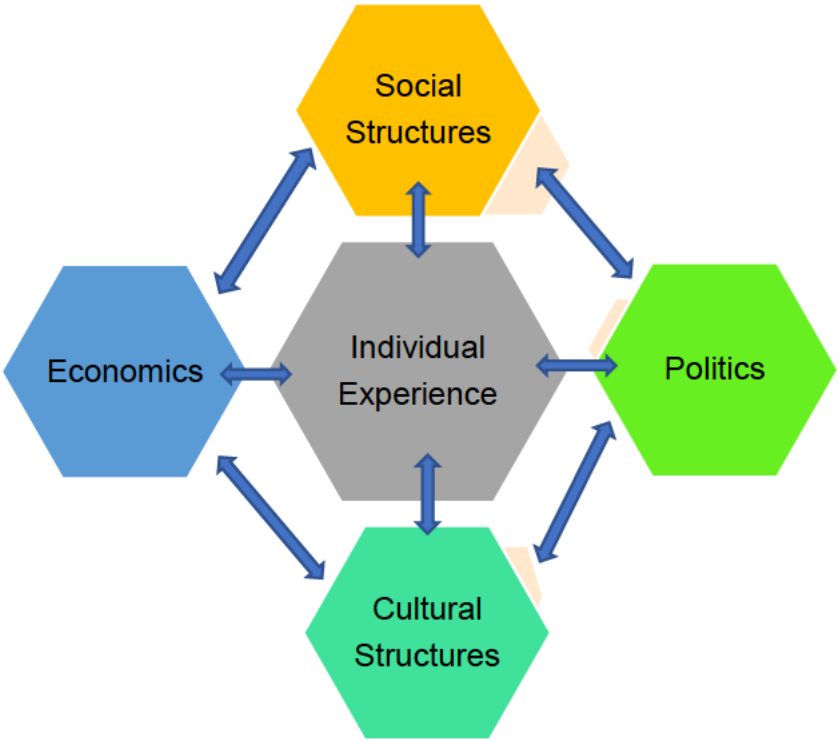

Figure 3. 1: Social Factors adapted from Kellner (1993)

Beyond the social factors illustrated in Figure 3.1, Asghar (2013) refers to CT tenets that must be observed when conducting CT anchored research. These tenets are highlighted as follows:

- Explaining what is wrong in the social reality status quo
- Identifying the action to change it
- Providing explicit norms for criticising and transforming the social reality

The Frankfurt School of Critical Theorists do not prescribe how to apply CT as a theoretical framework to researchers. CT is a meso-level theory, rooted within the communities and organisations while operating within a limited space (Ngulube et al. 2015). Even though CT focuses on dialectics of social factors and the emancipation of the marginalised, the identified tenets by Asghar (2013) provide a practical guide that aids in the operationalising of the CT in the given context. Figure 3.2 illustrates the CT tenets adopted from Asghar (2013). The illustration in Figure 3.2 is presented in a continuous cycle as i) it depicts the ongoing nature of the process when dealing with CT-focused social research and ii) it resonates with this study's adopted methodology, i.e. Critical Participatory Action research (CPAR), which adopted a

similar approach through the Lewinian Action Research Spiral (LARS). Further details on the study methodology are presented in Chapter Four.

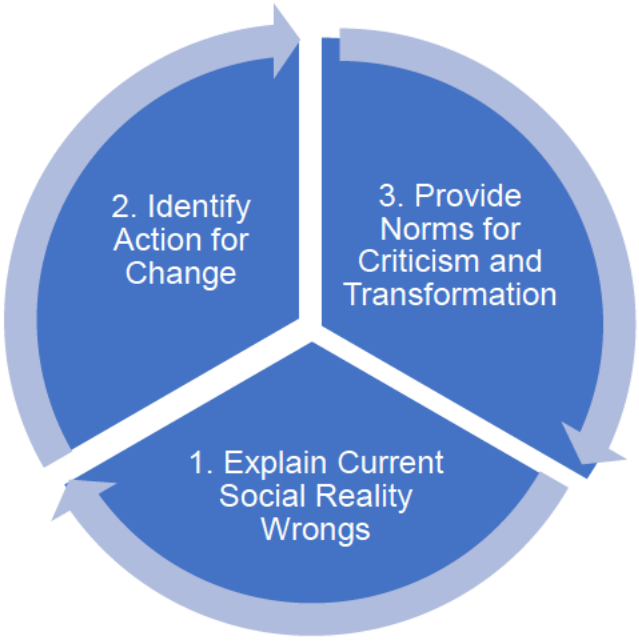

Figure 3. 2: CT Tenets, adapted from Asghar (2013)

Paramount to the CT-aligned research is the ability to produce a praxis. Asghar (2013) believes that CT tenets encourage Critical Theorists to explore the problem and identify probable solutions and strategies to bring meaningful change within society. However, Asghar (2013) warns that even though CT is more flexible and independent in pursuing reality, it puts a heavier responsibility on the researcher to observe, perceive, interpret and analyse data more vigilantly.

CT, as the adopted theoretical framework in this study, positioned the researcher to explore the clinical transition of graduate paramedics during their transition to independent practice within the South African EMC milieu. This is a period of vulnerability for graduate paramedics as they transition from dependent to independent clinical practice within the South African pre-hospital settings as novice paramedics (Duchscher & Windey 2018). This transition is assumed to occur in the absence of any formal scaffolding in place within the South African EMS milieu to guide such a crucial developmental stage for these paramedics (Kennedy, Kenny and O'Meara 2015; Clipper and Cherry 2015; Kulkarni 2017).

This study operationalised the CT tenets identified by Asghar (2013) within the context of paramedic clinical transition in the South African EMS milieu as anecdotally experienced by the researcher. Historically, the South African EMS profession has always accepted graduate advanced life support paramedics as industry ready to clinically practice independently. This has led to the profession making hegemonic decisions regarding the graduate paramedic's clinical transition progressing directly from student (supervised practice) to novice paramedic (independent practitioner) without a formal support system in place (Kennedy et al. 2015; Clipper & Cherry 2015; Kulkarni 2017). This practice is assumed to be persistent, even though it contradicts published literature regarding healthcare professionals' clinical transition (Wyatt 2003; Lazarsfeld-Jensen, Bridges and Loftus 2011). Friesen (2008) suggests that social acts justifying practices and ideologies are often associated with social power dynamics and economic interests.

Aligning with Asghar's (2013) identified CT tenets, the researcher, from his own clinical experience within the South African EMS milieu, has observed the social reality wrongs, thought to still be occurring as follows:

a) The paramedic clinical transition is unstructured and haphazard without legitimate oversight.
b) The paramedic clinical transition exposes the graduate paramedic to a risk of unsafe patient care and malpractice.
c) The paramedic clinical transition exposes the patients to unsafe clinical care and risks associated with mismanagement.
d) The paramedic clinical transition exposes the employing services to potential lawsuits.
e) The paramedic clinical transition exposes the profession to the risk of losing public trust.

Additional to the above-stated social reality wrongs, it is paramount to note that graduate paramedics are identifiable as marginalised at the inception of their professional independent clinical practice journey within the South African EMS. The graduates' function and contribution within the professional settings are determined mainly by the employers based on service needs and, in some instances, contrary to the novice to expert skills development model as proposed by Dreyfus & Dreyfus (1986) and Benner (1982). This might involve graduate paramedics clinically supervising undergraduate paramedic students during their experiential learning shifts and assuming a supervisory clinical role for lower-qualified EMS personnel on duty with them. Whilst there is no documented empirical support system in the South African EMS milieu to aid the clinical transition of graduate paramedics into independent clinical practice, this study aimed to fill such a research paucity within the South African EMS and develop a praxis.

3.4 Critique of Critical Theory

The Critical Theorists endeavour to challenge the taken-for-granted practices believed to impose hegemony over the vulnerable groupings (McKenzie 2021). The major empirical contribution associated with CT is egalitarianism as realised through individual access to autonomy and agency from the marginalised societal groupings resulting in social changes (McKenzie 2021). Autonomy strengthens critique and creates a possibility of new thoughts, new knowledge and practices (McKenzie 2021).

Central to CT is the ability of the marginalised to reason and critique the status quo, an assumption that is oversimplified (McKenzie 2021). Reflection and the ability to separate emotions driven by personal needs from one's thoughts is a complex process. McKenzie (2021) argues that the ability of individuals to rationalise and engage in contradicting views is a developed skill. Furthermore, individual values, morals and emotions cannot be stripped away from experiences in favour of reason and critique; however, they must be incorporated in a thoughtful way to enhance them (McKenzie 2021). In this study, the researcher played a key role in guiding the graduate paramedics in conducting a balanced critique of their clinical transition into independent practice.

The Critical theorists are criticised for believing that where there are social status differences, hegemony prevails (McKenzie 2021). This includes the notion that whatever comes from those in authority to the members of society has devious intentions to create or maintain hegemony (McKenzie 2021). In this study, the researcher adopted CPAR as the study methodology. CPAR positioned me to incorporate participants' views in confirming and/or amending the research aim, question and sub-questions as accurate and appropriate for this study. This study focused on the transition of graduate paramedics to independent clinical practice as the participants lived experiences, including developing an appropriate support system to aid their transition.

3.5 Application of the theoretical framework

Critical Theory grounded this study in terms of the theoretical stance. It allowed the researcher to explore the clinical transition of graduate paramedics into independent practice, a historical phenomenon within South African EMS that has been accepted without being probed (Friesen 2008). Although CT guided the researcher's posture throughout this study, the application of CT was mostly realised through the research design and methodology. A study methodology associated with the CT should be able to critique the value systems and surface injustices, and challenge social structures and practices to empower and produce a social action (Scotland 2012).

Through CT, CPAR, as this study's adopted methodology, created an enabling environment to explore the studied phenomena as follows:

a) This study's selected participants (i.e., Graduate Paramedics) were identified as marginalised and disempowered during their transition to independent clinical practice. This is based on their social status within the employment ranks as novice paramedics, including their novice clinical state, which still warrants further development. Therefore, this positioned the study to capture their lived experiences as they develop their clinical independence within the South African pre-hospital milieu without any documented enabling system/s in situ.

b) The additional pertinent participants (i.e. external EMS stakeholders') views and experiences on the studied phenomena poised this study to uncover the interrelated nature and/or contradicting experiences within the broader South African EMS systems. This approach provided totality to the studied phenomena of paramedic clinical transition within the South African EMS as it accommodated inputs and experiences from the South African EMC education, EMS regulation, EMS operations and EMS experts.

c) This study operationalised the dialectics between social factors, as presented in Figure 3.1*,* in favour of the graduate paramedic's narrative and given totality by external role players within the study. The Delphi phase of this study allowed for validating the praxis generated through a CT-driven study.

d) Lastly, CPAR empowered the main study cohort by ensuring that they are part of the pertinent decision-making processes regarding this research focus, activities and the produced praxis, which intended to bring changes to the South African EMS milieu.

The above stated broadly highlighted the application of CT as this study adopted theoretical grounding, particularly its realisation through the study design and methodology. The detailed application was observed as it was used to guide the researcher throughout the data collection, analysis and generation of findings, presented in their respective chapters. A theoretical framework must have the elegance to explain the studied social phenomena, guide the research process and contextualise the research findings (Ngulube et al 2015). CT fulfilled such a role in this study.

3.6 Summary

This chapter presented CT, the theoretical framework adopted in this study. Guided by CT, the social factors related to graduate paramedics' clinical transition to professional practice were explained. Furthermore, the importance of developing a praxis relevant to the South African EMC profession, to support the clinical transition of graduate paramedics was explained. The following chapter presents the research design and methodology adopted to conduct this study.

CHAPTER FOUR: STUDY DESIGN AND METHODOLOGY

4.1 Introduction

In this chapter, a detailed description of the study's adopted research design and methodology is presented. Furthermore, the applied data analysis approach is also presented. An outline of ethical considerations maintained during this study concludes the chapter.

4.2 Research Design

Creswell and Creswell (2018) identify three major types of research approaches as quantitative, qualitative and mixed. Creswell and Creswell (2018) reject the common argument regarding qualitative and quantitative approaches as dichotomies. According to Creswell and Creswell (2018), these research approaches are different ends to a continuum. It is argued by Creswell and Creswell (2018) that research can be more qualitative than quantitative and interchangeably so, while other research incorporates both elements of qualitative and quantitative approaches. Creswell and Creswell (2018) argue that the holistic way to differentiate between research approaches is to assess the basic philosophical assumptions the researcher applied to the study, the type of strategy (i.e. approach and design) and the research methods employed in conducting the study.

Aligning this study with the argument advanced by Creswell & Creswell (2018), a sequential exploratory mixed method design was adopted as the most suitable research approach to explore the clinical transition of graduate paramedics into independent practice and also validate an actionable praxis (Creswell & Creswell 2018; Harrison, Reilly & Creswell 2020; Dawadi, Shretha & Giri 2021). Refer to Figure 4.1 below.

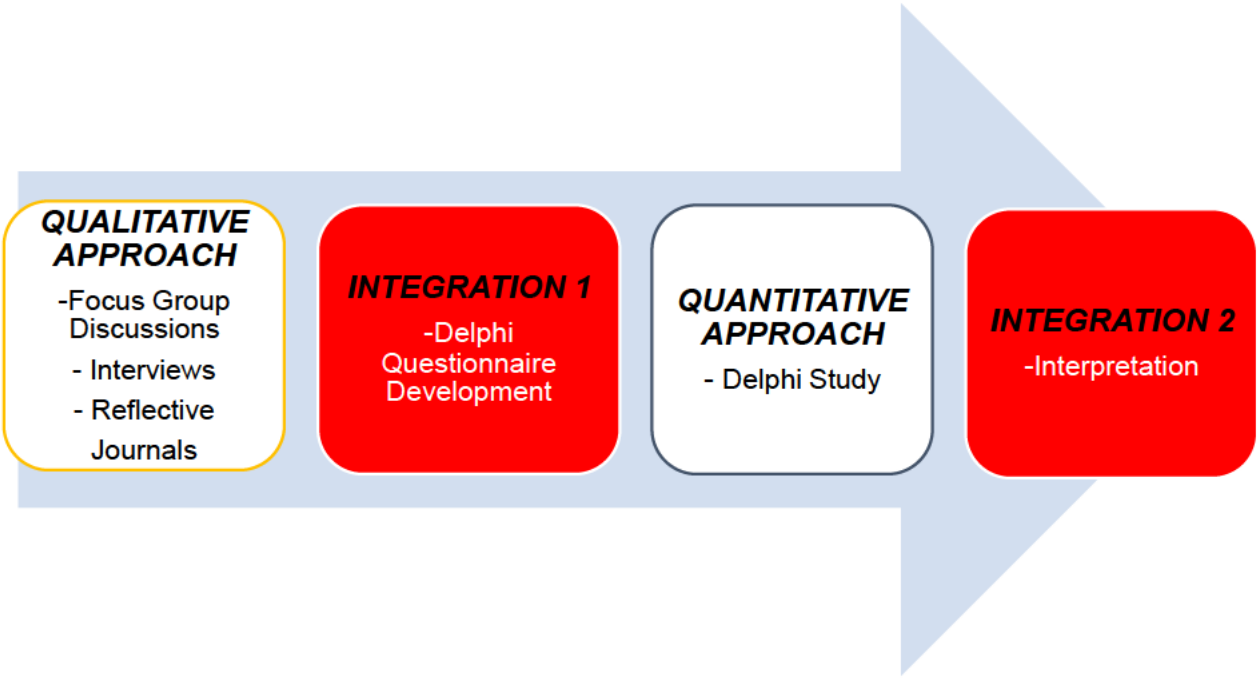

Figure 4. 1: Exploratory Sequential Mixed Method Design Procedural Diagram adapted from Creswell & Creswell (2018) and Harrison et al. (2020)

An exploratory sequential design afforded an opportunity for an in-depth collection of qualitative data through a series of interviews, focus group discussions and reflective journals. Developed from the qualitative data analysis was a quantitative data collection tool which was administered during the quantitative phase through a Delphi study (Creswell & Creswell 2018; Harrison et al. 2020; Dawadi et al. 2021). In this research approach, the qualitative data strand was collected to explore the phenomenon under study i.e. the clinical transition of graduate paramedics to independent practice, while the quantitative data strand was used to validate the recommended praxis developed from the qualitative data findings (Creswell & Creswell 2018; Harrison et al. 2020; Dawadi et al. 2021). This rendered the study to have a dominant qualitative strand preceding the quantitative strand (Creswell & Creswell 2018; Harrison et al. 2020). Creswell & Creswell (2018), Harrison et al. (2020) and Dawadi et al. (2021) argue that when neither the qualitative nor quantitative approach can adequately answer the investigated phenomenon, the mixed method approach offers the advantage of integrating the two approaches to give power to findings and recommendations. In this study the integration of the qualitative findings from the graduate paramedics' clinical transition experiences with the quantitative results from the EMS experts' opinions, gave depth and breadth to the

study findings and the recommendations advanced. Thus, both these mono-approaches complemented each other (Harrison et al. 2020; Dawadi et al. 2021).

The qualitative approach in exploratory sequential mixed methods design mainly adopts the constructivist paradigm principles and ascribes to acquire an in-depth understanding of subjective experiences and meanings made by individuals or groups within a society (Creswell & Creswell 2018; Dawadi et al. 2021). In contrast, the quantitative approach adopts the post-positivist paradigm's principles and ascribes to the development of an objective, scientific instrument to investigate phenomena intended for generalisation of the results (Creswell & Creswell 2018; Dawadi et al. 2021). The integration of these two research approaches through the exploratory sequential design was deemed appropriate for this study as neither would fully answer the researched question and sub-questions (Creswell & Creswell 2018; Harrison et al. 2020; Dawadi et al. 2021). Core to this study is the intention to foster change through the study findings, hence the adopted theoretical stance (See Chapter Three). The integration of the qualitative and quantitative strands of the mixed methods approach, gives power to this study to foster the envisaged changes.

In the section below, I focus on Action Research (AR) inclusive of its sub-types while building an argument of how I arrived at the adopted methodology for this study.

4.2.1 Action Research, Participatory Action Research and Critical Participatory Action Research

AR is a methodology attributed to one of its founders, Kurt Lewin, in the 1930s (Masters, 1995; Carr, 1996; Van Der Meulen, 2011; Kemmis, McTaggart and Nixon, 2014). In his earlier definitions of AR, Lewin referred to it as a research methodology where the research process, results and outcomes are intertwined, thus leading to further social action (Carr, 1996; Van Der Meulen, 2011; Kemmis, McTaggart and Nixon, 2014). In the 1970s, Fals-Borda and colleagues expanded on the Lewinian definition and conduct of AR by introducing the aspect of studied communities actively participating in the research process i.e. through problem identification, choosing the research methods and design. This gave rise to Participatory Action Research (Van Der Meulen, 2011; Kemmis, McTaggart and Nixon, 2014).

Studied communities assuming an active role in Participatory Action Research (PAR) become empowered, produce valid and reliable findings grounded in local knowledge while they are supported by the expert knowledge from the researcher (Van Der Meulen, 2011; Kemmis, McTaggart and Nixon, 2014). Kemmis, McTaggart and Nixon, (2014) state that PAR is committed to a broad social analysis, self-reflection, a collective self-study of practice and a transformational action to improve experiences.

Kemmis, McTaggart and Nixon (2014) further expanded on PAR by introducing Critical Participatory Action Research (CPAR), a methodology with similar characteristics to PAR, however, aligned to Critical Theory (CT). In their view, CPAR captures the essence of CT by addressing the power dynamics within a community, including the disempowerment and injustice of the marginalised (Kemmis, McTaggart and Nixon, 2014). CPAR aims to change the dynamics within the social and societal space by challenging the status quo saturated with bureaucratic discourse, routine practices, and a social system that sees the world through the prism of organisations and is oblivious to the community within the system (Kemmis, McTaggart and Nixon, 2014).

I adopted CPAR for this study as the most suitable methodology to facilitate this research project. Firstly, CPAR naturally aligned with this study's adopted research paradigm and theoretical stance, i.e., CP and CT. Furthermore, CPAR allowed me to explore the clinical transition of graduate paramedics to independent practice from the graduates' perspective as marginalised, novice professionals practising pre-hospital emergency medical care within the South African EMS milieu. In addition, the studied graduate paramedics were actively involved in all key milestones of this study as key role players with a mutually shared interest as I. Lastly, CPAR positioned this study to produce an actionable praxis with an intent to transform the current graduate paramedic clinical transition practice within the South African EMS milieu. In summary, Figure 4.2 depicts the adopted research strategy for this study.

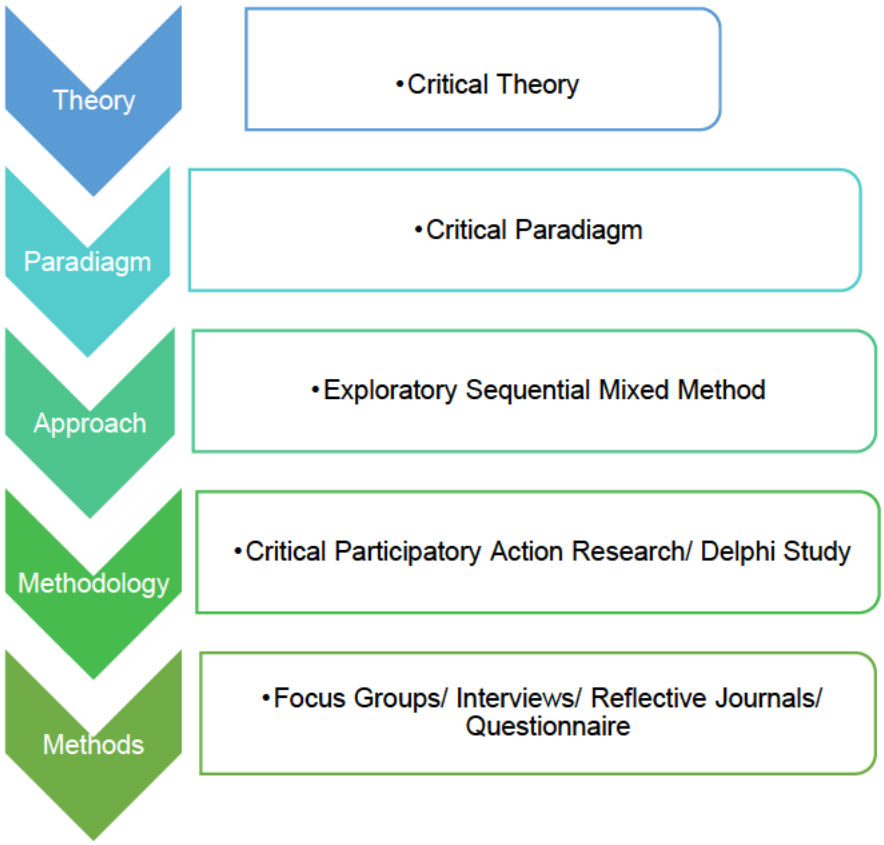

Figure 4. 2: Adopted Research Strategy

4.2.2 Action Research Spiral

A key component of CPAR is the Lewinian Action Research Spiral (Kemmis, McTaggart and Nixon, 2014:9). Kemmis, McTaggart and Nixon (2014:9) present the Lewinian Action Research Spiral (LARS) as an essential component of CPAR with distinct observable phases. The LARS phases include: Plan, Act, Observe, Reflect, Re-plan, and [Re]-Act (Kemmis, McTaggart and Nixon, 2014:9). In this study, LARS was applied during data collection. Presented below is the overview thereof:

- ***Plan Phase***: As part of the conceptualisation of this study, the research problem and strategy were presented to the graduates during the study participant recruitment meeting and **Phase I** data collection. The participants were afforded the opportunity to share their contributions and confirm the research problem and strategy. The LARS plan phase included informing the graduates that their clinical transition from dependent to independent practitioners was the area of interest for this study; that they would be active participants and the researcher would interact with them through a longitudinal

study. Furthermore, the researcher would avail himself for clinical mentorship and shared with the graduates' contact details for the psychological services linked with this study.

- ***Act Phase:*** The graduates and the researcher acted upon the formulated plan from Phase II of data collection, as presented in Table 4.1. The LARS Act phase was initiated through self-documented individual experiences by the graduates using reflective journals. This was followed by one-on-one interviews between the graduates and myself. During these interviews, we explored the self-documented experiences of the graduates. As part of that data collection phase, clinical guidance, support and mentorship based on the specific self-documented experiences was provided.

- ***Observe Phase:*** During this LARS phase, the graduates' early days of clinical transition to independent practice was observed. These observations were done by reading self-documented reflective journals and during the subsequent one-on-one interviews. These observations were made through the data collection in Phases II and IV of this study. Refer to Table 4.1 below.

- ***Reflect Phase:*** This LARS phase was mostly done during the one-on-one interviews and Focus Group Discussions (FGD), i.e. Phases II, III, IV and VII of data collection. The graduates and the researcher reflected on action plans and collectively continuously attempted to identify the effects thereof. Refer to Table 4.1 below.

- ***Re-plan Phase:*** The graduates and researcher continuously developed new plans as part of this LARS phase. This was particularly during Phase III of this study's data collection process. This re-plan phase included the evaluation of previously adopted individual clinical transition coping strategies by the graduates. We elaborated upon them and adopted them into mutually agreed clinical transition coping strategies for all the graduates to incorporate within their clinical practice. This LARS phase was done during Phase III of data collection. Refer to Table 4.1 below.

- ***[Re]Act Phase*:** This LARS phase was fulfilled mostly during Phase IV of the data collection process. The graduates were asked to respond to the collective plans developed to guide their clinical transition period. This was conducted using written self-reporting in the form of reflective journals, followed by one-on-one interviews. The LARS process is repetitive until the desired outcomes are reached. This was achieved in Phase VII of the data collection process; see Table 4.1 below. Figure 4.3 provides a schematic representation of the study's adopted LARS approach. The LARS illustration is expressed as an ongoing circular presentation, synonymous with the actual experienced process in this study.

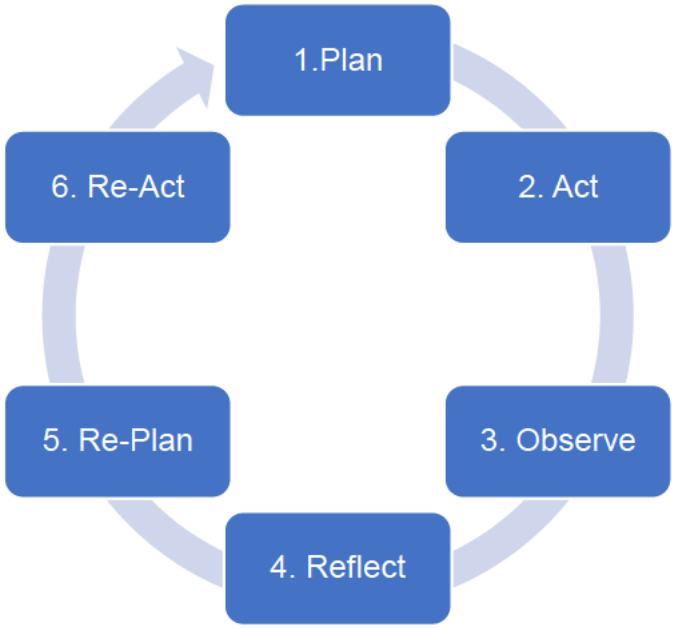

Figure 4. 3: : Action Research Spiral adopted from Kemmis, McTaggart and Nixon (2014)

According to Kemmis, McTaggart and Nixon (2014), a common misconception regarding the LARS process is that it promotes the isolation of the researcher from the research process. This implies that the researcher acts as an observer, is insulated from the research process, and thus only facilitates or advises on request (Kemmis et al. 2014). Kemmis et al. (2014) argue that the researcher is an active participant in the investigated community. However, the community members are the key drivers of the

research enquiry (Kemmis et al. 2014). Kemmis and colleagues further argue that in CPAR, there is shared ownership of the research and an orientation towards community action (ibid). Kemmis and colleagues also add that LARS is not a smooth-flowing, segmented process and in reality, phases can overlap (ibid). Kemmis et al. (2014) argue that the study participants and the researcher can identify and master the necessary activities for the LARS cycle to be in motion and know when to cease the process.

Having experienced this study's LARS process, I concur with Kemmis and colleagues' argument. During this study's data collection, I actively participated in the research process to guide the graduates through various phases. I guided them during their reflection on individual clinical encounters and fulfilled the clinical mentor and peer reviewer role. This mostly unfolded through one-on-one interviews based on the graduates' self-documented clinical experiences captured in their reflective journals. Those interviews were opportunities to explore clinical experiences in-depth and provide debriefing, feedback and clinical guidance. The graduates became the heartbeat of the study, and all the study's activities were discussed with them; the graduates shared their inputs and agreed on further actions to take.

Table 4. 1: Summary of Data Collection Process, Research Methods and Scope

	Phase	Method	Participant/s	Scope	Sub-Question	LARS
EXPLORATORY SEQUENTIAL DESIGN: QUALITATIVE PHASE	I	Focus Group Discussions	Paramedic Graduates	• Identify expectations regarding clinical transition from participants. • Introduce reflective journals	N/A	Plan
	II	Interviews	Paramedic Graduates	• Provide guidance, support and feedback on reflective journals.	N/A	Act & Observe
	III	Focus Group Discussions	Paramedic Graduates	• Determine experiences on clinical transition. • Identify challenges and adopted coping strategies. • Confirm/amend research question with the participants.	What is the interplay between the work environment and the transition of graduate paramedics to independent clinical practice?	Reflect & Re-Plan
	IV	Interviews	Paramedic Graduates	• Provide guidance on reflective journals. • Provide support on identified coping strategies.	N/A	Re-Act & Observe
	V	Focus Group Discussions	Paramedic Graduates EMS employers EMS educators HPCSA National Health	• Contextualise paramedic graduates clinical transition in line with social factors and roles played by stakeholders. • Identify challenges associated with paramedic graduate clinical transition.	What mechanism/s must be instituted within the South African EMC profession to support the transition of graduate paramedics to safe,	Reflect & Plan

				• Identify praxis to address the challenges. • Identify EMS experts.	independent clinical practice?	
QUANTITATIVE PHASE	VI	Delphi Study	Team of Experts • EMS Operations • EMC Education • EMS policy and regulations	• Validate the identified praxis for graduate paramedic clinical transition in South Africa.		Re-Act
	VII	Focus Group Discussions	Paramedic Graduates	• Verify Delphi study praxis • Reflect on individual journeys. • Conclude the study.		Reflect & Plan

4.3 Data Collection Methods

During the qualitative phase of the exploratory sequential mixed methods approach, multiple data collection methods were adopted as reflected in Figures: 4.1, 4.2 and Table 4.1 above. These research methods included semi-structured focus group discussions (FGD), semi-structured one-on-one interviews and self-reporting written reflective journals. According to Creswell (2013), qualitative data collected using FGD and individual interviews can be structured, semi-structured or unstructured. Gill et al. (2008) explain that structured interviews are fundamentally rigid, oral questionnaire administration, while unstructured interviews are considered open-ended conversations with free construct. Contrarily, semi-structured interviews contain several key questions that guide the interview; however, they also allow the interviewer to explore areas raised by the interviewee outside of the predetermined scope (ibid). These characteristics of structured, semi-structured and unstructured interviews extend to FGDs, where a group of participants are interviewed simultaneously (Gill et al. 2008).

During the qualitative phase, semi-structured interviews and FGDs were conducted through an internet-based medium, i.e. Microsoft Teams®. Creswell (2013) and Archibald et al. (2019) agree that using internet-based qualitative data collection methods is gaining momentum and has proven efficient and cost-effective. Due to the vast geographical distance between the study participants and the researcher, including the Covid-19 travelling and gathering restrictions, using Microsoft Teams® for all interviews and FGDs was efficient. Archibald et al. (2019) concur that using an internet-based qualitative data collection tool allows for a wider geographical reach of participants. This was the case for this study.

Interviews and FGDs were adopted to explore individuals' and groups' views, experiences, beliefs and motivations regarding the studied phenomenon (Gill et al., 2008). These qualitative data collection methods (i.e. interviews and FGDs) allowed for a deeper exploration of the studied phenomenon from an individual and group perspective (ibid). During this study, the use of semi-structured interviews and FGDs for data collection allowed the graduate paramedics, South African EMS representatives, and I to explore the phenomenon of graduate paramedics' clinical transition into independent practice.

As part of the study's data collection procedures, transcripts were produced for all interviews and FGDs. According to Gill et al. (2008), all interviews and FGD recordings must be transcribed verbatim to protect against researcher bias and to produce the study's permanent records. To strengthen the trustworthiness of the collected data from these interviews and FGDs, I ensured that all study participants were allowed to conduct member checking on all transcripts.

DeCino and Waalkes (2018) and Carlson (2010) refer to member checking as responders' data validation process and an important part of establishing data credibility. Member checking affords the study participants an opportunity to clarify, correct and confirm data to be accurate and a true reflection of their expressions (Carlson, 2010; Simpson and Quigley, 2016; DeCino and Waalkes, 2018). Carlson (2010) advises that member checking is best conducted continuously. During this study's data collection, after every interview and FGD, participants were allowed to member-check the transcripts through electronic mail correspondence.

Another data collection method used in the study was reflective journals for the graduates. These reflective journals were used for the self-reporting of clinical experiences by graduate paramedics. The graduate paramedics independently selected experiences in the form of clinical encounters they deemed significant to self-report and share with me during a reflection session. Rozental, Meitar and Karnieli-Miller (2021) identify reflection as an important part of medical practice and a metacognitive process that enhances learning. Reflection improves clinical decision-making and communication, reducing medical errors and professional conflict (Rozental et al. 2021). In this study, a self-reporting written reflective journal allowed the graduate paramedics to document clinical experiences and organise thoughts and feelings about self, others, and the clinical event (Rozental et al. 2021). This process presented an opportunity for the graduates to cope better with similar experiences in the future (ibid).

During the quantitative data collection phase of the exploratory sequential mixed method design, the Delphi technique was adopted to validate the recommended praxis developed from the qualitative data collection and analysis phase. The Delphi technique is a means to organise group thoughts and communication from individual opinions of a selected group of experts to reach a group consensus (Fish and Busby 2005; Chalmers and Armour 2019a). The Delphi study will be discussed in detail in **Section 4.8.6** of this chapter under the data collection phases.

4.4. Study Population

According to Creswell (2013), qualitative research collects data from information-rich participants deemed knowledgeable about the investigated phenomenon, termed the study population. As part of this study, the population was categorised into three knowledgeable groups, as reflected below.

4.4.1 Graduate Paramedics

The class of 2021, newly graduated paramedics from the Durban University of Technology (DUT), were identified as graduates. These participants were central to the study and were followed by the researcher for 12 months post-graduation, collecting data at various points. In 2021 it was reported that 11 students were in their final year of the BHSc EMC program at DUT and envisaged to qualify by the end of the 2021 academic year. From this cohort of 11, only five males graduated in 2021. The participants were then recruited from these five paramedic graduates. I aimed to recruit all five participants eligible to participate in the study. However, one participant declined to participate, leaving only four paramedic graduates who agreed to participate in the study.

Boddy (2016) argues that a sample size in qualitative research is contextual and influenced by the scientific investigation undertaken. In addition, sample sizes that involve few participants are common with qualitative research and can provide rich, meaningful data (Boddy, 2016; Omona, 2013). Even though quantitative scholars may question the adequacy of qualitative sample sizes, Boddy (2016) and Omona (2013) argue that qualitative sampling is not meant for statistical generalisation but rather for ensuring a deep understanding and meaning-making of the studied phenomena as experienced by the population under study. Omona (2013) further states that the

number of participants in a study sample is not the only marker of sample quality. Factors like the number and duration of contact periods with each participant are also crucial. Boddy (2016) also argues that qualitative studies, with their sample size limitations, can still provide direction for future research, including generating a deep understanding of a previously unexplored phenomenon.

Based on this study's graduates' sample size, the researcher concurs with the arguments presented by Boddy (2016) and Omona (2013) regarding the quality of data collectable from a small sample. Even though the sample consisted of only four participants, the depth and richness of data collected throughout the multiple interactions over 12 months elucidated meaningful insight into their experiences as graduate paramedics during their clinical transition to independent practice within the South African EMS milieu.

4.4.2 External EMS Stakeholders

In this study, the category for external EMS stakeholders referred to individuals purposefully selected from the larger South African EMS community, representing various entities within the profession. These participants were termed external, as they were not part of the 2021 graduates. The external EMS stakeholders represented various South African EMS role-players most likely to have a direct or indirect influence on the clinical transition of graduate paramedics to independent practice. These included individuals representing: i) the South African public and private EMS operations, ii) South African public and private EMC Higher Education Institutions (HEI), iii) South African health systems regulatory authorities.

The external EMS stakeholders represented the wider South African EMS community and thus positioned the study to holistically explore the phenomenon of graduate paramedics' clinical transition and recommended praxis to aid such a transition process.

4.4.3 South African EMS Experts

The South African EMS experts' category referred to individual participants identified by external EMS stakeholders and the graduates. These participants were termed experts based on their EMS experience, qualifications and employment positions. Chalmers and Armour (2019) refer to an expert as someone knowledgeable about a skill or specific area of interest. Experts can be defined by their organisational roles, public acknowledgement, qualifications and experience (Chalmers and Armour, 2019). For this study, the EMS experts were identified as individuals with a combination of extensive knowledge regarding the various South African EMS sectors, highly qualified, occupying positions of authority and most likely to influence graduate paramedics' clinical transition to independent practice directly or indirectly. These South African EMS experts represented various South African EMS sectors similar to the external stakeholders as stated above.

The EMS experts included representatives from: i) the South African public and private EMS operations, ii) South African public and private EMC HEI, and iii) South African health systems regulating authorities. This cohort was composed of different participants from those that participated as external EMS participants. The participation of the South African EMS experts positioned this study to have an opportunity to validate the praxis proposed by the graduates and external EMS stakeholders.

4.5. Sampling Approach

According to Onwuegbuzie and Leech (2007), sampling refers to selecting the study participants from the general population. In this study, two main sampling approaches were adopted, i.e. purposive and snowball (Creswell, 2013; Onwuegbuzie and Leech, 2007). The application of these sampling techniques is discussed below.

4.5.1 Purposive Sampling

According to Creswell (2013), purposive sampling allows the researcher to select the study participants deemed appropriate, willing and information-rich for the phenomenon under investigation. Purposive sampling is subjective and relies on the researcher's judgement in selecting study participants (Sharma, 2017). In this study, the researcher recruited the study participants using his judgement while guided by the inclusion and exclusion criteria (Creswell, 2013; Sharma, 2017). The graduate paramedics were purposively selected from the 2021 DUT BHSc EMC cohort. These participants completed their experiential learning under the KZN Department of Health ambit, including their inception to independent clinical practice (See Chapter Two). The recruitment was conducted at the inception of the paramedics' independent clinical practice, perceived to be the appropriate time to recruit information-rich participants for this study.

Sharma (2017) cautions that purposive sampling is susceptible to researcher bias due to the researcher's subjective judgement. Sharma (2017) does advise on mitigating the researcher biases by making explicit the researcher's judgement and guiding principles. For this study, the inclusion and exclusion criteria for the recruitment of the graduates were made explicit and applied consistently with oversight from the study supervisors.

During data collection, the graduate paramedics were followed for 12 months, thus rendering the study's data collection approach longitudinal (Balmer, Varpio, Bennett & Teunissen 2021; Hermanowicz 2013). Following this group of participants for one year while their experiences unfolded allowed an in-depth exploration of the studied phenomenon (Balmer et al. 2021). According to Creswell and Creswell (2018), Balmer et al. (2021) and Hermanowicz (2013), longitudinal data collection refers to the collection of research data over a prolonged period from the same participants. This study's longitudinal data collection approach afforded an opportunity to explore the clinical transition of graduate paramedics as a progressive experience from the same group of participants (Balmer et al. 2021; Creswell and Creswell 2018 ; Hermanowicz 2013). Even though the graduates were followed for a year, data were serially collected at specific study phases, as reflected in Table 4.1 and Figure 4.4. This type

of approach to data collection strengthened the study's trustworthiness due to data collection over a prolonged interaction with the study participants (Creswell 2013).

Hermanowicz (2013) identifies considerations to be addressed when undertaking longitudinal research as i) the point to initiate the research, ii) the number of data collection points and iii) the impact of participant attrition. Accordingly, Hermanowicz (2013) argues that if these considerations are not addressed, they will affect the quality of data collected. During this study data collection was initiated at the inception of the graduates' independent clinical practice, thus allowing for data collection as the investigated phenomenon is experienced and not relying on historical events or memory. During data collection, seven data collection points were spread throughout the 12 months, alternating between FGDs and interviews. Unfortunately, during Phase V of the data collection, one of the graduates withdrew from the study. Even though the withdrawal resulted in losing a critical member, the attrition at such an advanced stage of the study's data collection meant that the participant's contributions to most of the collected data remained meaningful.

4.5.2 Snowball Sampling

Snowball sampling is a sub-type of convenience sampling which involves the identification of a few key participants who further assist the researcher with suggesting additional participants known to them until data saturation is reached (Creswell 2013; Naderifar, Goli & Ghaljaie 2017). The external stakeholders and EMS experts were recruited through snowball sampling. Beyond the suggestions made by participants, the process was also guided by the study's inclusion and exclusion criteria.

During phase III of the study, the graduates suggested known external South African EMS stakeholders who would be appropriate to participate in the study. Similarly, during phase V of data collection, the external stakeholders' cohort suggested South African EMS experts who would be appropriate to participate in the study. The external stakeholders preferred sending direct emails to me with information about the suggested EMS experts. All the participants suggested through snowballing were also requested to identify other participants. However, an exception to this approach was made with the EMS experts participating in this study's Delphi phase. EMS experts

were not requested to recommend other participants, as that approach would have invalidated the anonymity principle of the Delphi technique (Chalmers & Armour, 2019). This will be further elaborated upon in the Delphi section below.

4.6. Study Participation Inclusion and Exclusion Criteria

Designing elaborate and explicit inclusion and exclusion criteria is standard practice for high-quality research (Patino & Ferreira 2018). Inclusion criteria refer to defined features of a target population to be used in a study to answer the research question (Patino & Ferreira 2018). In contrast, the exclusion criteria refer to features of potential study participants with characteristics that could interfere with the success of the study in answering the research question (ibid). All the participants in the study complied with the predetermined inclusion and exclusion criteria specific to the relevant category, as reflected below:

4.6.1. Graduates' Inclusion Criteria

To participate in the study under this category, the participants had to comply with the following criteria:

- Be 2021 DUT BHSc EMC graduates and,
- Have a valid HPCSA independent clinical practice registration certificate and,
- Be employed by a South African-based public or private EMS organisation and practising clinical patient care.

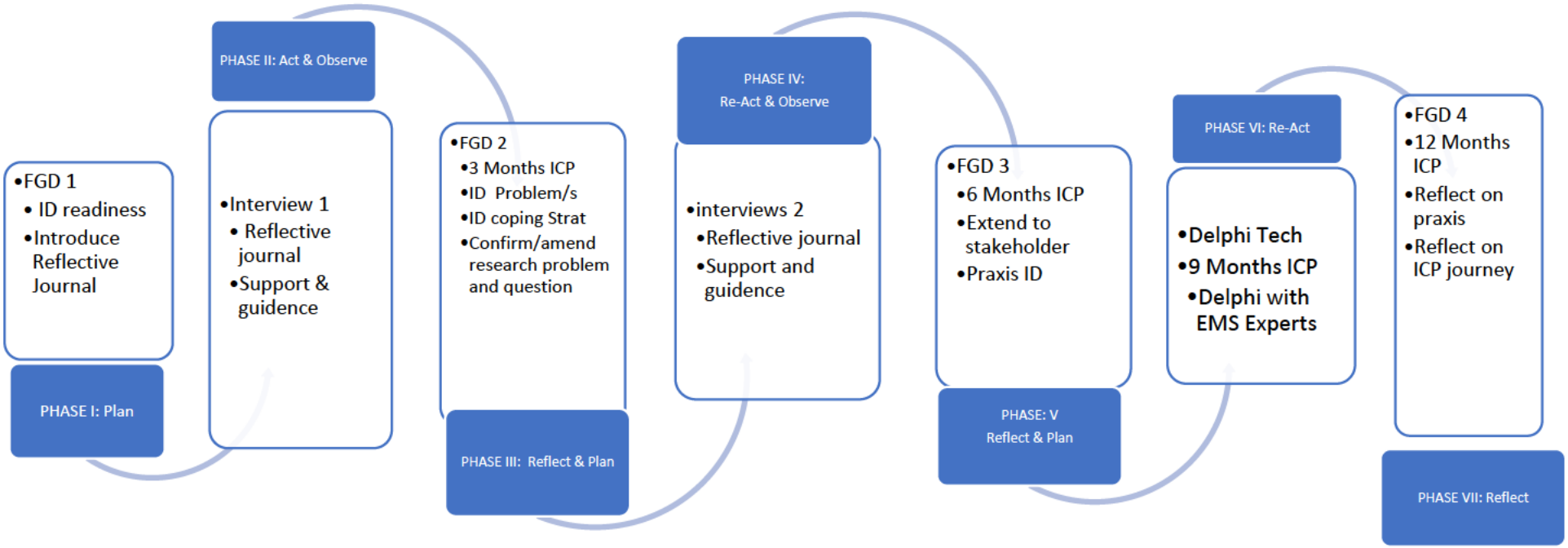

Figure 4.4: CPAR Methodology aligned with Action Research Spiral, adopted from Kemmis, McTaggart and Nixon (2014)

FGD: Focus Group Discussion; ICP: Independent Clinical Practice; ID: Identify; Delphi Tech: Delphi Technique

4.6.2. External EMS Stakeholders Inclusion Criteria

To participate in the study under this category, the participants had to comply with the following criteria:

- Have current registration with the HPCSA and,
- Be employed within a public EMC HEI as an EMC program manager/ year coordinator/ senior lecturer or equivalent. These participants were recruited from the Durban University of Technology, Department of Emergency Medical Care and Rescue and the University of Johannesburg, Department of Emergency Medical Care. These two public EMC HEIs were identified as the most suitable institutions to recruit from based on their extensive experience (more than 30 years) in the offering of EMC HEI programs in South Africa for both the undergraduate and postgraduate qualifications (Health Professions Council of South Africa 2020) or,
- Be employed within a private EMC HEI as a program manager/ year coordinator/ senior lecturer or equivalent. These participants were recruited from the only two HPCSA accredited Private HEIs offering EMC programs. These institutions will be referred to as Private HEI_1 and Private HEI_2 (Health Professions Council of South Africa 2020) or,
- Be employed within a South African-based public or private EMS operations as a supervisor or equivalent. These participants were recruited per sector: Public EMS operations from Gauteng provincial EMS and KwaZulu Natal provincial EMS. Private EMS operations from the two largest private EMS organisations in South Africa. These private EMS operations were termed Private EMS OPS_1 and Private EMS OPS_2. These public and private EMS organisations operate the largest EMS organisations in South Africa (Msomi 2018) or,
- Be currently appointed by the South African EMS regulating authorities. These participants were recruited from either the i) HPCSA, Professional Board of Emergency Care (PBEC) members and ii) National Department of Health, EMS and disaster medicine directorate employees.

4.6.3. South African EMS Experts Inclusion Criteria

To participate under this category, the participants had to comply with the following criteria:

- Have Current registration with the HPCSA and,
- Be current or previously employed within a public HEI as an EMC head of department/ EMC program manager/ year coordinator or equivalent. Participants were recruited from Durban University of Technology, Department of Emergency Medical Care and Rescue and University of Johannesburg, Department of Emergency Medical Care or,
- Be current or previously employed within a private HEI as an EMC head of department/ EMC program manager/ year coordinator or equivalent. Participants were recruited from Private HEI_1 and Private HEI_2 or,
- Be current or previously employed within a South African-based public or private EMS as a middle/senior manager or equivalent. These participants were recruited per sector as follows: public EMS operations from Gauteng provincial EMS and KwaZulu Natal provincial EMS. Private EMS operations from Private EMS OPS_1 and Private EMS OPS_2 or,
- Be current or previously appointed by the South African EMS regulating authorities. These participants were recruited from i) the current/previous HPCSA, Professional Board of Emergency Care (PBEC) members and ii) the current/previous National Department of Health, EMS and disaster medicine directorate employees.

4.6.4. Graduates' Exclusion Criteria

Participants in this category were excluded based on the following:

- Any paramedic graduates, not a DUT graduated BHSc EMC paramedic, 2021 cohort or,
- No valid HPCSA independent clinical practice registration or,
- Not employed by South African-based public or private EMS organisations and not practising clinical patient care.

4.6.5. External EMS Stakeholders Exclusion Criteria

Participants were excluded based on the following:

- No current HPCSA registration or,
- Not employed by the public or private EMC HEI as a program manager/ year coordinator/ senior lecturer or equivalent or,
- Not a South African based public or private EMS operations supervisor or equivalent or,
- Not a current HPCSA, Professional Board of Emergency Care (PBEC) member or,
- Not a current National Department of Health, EMS and disaster medicine directorate employee.

4.6.6. South African EMS Experts Exclusion Criteria

Participants were excluded based on the following:

- No current HPCSA registration or,
- Not associated with any of the public or private EMC HEI as a current or former EMC head of department / EMC program manager/ EMC year coordinator or equivalent or,
- Not associated with a South African-based public or private EMS operations as a current or former middle/senior manager or equivalent or,
- Not associated with the HPCSA, Professional Board of Emergency Care (PBEC) as a current or former member or,
- Not associated with the National Department of Health, EMS and disaster medicine directorate as a current or former middle/senior manager.

4.7. Study Data Collection Process

According to Hermanowicz (2013), longitudinal studies tend to have multiple data collection points. This study had seven data collection points excluding the recruitment of the graduates and the testing of data collection tools. The data collection process for this study is elaborated upon, starting with the recruitment of the graduates then, followed by the actual data collection. Where applicable, the data collection tool testing is elaborated upon.

4.7.1 Graduates' Recruitment

Ethical clearance was obtained from the DUT Institutional Research Ethics Committee (IREC), with a reference number: ***IREC 293/21*** *(see* ***Appendix A$_1$****)*. The DUT IREC approval and the gatekeeper letter were then sent to the DUT director of research and postgraduate support, seeking permission to access participants from the institution (*see* ***Appendix A$_2$***, DUT gatekeeper committee letter). Upon obtaining gatekeeper approval from the DUT institution's research director, an email with the IREC and gatekeeper approvals was sent to the DUT Department of EMCR postgraduate studies coordinator to provide contact details of all the 2021 BHSc EMC graduates, herewith referred to as graduate paramedics.

All the 2021 graduate paramedics from DUT were invited to a study recruitment meeting (*see* ***Appendices B & C***, study advert and study information letter). During this meeting, a recruitment presentation was made, and four paramedic graduates consented to participate in the study. Contact details of all their EMS employing services were requested, and a gatekeeper letter was sent requesting access to these employees (see **Appendix A$_3$**, employer gatekeeper letter). The recruitment of the graduates adhered to this study's inclusion and exclusion criteria.

All the graduates completed the study consent form (*see* ***Appendix D***, study consent form). In addition, ***Appendix E*****,** i.e. audio and/or video consent form, was also completed by the graduates due to Covid-19 travelling and gathering restrictions. This approach positioned the study to incorporate an internet-based medium, i.e. Microsoft Teams®, as part of the data collection process.

4.7.2 External EMS Participants Recruitment

The external EMS participants were identified during phase III of the data collection process. This cohort was composed of representatives from the larger South African EMS community. These representatives were from i) Public and Private EMC HEIs, ii) Public and Private EMS operations, and iii) South African EMS regulating authorities. All these external stakeholders required that I follow their internal institution-specific research gatekeeper approval processes. However, generic to all external stakeholders' gatekeeper approval processes were the research information packs that were sent out. This research information pack included: i) a copy of the research

proposal ii) a copy of the DUT IREC approval letter, iii) **Appendices A, B, C, D and E**. Permission for study participation was granted for all the external EMS participants as summarised in Table 4.2, below.

Table 4. 2: Overview of External Stakeholder Participants

STAKEHOLDER	ORGANIZATION	APPROVED	DECLINED
Public HEI	DUT	√	
	UJ	√	
Private HEI	Private HEI_1	√	
	Private HEI_2	√	
Public EMS	GPG EMS	√	
	KZN EMS	√	
Private EMS	Private EMS OPS_1	√	
	Private EMS OPS_2	√	
EMS Regulators	NDoH	√	
	HPCSA	√	

4.7.3 South African EMS Experts Recruitment

South African EMS experts were identified and confirmed during Phase V of the data collection process. These experts had to comply with the study's inclusion criteria and represented the broader South African EMS profession. The study participants confirmed the following EMS sectors as appropriate: i) Public and Private EMC HEIs, ii) Public and Private EMS operations, and iii) South African EMS regulating authorities. All the identified individual EMS experts were sent the research information pack, which included: i) a copy of the research proposal, ii) a copy of the DUT IREC approval letter, iii) **Appendices: A, B, C, D and E.** All the South African EMS experts granted permission to participate in the study, as summarised in Table 4.3 below.

Table 4. 3: Overview of South African EMS Experts

EXPERTISE	ORGANIZATION	ACCEPTED	DECLINED
Public HEI	DUT	√	
	UJ	√	
Private HEI	Private HEI_1	√	
	Private HEI_2	√	
Public EMS	GPG EMS	√	
	KZN EMS	√	
Private EMS	Private EMS OPS_1	√	
	Private EMS OPS_2	√	
EMS Regulators	NDoH	√	
	HPCSA	√	

4.7.4 Data Collection

Data collection for this study was conducted over 12 months, i.e. February 2022 ending January 2023. A series of phases translated into seven data collection points. See Figure 4.4 above for a summary of this study's data collection process.

4.7.4.1 Phase I: Focus Group Discussions

A semi-structured focus group discussion (FGD) method was adopted to explore the expectations of graduate paramedics regarding their clinical transition to independent practice. A FG guide ensured that collected data was organised and provided detailed data from the participants (*see **Appendix G,*** FGD guide***)***. The methods section above has already discussed the use of semi-structured FGDs as an adopted method in this study.

As part of this data collection phase, the reflective journal template was introduced to the graduates *(see **Appendix F**,* reflective journal template). Adopting reflective journals as data collection tools during **Phase I** was the basis for future data collection in phases where one-on-one interviews were conducted with the graduates. This aspect will be further discussed under the relevant phases. The research problem and strategy were presented to the graduate paramedics to input, amend and confirm as discussed in CPAR section above.

LARS is a part of this study's methodology, and it was related to this data collection phase as follows: i) **Phase I** fulfilled the **Plan Phase** of the LARS. Planning during **Phase I** included the introduction of the research and the adoption of the research plan by the graduates. Furthermore, the introduction and training on using the reflective journal template was also part of the LARS **Plan Phase**.

4.7.4.2 Phase II: One-on-one Interviews

During phase II, semi-structured interviews were conducted with the graduates. The primary focus of these interviews was the graduate paramedics' reflective journal entries. This phase allowed the researcher to offer clinical support, guidance, and feedback to the graduates. Feedback is as important as the reflective process (Rozental, Meitar & Karnieli-Miller 2021). Providing feedback to the graduates ensured that the researcher guided them through self-critique and challenged them to a deeper level of reflection. Using the Socratic questioning approach, the graduates' experiences were probed to improve their clinical decision-making process and future outcomes (Rozental et al. 2021). Socratic questioning is a series of carefully designed questions intended to lead a person to a logical response to a problem and guide future actions (Carey & Mullan 2004).

I am an experienced paramedic medical educator and clinician with over 15 years of experience in EMC education and patient care. My rich clinical knowledge and experience positioned me to provide valuable feedback and clinical support to these novice paramedics through one-on-one interviews. ***Appendix H*** is the interview guide used during this data collection phase to ensure a consistent and organised data collection process.

Relating the LARS to **Phase II** data collection: this phase fulfilled the study's Act and Observe LARS Phases. The graduates acted by documenting experiences as novice independent practitioners using written reflective journals. As part of the study's methodology, the researcher guided the graduate paramedics through their reflection process and observed how they started to develop their clinical decision-making process, including their awareness of their individual clinical development.

4.7.4.3 Phase III: Focus Group Discussion

This data collection phase was conducted three months after the graduates' inception to independent clinical practice. During this data collection phase, a semi-structured FGD was conducted with the graduate paramedics. The research problem, aim, and questions were re-explored based on the graduates' experiences during the first three months of their clinical transition. This was done to confirm and/or amend them as viewed and experienced by the graduates.

As part of the study's adopted methodology, i.e. CPAR, it was paramount that the studied population identify, amend or confirm the research problem as appropriate and valid (Van Der Meulen 2011). This active participation in the research process empowers the participants, gives them a sense of inclusivity and pride while providing rigour to the study (Van Der Meulen 2011). In addition, challenges experienced by the graduates during their first three months of independent clinical practice and their adopted coping mechanisms were explored.

Relating the LARS to **Phase III** data collection: this phase fulfilled this study's Reflect and Plan LARS Phases. The experiences of the graduate paramedics during their first three months of independent clinical practice were reflected upon. This reflection phase gave the graduates an insider perspective on the research problem being explored. Furthermore, reflecting on encountered clinical transition challenges experienced by the individual paramedic graduates, including their adopted coping mechanisms, were also explored.

The planning aspect of the LARS focused on sharing and applying the coping mechanisms amongst the graduates, guided by myself. Furthermore, identifying possible praxis that can aid the clinical transition of future paramedic graduates was explored. Related to the identified clinical transition praxis was identifying key role players within the South African EMS milieu capable of facilitating the implementation of the identified praxis. This fulfilled the ***Plan* phase** of the LARS.

4.7.4.4 Phase IV: Interviews

A series of semi-structured one-on-one interviews were conducted with the graduates as part of this data collection phase. These interviews were based on the individual entries made in the reflective journals by these participants. These self-reported written reflective journal entries captured pertinent experienced moments during the graduate paramedics' clinical transition processes. Additional to the interviews conducted about the reflective journal entries, the researcher provided the graduate paramedics with feedback, clinical support and guidance on their independent clinical practice experiences (Rozental et al. 2021). The interviews became an opportunity to build rapport between the participants and myself (Van Der Meulen 2011). These interviews further allowed me to actively participate in the study by offering clinical expertise to the graduates (ibid). This approach strengthened the relationship between the participants and the researcher. It also allowed me to develop an insider perspective of the clinical transition of these graduates to independent practice (Van Der Meulen 2011).

Relating the LARS to **Phase IV** data collection, this was the **Re-Act and *Observe*** phases of this study. The defining moments experienced by the graduate paramedics were captured using reflective journals and orated during the semi-structured interviews. As the participants orated their experiences, they fulfilled the **Re-Act** phase of the LARS. During the interviews, it was also critical to identify the challenges and coping mechanisms adopted by the graduate paramedics. These mechanisms were observed against the previously discussed coping mechanisms during Phase III of data collection. This then served as the ***Observe phase*** of the LARS. Even though indirectly observed, the experiences, as well as coping mechanisms for challenges endured, were probed to observe how the graduate paramedics justified their clinical

decision-making processes as well as personal rectification of shortcomings (Rozental et al. 2021).

4.7.4.5 Phase V: Extended Focus Group Discussions

Six months from the inception of independent clinical practice by the graduates, Phase V data collection was conducted. This was an extended semi-structured FGD with external stakeholders. During the initial planning of this data collection phase, it was envisioned that both the graduates and the external stakeholders would be interviewed during this FGD. Invitations were shared with graduate paramedics willing to participate in this extended FGD with external stakeholders during Phase III data collection. Unfortunately, none of the paramedic graduates were willing and comfortable participating in this data collection environment.

Before this data collection phase, the researcher was aware of the potential power dynamics that could play out between novice graduates as a vulnerable community interacting with external stakeholders perceived to have a higher authority. Power dynamics are inherently present during professional interactions based on traditional hierarchy (Looman et al. 2022). In this instance, where some external stakeholders are supervisors, managers, or previous lecturers to the graduates, a power dynamic phenomenon was realised. Power dynamics can be implicit and explicit (Looman et al. 2022). Even though some of the graduates expressed interest in participating in the extended FGD, none of them turned up; this proved the implicit nature of the power dynamics present during the Phase V semi-structured FGD.

According to Looman et al. (2022), power dynamics can be mitigated by creating a psychologically safe environment conducive to interpersonal risk-taking and free self-expression. In this study, I mitigated the perceived power dynamics and its impact on the quality of data collected by firstly affording all willing novice paramedic graduates during Phase III of data collection the opportunity to choose to participate in the extended FGD with external stakeholders. Additional to self-choices, a separate FGD was conducted with only the graduate paramedics, as it was anticipated that the graduates might not participate in the extended FGD with external stakeholders. During the second Phase V FGD, the graduate paramedics proposed a praxis for the

clinical transition of graduate paramedics in the South African EMS milieu and had the opportunity to review the praxis proposed by the external stakeholders on same.

The afore-stated approach to data collection during Phase V positioned this study to mitigate the perceived power dynamics without compromising the data quality. Furthermore, it allowed the graduates to interact with the proposed praxis before it was presented as part of Phase VI data collection, i.e. Delphi phase. This active participation in the study by the studied community is a crucial aspect of CPAR (Van Der Meulen 2011).

The research objectives during this phase of data collection were to identify a South African EMS-specific probable praxis aimed at mitigating the challenges experienced by graduate paramedics during their clinical transition into independent practice, as well as the identification of the South African EMS experts suitable for participating in Phase VI to validate the identified praxis. Refer to Table 4.1 above. This phase of the study explored the second sub-question of this study, and the findings thereof will be presented in Chapter Five.

Relating **Phase V** to the LARS, **Phase V** was identified as the study's Reflect and Plan phases. The inputs from the broader South African EMS communities' representatives (i.e. external stakeholders) regarding the clinical transition of graduate paramedics were explored during this phase. What was explicitly reflected upon were the perceived vast challenges faced by graduate paramedics and the practices already put in place by various South African EMS stakeholders to mitigate them. However, shortcomings were also identified through the graduates' experiences. They necessitated the South African EMS stakeholders to plan for an inclusive cohesive praxis which will serve the common interest of the South African EMS. Further planning included agreeing on a team of South African EMS experts to validate this identified praxis to aid the clinical transition of graduate paramedics in South Africa.

4.7.4.6 Phase VI: Delphi Study

The Delphi study was the quantitative data collection phase of this study as part of the exploratory sequential mixed methods design. A Delphi technique was adopted to validate the recommended praxis from the qualitative phase of the mixed method. A Delphi technique is an objective method of structuring effective group communication. It allows individual experts in a group setting to anonymously express their opinions regarding complex situations that require a group consensus or prediction (Niederberger & Spranger 2020; Chalmers & Armour 2019; Okoli & Pawlowski 2004; Linstone & Turoff 2002). According to Chalmers & Armour (2019) and Niederberger & Spranger (2020), consensus in a Delphi setting is reached using multiple rounds of questionnaires answered by a selected group of experts in that field. During these multiple Delphi rounds, descriptive statistics are applied to determine an acceptable level of consensus to implement a resolution (Chalmers & Armour 2019).

The Delphi technique as a method for group communication has characteristics which set it apart from other group communication approaches, i.e. i) Multiple rounds of questioning, ii) anonymity in group interaction and responses iii) as well as providing feedback to the panellists (Niederberger & Spranger, 2020; Chalmers & Armour 2019). Chalmers & Armour (2019) argue that these three Delphi technique characteristics are meant to remove bias when building a consensus by eliminating social and peer pressures while encouraging convergence of ideas in a group setting. All these three Delphi technique characteristics were observed during this study.

In recent years there has been an increase in the number of studies adopting the Delphi technique from various fields of studies (Chalmers & Armour 2019). It is arguably accepted by researchers that the Delphi technique remains one of the most effective approaches to obtaining a reliable consensus of opinions from a group of experts (Niederberger & Spranger 2020; Chalmers & Armour 2019; Okoli & Pawlowski 2004; Linstone & Turoff 2002). Experts in a particular field are challenged to apply their knowledge, skills and experience to collectively reach a consensus (Niederberger & Spranger 2020; Chalmers & Armour 2019; Okoli & Pawlowski 2004; Linstone & Turoff 2002). The Delphi technique was identified as a suitable method adopted for the study to validate the South African EMS specific praxis, intended to aid the clinical transition of graduate paramedics to independent practice. This area of enquiry within

the South African EMS milieu has research paucity; thus, through the anonymous consolidation of opinions from the selected group of South African EMS experts, and reaching a consensus, a contribution to the body of knowledge could be advanced. For this study, anonymity was maintained by using emails sent directly to individual expert panellists to respond to the Delphi questionnaires.

The increase in the application of the Delphi technique across various settings and fields resulted in two distinct types of the Delphi technique, i.e. i) original Delphi technique and ii) modified Delphi technique (Chalmers & Armour 2019; Linstone & Turoff 2002). The main difference between these two types of Delphi techniques is the composition of the first-round questionnaire (Chalmers & Armour 2019). During the original Delphi technique, the first-round questionnaire is usually an open-ended question posed to the expert panel, whilst the modified Delphi technique has a first-round questionnaire composed of pre-selected items to be ranked or rated by the panel of experts (Chalmers & Armour 2019). In this study, a modified Delphi technique was adopted. The first-round questionnaire was composed of a pre-determined proposed praxis from the preceding data collection phases to be rated by the panel of experts using a Likert scale (see ***Appendix I_1*****,** Delphi round 1 questionnaire).

Feedback between Delphi rounds is presented to panellists quantitatively and/or qualitatively (Chalmers & Armour 2019). Quantitative feedback is presented using statistics that project both group and individual panellist ratings of the questionnaire items. In contrast, qualitative feedback includes controlled remarks from all panellists regarding the questions asked (Chalmers & Armour 2019). For this study, both qualitative and quantitated feedback was provided to the expert panellists after every Delphi round.

Chalmers & Armour (2019) and Niederberger & Spranger (2020) argue that the number of experts participating in a Delphi can vary greatly, with some studies having a minimum of four and a maximum that can extend beyond a thousand. According to Okoli & Pawlowski (2004), the average number of Delphi panellists must be between 10 and 18. For this study, 15 South African EMS experts participated in the modified Delphi. Table 4.4 below presents the composition of the Delphi panellists. Due to the

geographical distance between the selected panellists and myself, an email-based distribution of all Delphi round questionnaires was adopted.

Mash, Couper & Hugo (2006) argue that there is a paucity of literature guiding the exact approach in setting the Delphi study consensus levels. Some studies have reported Delphi consensus levels ranging between a percentage value of 51% and 100% agreement. Chalmers & Armour (2019) present a practical approach using descriptive statistics to guide the development of a consensus in a Delphi. The measurements of central tendencies, i.e. mean, median or mode, together with the level of dispersion, i.e. standard deviation (SD) or interquartile range (IQR), are presented as statistically superior parameters to measuring the level of consensus in a Delphi (Chalmers & Armour 2019). For this study, the consensus level was set at a median of six or more, IQR of two or less and an average agreement of 60% or more. A median of six was the minimum agreeable level based on the adopted seven points Likert scale, while an IQR of two or less was based on the number of Delphi panellists that were beyond 10 for this study (Chalmers & Armour 2019).

The Likert scale was developed to measure preference in a scientifically accepted and validated approach (Joshi et al. 2015). Participants are asked to express their degree of agreement or disagreement with a given statement (Taherdoost 2019; Joshi et al. 2015). The Likert scale usually has a minimum of two and a maximum of 11-points (Taherdoost 2019; Joshi et al. 2015). Joshi et al. (2015) argue that the seven-point Likert scale has higher reliability than the commonly used five-point Likert scale. In contrast, the Likert scale higher than seven points has a decreasing reliability compared to the lower point scales. Taherdoost (2019) supports the argument expressed by Joshi et al. (2015) by stating that the inter-rater reliability is optimised when using the seven points Likert scale. Furthermore, from the two-point Likert scale to the 11-point Likert scale, reliability is maximised at the seven-point Likert scale level (Taherdoost 2019). The seven-point Likert scale was adopted based on its reliability as expressed by Taherdoost (2019) and Joshi et al. (2015).

Relating the LARS to Phase VI data collection, this data collection phase was identified as the *Re-Act* phase of this study. The validation of the identified praxis intended to aid the clinical transition of graduate paramedics within the South African EMS milieu fulfilled the Re-Action phase of LARS. EMS experts in a Delphi setting, Re-acted to the proposed praxis and, using their expertise, validated the praxis structure from the array of presented possibilities by both the graduates and external stakeholders.

Table 4. 4: Delphi Experts Overview

INSTITUTE	PUB HEI 1	PUB HEI 2	PUB HEI 3	PUB EMS 1	PUB EMS 2	PUB EMS3	PUB EMS4	PUB EMS 5	PRV EMS 1	PRV EMS 2	PRV EMS 3	REG 1	REG 2	PRV HEI 1	PRV HEI 2
GENDER	M	M	M	F	M	M	F	F	M	M	M	M	F	F	M
AGE GROUP	46-55	36-45	46-55	36-45	36-45	46-55	36-45	36-45	36-45	46-55	36-45	46-55	36-45	36-45	25-35
HIGHEST QUALIFICATION	M	M	PhD	M	M	M	B	B	Cert	B	B	PhD	M	M	B
NO. OF YEARS IN EMS	>20	>20	>20	16-20	>20	>20	16-20	>20	16-20	>20	16-20	>20	11-15	16-20	5-10
EMS EXPERTISE	Pub HEI	Pub HEI	Pub HEI	Pub EMS	Pub EMS	Pub EMS	Pub EMS	Pub EMS	Priv EMS	Priv EMS	Priv EMS	Pub EMS/ HPCSA	Pub EMS/ NDoH	Priv HEI	Priv HEI
HPCSA REG CARTEGORY	ECP	ECP	ECP	ECP	ECP	ANT	ECP	ECP	ANT	ECP	ECP	ANT	ECP	ECP	ECP

PUB- PUBLIC; PRV- PRIVATE; REG- REGULATORY; HEI- HIGHER EDUCATION INSTITUTE; EMS-EMERGENCY MEDICAL SERVICE; M- MALE; F-FEMALE; M- MASTER'S DEGREE; B- BACHELOR'S DEGREE; CERT- CERTIFICATE; ECP- EMERGENCY CARE PRACTITIONER

4.7.4.7 Phase VII: Focus Group Discussion

This data collection phase of the study was conducted after 12 months of the graduate paramedics' independent clinical practice. A FGD was conducted with the graduate paramedics following the conclusion of the Delphi phase. During this phase, the outcomes of the Delphi Phase were presented to the graduates. This phase allowed the graduates to become active participants in this study again, per the adopted study methodology, i.e. CPAR.

The graduates were asked to verify the Delphi-validated praxis based on their experiences. During the verification process, the Delphi round 1 and 2 questionnaires and their results were presented to the graduates. The graduates commented on the Delphi results based on their experiences as part of the proposed praxis in phase V data collection. During the deliberations, the graduates verbally verified the validity of the Delphi outcomes as appropriate. The study was concluded by the graduates and the researcher during this phase.

The graduates' self-documented written reflective journals focusing on the individual journeys of transitioning to independent clinical practice, spreading over 12-months, were discussed. These written reflective journals capturing the experiences of individual graduate paramedics were resolved to be the final data collected for this study. The reflective journals and other data collected during the study contributed to data triangulation. Creswell (2013) states that data triangulation is used to corroborate research findings using multiple or different sources or methods. Data triangulation strengthened the study's trustworthiness.

Relating LARS to Phase VII data collection, this phase was identified as the Reflect phase of this study. Reflection during this data collection phase focused on the graduate paramedics' verifying the Delphi-validated praxis in phase VI. This verified praxis is intended to aid the clinical transition of graduate paramedics to independent practice within the South African EMS milieu. Furthermore, graduate paramedics were expected to reflect on their experience for the first 12 months of independent clinical practice using a self-written reflective journal.

4.8. Data Analysis

Qualitative data were collected from audio-recorded semi-structured FGDs, one-on-one interviews and self-written reflective journals from the graduate paramedics. All transcripts were produced verbatim from the audio recordings. Qualitative data analysis brings order, structuring and meaning-making out of a mass collection of textual, audio, video and image data (AlYahmady & Alabri 2013). The researcher intends to bring light to the relationship between collected data, emerging sub-theme and themes to increase the understanding of the studied phenomenon .

Qualitative data analysis was conducted using Thematic analysis (TA). Smith & Firth (2011) identify TA as qualitative data analysis method that describe and interpret participants' views and experiences of a phenomenon. TA was suitable for this study to analyse both transcribed recordings and self-written experiences of the graduate paramedic's clinical transition into independent practice. NVivo® Version 12, a computer-assisted qualitative data analysis software (CAQDAS), was also used during data analysis in this study. According to Zamawe (2015), CAQDAS is a data management program which supports the researcher during data analysis. A CAQDAS does not analyse qualitative data; however, it assists in data organisation. AlYahmady & Alabri (2013) argue that using a computer-based qualitative data analysis software package ensures that the researcher is methodical, thorough, and attentive. NVivo® Version 12 aided my data analysis by helping me methodically and thoroughly organise qualitative data from the transcribed FGDs and interviews.

4.8.1 Thematic Analysis

Thematic analysis is a process of systematic searching for themes that emerge as being important to the description of a phenomenon under study (Fereday & Muir-Cochrane 2006). TA was applied on all transcripts (i.e. FGDs and interviews) and reflective journals. Clarke & Braun's (2017) approach to TA was adopted in this study. Clarke & Braun (2017) argue that TA is a qualitative method for identifying, analysing, and interpreting meaning from a qualitative data set. Furthermore, Clarke & Braun (2017) highlight that TA is a flexible method not bound by a theoretical framework or paradigm but can be applied across various theoretical frameworks and paradigms. Clarke & Braun (2017) also argue that TA can be suitably used within a Critical

framework, allowing for the interrogation of patterns around a topic from a personal or social meaning perspective.

The emphasis on TA is to produce rigorous and high-quality data analysis (Clarke & Braun 2017). To achieve this high-quality data analysis, TA has a two-stage in-built process allowing researchers' themes to be reviewed against the coded data and the entire data set (Clarke & Braun 2017). Fereday & Muir-Cochrane (2006) state that inductive TA refers to data-driven coding without an *a priori* template. An inductive TA approach was adopted for this study. Clarke & Braun (2017) argue that the inductive approach is useful when exploring new terrain, and TA is suitable.

Clarke & Braun (2017) highlight six phases for TA. Phase one involves familiarising oneself with the collected data by reading and re-reading the transcript while noting initial thoughts and ideas. Phase two includes generating initial codes by systematically identifying interesting, relevant information across the entire data set and assigning a code to each. In phase three, the researcher searches for themes which involves collating all related codes into potential themes and collecting all the information relating to each potential theme. In phase four, themes are reviewed by checking if they relate to codes and the coded extracts. A thematic map is then created for data analysis. Phase four involves the naming and defining of themes, including an ongoing analysis to refine the specifics of every theme. In phase six, a report links themes to codes and extracts, including how they relate to the research question and supported by literature.

In practice, the applied TA followed an inductive process for coding and development of sub-themes (Clarke & Braun 2017; Selvam & Collicutt 2013). To develop themes, the meaning of the grouped sub-themes was interpreted within the CT's social factors definitions (Refer to CT in Chapter Three). TA was adopted within the study theoretical frameworks and strengthened the reliability of coding and development of themes (Clarke & Braun, 2017). The developed themes informed by CT's social factors elucidated the broader understanding of the clinical transition of graduate paramedics through the CT framework (Selvam & Collicutt 2013). The findings from the TA process will be presented in Chapter Five.

4.9. Research Rigour

Fereday & Muir-Cochrane (2006) refer to research rigour as the demonstration of integrity competence by the qualitative researcher regarding the study. During this study, research rigour was maintained as discussed below.

4.9.1 Trustworthiness

Carlson (2010) refers to trustworthiness as the degree of certainty afforded to qualitative research that data collected, analysed and reported was appropriately and ethically handled. Multiple approaches exist in validating qualitative research (Creswell 2013). This study adopted Lincoln and Guba's (1985) approach, which refers to qualitative research trustworthiness to comply with the criteria under reflexivity, credibility, transferability, dependability and confirmability as the natural equivalents to quantitative internal validity, external validity, reliability and objectivity (Creswell 2013). The section below describes how trustworthiness was maintained in this study.

4.9.2 Credibility

Creswell (2013) argues that credibility is achieved through triangulation of data sources, methods and a prolonged field engagement. Carlson (2010) refers to triangulation as the collection or analysis of data in more than one approach. The premise of triangulation is that multiple approaches can substantiate each other and better the credibility of findings (Carlson 2010). This study had multiple data collection methods, i.e. FGDs, interviews, reflective journals and a Delphi technique. Triangulation through multiple data collection methods (i.e. FGDs, interviews and reflective journals) and methodology (i.e. Delphi) was a strong feature in this study. All transcripts produced during data collection were member checked, thus allowing all participants to review them, enhancing the study's credibility (Creswell 2013). Additional to multiple data sources, a longitudinal data collection approach was adopted as part of the methodology employed, i.e. CPAR. The study's data collection period was 12 months, comprising seven data collection points, i.e. Phase I-VII. This prolonged engagement built rapport between the participants and myself, strengthening the credibility of data collected (Creswell 2013).

4.9.3 Transferability

Transferability refers to qualitative research being positioned to corroborate findings over time and across similar situations (Carlson 2010). A thick description of the study process, analysis, interpretation and findings is paramount to ensure the transferability of findings to other similar settings and populations (Creswell 2013). Even though Creswell (2013) advises on the limitation of qualitative studies regarding the reproducibility of findings, it is paramount that the researcher provides a thick description of the research process and proceedings. Similarly, Carlson (2010) warns that qualitative research is not concerned with inter-study replication but rather the substantiation of findings.

In this study, the experiences of graduate paramedics' clinical transition to independent practice were captured in detail through prolonged interaction with them during data collection while employing methods like FGDs, interviews and written reflective journals to gather a detailed account thereof. Furthermore, in this chapter, a detailed description of the data collection process is presented, this includes the study settings, participants and data collection process (Carlson 2010). In the following chapters, comprehensive details regarding the processes of data analysis and the generation of study findings are presented. This approach not only allows this study to present a rich description of the studied phenomenon but demonstrates the diligence with which the research was conducted and the process followed to infer findings (Creswell 2013; Carlson 2010).

4.9.4 Dependability

Dependability was achieved by auditing the research process (Creswell 2013). The study was supervised and co-supervised by two independent researchers who oversaw the entire research process. These supervisors compared the study findings against the collected and analysed data. Member checking added a layer to the audit trail from the participants and allowed for the researcher to be held accountable for accurate and dependable findings (DeCino & Waalkes 2018; Creswell 2013).

4.9.5 Confirmability

Qualitative researchers look for confirmability instead of objectivity by auditing the research process (Creswell 2013). Study supervisors' audits and member checking satisfied this condition, as reflected above. Furthermore, while reporting findings, I ensured that the participants' voices were brought forth and presented as intended through their extracts (DeCino & Waalkes 2018).

4.9.6 Reliability

Reliability centres around the reproducibility of research data and findings (Creswell 2013). During this study, a recording medium was used and transcripts were produced verbatim. Member checking was done and a computerised data analysis software programme (i.e. NVivo® Version 12) was used. These are some of the strategies employed in this study to ensure reliable data collection, handling and reporting on reliable findings.

4.9.7 Reflexivity

Researcher reflexivity refers to the explicit acknowledgement of the qualitative researcher's role and impact on the research (Carlson 2010). Carlson (2010) argues that all researchers have personal biases that influence their interaction with the research process, i.e. data collection, analysis and interpretation. To reduce these biases, the qualitative researcher must explicitly disclose their assumptions and aspects of their background that could influence the data interpretations they make (Carlson 2010). Reflexivity is the acknowledgement by qualitative researchers of their significant influence over the research process and participants (Carlson 2010).

I am an experienced paramedic clinician and educator with over 15 years of experience. I obtained my EMC undergraduate qualifications from the University of Johannesburg, i.e. National Diploma in EMC and the Durban University of Technology, i.e. B. Tech EMC, while my post-graduate qualification, i.e. master's degree in health sciences education is from the University of the Witwatersrand. I have extensive experience in teaching undergraduate paramedics at a Provincial EMS college level as well as working closely with them during their clinical experiential learning and after obtaining their qualifications as colleagues. I have accepted multiple requests from undergraduate paramedics to mentor them formally and informally after graduation as

independent practitioners. These graduates were appointed in both public and private EMS as paramedic clinicians. I have observed and learned about these graduates' struggles when transitioning from being students working under supervision to working independently as novice paramedics. The need to have a deeper understanding of the phenomenon of paramedic graduate clinical transition to independent practice and to contribute to a better transition process has always been my deepest desire. This study has allowed me to fill such a void within me. I had no prior or current relations with the study's main cohort participants i.e. 2021 DUT BHSc EMC graduates.

I subscribe to the Critical paradigm (CP), centred on empowering the disadvantaged. I incorporate the CP within my workspace, mostly dealing with paramedic students. I also hold the view that those who experienced a phenomenon are better positioned to guide any program intended to empower them so it can be meaningful and impactful. I have an optimistic, futuristic attitude towards problem-solving, especially when the ideal solutions are forged under unfavourable environments. This is key because subscribing to the CP challenges one to be solution-orientated, not problem-focused. As I interact with this study process, CP drives how I engage with this research process, i.e. data collection, data analysis, interpretation and engaging with participants.

4.10. Data Management

This study stored all collected electronic data in a password-protected folder and computer, accessible only to me and my study supervisors. All the study hard copies were stored in a lockable safe. Both electronic and hard copy data will be stored for five years with or without publication and destroyed as per DUT data storage policy. All electronic data will be deleted and hard copies shredded after the above-stated period.

4.11 Ethical Considerations

Creswell & Creswell (2018) argue that during the conceptualisation of the research, researchers must anticipate ethical issues that might arise during the study when their research might involve data from people or about people. It is important that during the research, researchers protect the participants, develop rapport and promote integrity throughout the research process (ibid). Creswell & Creswell (2018) present

an approach where the research process is aligned with the anticipated ethical considerations to be addressed. I adopted the same approach in this study as presented below.

4.11.1 Ethical Considerations Before Conducting a Study

An ethical clearance application was submitted to the DUT IREC as part of the research initiation process. The proposal, including a completed ethics checklist and all the supporting appendices (see ***Appendices A, B, D, E ,F, G, H***), were part of this IREC submission. Creswell & Creswell (2018) argue that the institution's research review board serves to assess the potential risk that the study may pose to the participants, including the identification of vulnerable populations and how their special needs are considered by the researcher. The DUT research ethics policy identifies students as a vulnerable population (DUT 2018:4). In this study, I recruited participants from the 2021 BHSc EMC paramedic graduates' cohort. At the time of study recruitment, these participants were no longer students as they had already registered with the statutory regulator, i.e. HPCSA, as independent clinical practitioners. Even though these participants were no longer regarded as DUT students, the DUT department of EMCR was identified as a gatekeeper because of its centrality in gaining access to these graduates' contact details. Beyond the DUT research ethics policy, the following ethics policies relevant to this study were adhered to:

1. HPCSA: Guidelines for good practice in the health care professions: general ethical guidelines for health researchers, (HPCSA 2008).
2. National Health Research Ethics Council (NHREC): Ethics in health research: principles, processes and structures, (South African National Department of Health 2015).
3. South African Medical Research Council (SAMRC): Guidelines on ethics in medical research: general principles. book 1, (SAMRC 2002).

4.11.2 Ethical Considerations at the Beginning of a Study

Ethical clearance was received from the DUT IREC (See ***Appendix A$_1$***, IREC Approval letter, IREC 293/21). This approval was followed by sending a gatekeeper letter to the DUT department of EMCR to seek access to the study population. A gatekeeper letter, IREC approval and the research advertisement letter (see ***Appendices A$_{1,2,3}$ & B***)

were shared with the department. Only after approval from the department of EMCR was the study population contacted for recruitment. A study information letter and the research advertisement (see ***Appendices B&C***) were shared with the study population. Employers of all the participants were also contacted as gatekeepers to seek access to their employees. A gatekeeper letter and research advertisement (see ***Appendices A₃ &B***) were shared with the employers.

Participation was voluntary in this study. Creswell & Creswell (2018) state that researchers should not force or pressurise participation in studies; participation is informed and voluntary, and participants can withdraw from the study at any time. Creswell & Creswell (2018) further state that informed consent must be voluntarily completed and signed by willing participants who comply with the study inclusion criteria. All willing participants who meet the inclusion criteria voluntarily signed the study informed consent forms (see ***Appendices D&E***).

4.11.3 Ethical Considerations During Data Collection, Analysis and Reporting of Findings

This study employed an exploratory sequential mixed methods approach. Qualitative data were collected using FGDs, one-on-one interviews, and written reflective journals. The recommended praxis emanating from the qualitative data strand was validated using a Delphi technique (see ***Appendices F, G&H***). All participants were given pseudonyms to ensure that no identifiable information was linked to them. Creswell & Creswell (2018) state that researchers must respect sensitive participants' information (i.e. maintaining confidentiality) and protect the anonymity of participants, roles and incidents. In this study, participants' anonymity and confidentiality was maintained by using pseudonyms. Researchers must avoid disclosing information that would harm participants when reporting findings (Creswell & Creswell 2018**). A**ll participants were reminded to keep confidential all discussions that took place during data collection i.e. interviews and FGDs.

Additional to the above-discussed ethical considerations, the following ethical principles were also observed during this study.

4.11.4 Autonomy

Lanre-Abass (2012) defines autonomy as the ability to be informed and to use such information to make decisions about oneself. Autonomy relies on being informed to make rational decisions, moral choices and be allowed to have self-determination (Varkey 2021). In this study, all participants were informed about the study during the recruitment process and were handed copies of the study advert and information letter (see ***Appendices B&C***). After such information was shared, all participants could choose to participate or decline to participate in the study. All the participants signed an informed consent form to participate in this study (see ***Appendices C& D***).

4.11.5 Beneficence and Nonmaleficence

Beneficence refers to the ethical obligation that the researcher will act in the best interest of the study participants (Varkey 2021). In this study, all actions performed during data collection were insured to be in the best interest of the participants. The study was granted ethics clearance from the DUT IREC, i.e. IREC 293/21. All data collection activities were preceded by seeking gatekeeper permission for participation (see ***Appendices $A_{1,2,3}$***). The study participants were not exposed to any unnecessary, strenuous data collection activity, even though the study lasted 12 months. All the data collection activities were discussed with the study participants, and an agreement on suitable dates and times for data collection was reached. Lastly, where one-on-one interviews were conducted with the graduates, those participants benefited from clinical mentorship and support from the interaction with the researcher.

According to Varkey (2021), nonmaleficence refers to the ethical principle that the researcher will not cause any harm to the study participants. In this study, no harm was caused to the participants; however, clinical support and psychological support services were available to the graduates to utilise when necessary.

4.11.6 Justice

The ethical principle of justice refers to fair and appropriate treatment to all participants (Varkey 2021). In this study, all participants were treated fairly and appropriately irrespective of their title, gender, age and position within the South African EMS profession. All participants were selected based on the inclusion and exclusion criteria. All inputs from the participants were accepted as equally important without any favour towards a particular participant.

4.12. Summary

This chapter presented a thick description of the research design and methodology adopted in this study. Furthermore, an outline of the data analysis, including the ethical considerations maintained in this study, are described. The following chapter presents the qualitative data analysis and findings from this study.

CHAPTER FIVE: QUALITATIVE DATA ANALYSIS AND FINDINGS

5.1 Introduction

This chapter presents the findings from the qualitative phase of the exploratory sequential mixed method design. The reporting of these findings is aligned with standard reporting guidelines for qualitative research, COREQ (Braun & Clarke 2024). Focus group discussions (FGDs) and individual interview transcripts, including reflective journals, were analysed using thematic analysis (TA). These transcripts and reflective journals were initially coded by the researcher and co-coded by supervisors to strengthen the trustworthiness of these findings (Creswell 2013).

Five FGDs were conducted, Table 5.1 below presents the breakdown. Graduate paramedics were the only participants in the first two focus groups. FGDs three and four were conducted with the larger South African EMS participants (i.e. external EMS representatives; refer to Chapter Four for a detailed description of this cohort). FGD five was conducted with the graduate paramedics 12 months into their independent clinical practice. On average, a FGD lasted for 90 minutes.

Table 5. 1: Focus Group Discussions Overview

No. FGD	Research Phase	Duration	Number of Participants
1	1	70min	4
2	3	130min	4
3	5	110min	5
4	5	90min	5
5	7	63min	3

In between FGDs, individual interviews were conducted with the graduate paramedics. A total of 11 interviews were conducted. On average, an interview lasted 71 minutes. Augmenting the FGDs and interviews, seven reflective journals were received from the graduate paramedics. On average, a graduate paramedic submitted two reflective journals, except for one participant who submitted one reflective journal before voluntarily withdrawing from the study.

5.2 Graduate Paramedics Characteristics

The four graduate paramedics' backgrounds were explored during the first individual interviews. As the characteristics of the graduate paramedics are presented, confidentiality is maintained, and pseudonyms are used. During the interviews, it was identified that Tumi and Pat had no prior EMS experience. In contrast, Kgosi and Lerato had previous EMS experience, working for private and public EMS organisations, respectively. Kgosi had worked as a basic ambulance assistant before enrolling for the bachelor's degree program. Lerato held various short course qualifications and work positions related to these qualifications before he also enrolled on the bachelor's degree program. None of the participants chose emergency medical care (EMC) as their first option when applying to the university.

Tumi and Pat were first-time EMS employees without work experience and worked for private EMS companies' post-graduation. Kgosi and Lerato continued to work for private and public EMS organisations post-graduation. All the participants were males. These participants were four out of the five who completed the undergraduate paramedic education program within regulation time, i.e. four years of study. The fifth graduate was also a male who declined to participate in the study. Even though the participants' voices were mainly from a male perspective, as no female graduate paramedics were represented, the composition of these participants' experiences and exposure provided a deeper understanding of the studied phenomena.

5.3 External EMS Stakeholder Demographics

Various EMS stakeholders participated in the FGDs (refer to Chapter Four for a detailed cohort description). The demographics of these participants are summarised in Table 5.2 below.

Table 5. 2: External EMS Stakeholder Participants Demographics

Participant	Position	Qualifications	Sex	Years in EMS
Ext 1	Private EMC HEI Educator	Master's Degree	Female	15-20
Ext 2	Private EMC HEI Educator	Bachelor's Degree	Male	15-20
Ext 3	Public EMC HEI Educator	Master's Degree	Male	5-10
Ext 4	Public EMS Operations Manager	Bachelor's Degree	Female	5-10
Ext 5	Private EMS Operations Manager	Bachelor's Degree	Female	15-20
Ext 6	Public EMC HEI HOD	Master's Degree	Male	>20
Ext 7	Private EMS Operations Manager	Bachelor's Degree	Female	5-10
Ext 8	Public EMC HEI HOD	PhD	Male	>20
Ext 9	Public EMS Operations Manager	Bachelor's Degree	Male	15-20
Ext 10	EMS Policy Maker	Bachelor's Degree	Male	15-20

EMC- Emergency Medical Care; **HEI**- Higher Education Institution; **HOD**- Head of Department; **EMS**- Emergency Medical Services

5.4 Thematic Analysis Findings

The qualitative findings are presented as themes and sub-themes and supported by participant quotes. Three themes were developed during data analysis; see Figure 5.1 below for a summary of TA findings.

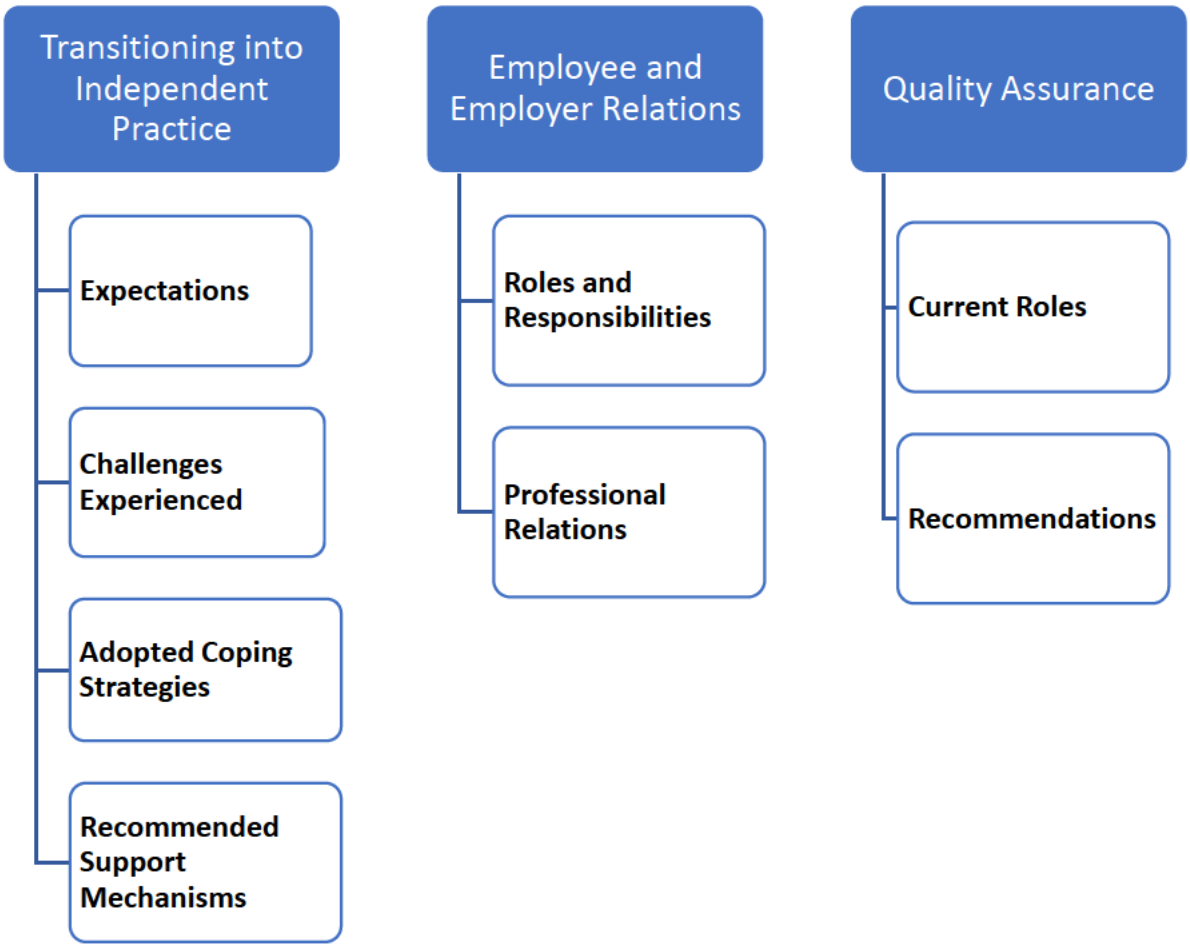

Figure 5. 1: Thematic Map

The TA findings sought to answer the research sub-question one i.e., What is the interplay between the work environment and the transition of graduate paramedics to independent clinical practice? Where applicable, care was taken to elucidate one participant's expression with other participants' expressions to strengthen the trustworthiness of the research findings as rooted in data (Selvam & Collicutt 2013). In presenting these findings, a natural gravitation towards the experiences of the

graduate paramedics, augmented by the experiences of the larger EMS community participants is a constant feature.

5.4.1 Theme 1: Transitioning into Independent Practice

This theme captured the reported experiences of graduate paramedics as they transitioned from dependent (i.e. students) to independent clinical practice (i.e. professionals) as related to their work environment. This graduate paramedics' clinical transition was experienced in selected public and private EMS organisations within the South African milieu. Four sub-themes were identified under this theme, i.e. expectations, challenges experienced, adopted coping strategies and recommended support mechanisms.

5.4.1.1: Sub-Theme 1: Expectations

This sub-theme describes graduate paramedics' expectations before their inception into independent clinical practice. Expectations were developed from the observations and experiences during the interaction with the larger EMS community as part of the undergraduate clinical training, i.e. experiential learning and classroom practicals. Graduate paramedics expressed expectations based on their perceived clinical capabilities and the workplace support they would receive from their employers.

Tumi and Lerato expressed juxtaposed views regarding their clinical diagnosis capabilities. Tumi expected that he would find it easy to diagnose and treat patients independently, as he perceived the skill to be similar to the classroom-simulated environment. Tumi explained it as follows:

> *"I was expecting it to be much (easier for me) to diagnose and treat patient(s) - as it was in the simulation environment".* ***Tumi***

In contrast, Lerato expected his clinical diagnosis and patient treatment capabilities to develop with time as he gained exposure to real patient cases. Lerato acknowledged the role of classroom simulated patient training as a guide to real-world expectations but accepted that it could not substitute real patient exposure. He described his expectations as follows:

‘’Since I have a little bit of experience prior to this qualification, I kind of had an idea that the scenarios that we are getting during our college days (patient simulations) were sort of giving us an idea of what the real world will look like out there. But, I knew that patients do not always follow the book and I knew that we were still going to have a hard time trying to put things together (regarding) what we have learned, what we are seeing in a patient and what we are suspecting to be happening in terms of the provisional diagnosis of the patient. So, I wasn't expecting to come out (of the university) and be on top of the (clinical) game when I start(ed) to treat patients because I knew there was a lot of adaptations to go through in order to nail it on the head”. ***Lerato***

Evidently, Lerato’s expectations regarding his capabilities to diagnose and treat patients during independent practice were informed by his prior EMS experience while working as a lower-qualified EMS practitioner in the public sector. In contrast, Tumi had optimistic expectations without any prior EMS exposure; however, he based his clinical capabilities on the classroom patient simulation experience.

A mismatch between the EMS employers’ expectations and graduate paramedics' clinical capabilities was highlighted. One of the external EMS participants, an Emergency Medical Care (EMC) Head of Department (HOD), extended Tumi and Lerato’s expectations by presenting the employers’ perspective. He highlighted that EMS employers expect graduate paramedics to effortlessly transition into independent clinical practice upon their employment and immediately be able to contribute effectively towards the organisational deliverables. His comments were as follows:

"The (EMS) employers' expectations are poorly informed about what graduates come out with, what is their skill set? I think very often graduates are placed into a box based on what the employer wants them to be as opposed to what they are and that's where the big problem comes in. The employer wants someone who can come out and work on a response car straight away and start responding with it. In the private services start generating income while in the public (sector) service, the employer obviously wants to keep the community happy. I think sometimes the challenges come as the new graduate is placed into a specific box, which is what the employer (expects) of them, as opposed to what they actually are (capable of doing)". ***Ext 8***

Interestingly, not only did the HOD share the EMS employers' expectations of graduate paramedics but further highlighted the practice as unfair, as it favoured the EMS employer's corporate deliverables above the graduate paramedics' clinical developmental needs.

Beyond the expectations of clinical capabilities, participants expected to work in a supportive environment catering to their novice independent clinical practice needs. Kgosi, a graduate paramedic working for a private EMS organisation expressed an expectation to receive work-based training to further develop his clinical skills and confidence. Kgosi explained:

"I somewhat expected an in-depth sort of training period or rather adjustment period where myself and the company would work together to develop me into a more skilled or more confident practitioner as an independent ECP (emergency care practitioner)". ***Kgosi***

In addition to work-based training, workplace orientation was reported as part of the expectations by participants. Tumi, a first-time employee, expected to be orientated on "how the company works". Tumi explained as follows:

"So, as someone who has never worked before in the EMS environment and still new to this type of work, I was expecting the company to orientate me on how the EMS environment works, on how the company itself works and on how things are done in the company". ***Tumi***

Kgosi supported Tumi and added that the workplace orientation should include the company administration procedures, policies and organizational structure. The following were Kgosi's expectations:

"I was expecting a thorough orientation of the company structure, of the equipment we use, of the SOPs (standard operating procedures), stuff like that". ***Kgosi***

Clinical mentorship was reported to be an expectation for a supportive work environment by participants. Lerato, a graduate paramedic working in the public sector, expressed a view that he hoped to be mentored by an experienced paramedic. He perceived mentorship to be an important aspect of his clinical growth as a novice paramedic. Lerato explained it as follows:

"I was hoping that my company will help me grow on the clinical aspect and make me work with someone who's more experienced for the first few months or weeks until I get my legs strong". ***Lerato***

Lerato further reported on expectations specific to his public EMS work environment. He expected to have enough clinical equipment to practice his skills and manage patients. He described it as follows:

"As a public servant, I was hoping that I will get all my equipment that I could need for my daily cases". ***Lerato***

This sub-theme illustrates the graduate paramedics' expectations before their inception to independent clinical practice. It was evident that graduate paramedics had opposing expectations regarding their clinical capabilities, which had been informed by their previous learning exposure. Additionally, a supportive work environment was also an expectation reported by graduate paramedics. However, one of the participants, an EMC HOD highlighted a contradictory expectation from the EMS employer's perspective regarding the graduate paramedics' functionality and clinical competency. This contradiction will be explored in chapter seven as I discuss these findings.

5.4.1.2 Sub-Theme 2: Clinical Transition Challenges

The graduate paramedics described their experienced challenges during the transition period. These challenges emanated from their clinical capabilities, work environment and the undergraduate training they had received. Various external EMS stakeholders also shared their experiences on observed challenges during the clinical transition of graduate paramedics.

The earlier days of independent clinical practice were reported to be challenging by the graduates. Kgosi described his "initial 60 to 90 days outside of varsity as extremely difficult" while trying to develop his clinical capabilities. He further alluded to this difficulty being exacerbated by a lack of self-confidence. Kgosi described it as follows:

"So, I'll probably start off by saying that the initial 60 to 90 days outside of varsity were extremely difficult and challenging trying to navigate how to become a good paramedic. You know that initial 60 to 90 days I was very wary of what I was doing and very low on confidence because I was so unsure about the treatments and what the treatments would look like at the end". ***Kgosi***

Kgosi shared a clinical experience in his reflective journal that corroborated the above-mentioned challenges. This self-written experience provided an opportunity to further understand some of the clinical challenges Kgosi referred to. He wrote:

"Today I had to do my first "alone" prehospital intubation on a 14-year-old male patient. Following this difficult and challenging clinical case, I had to endure the battery and onslaught of the company due to my management of the patient. The criticism and onslaught of my management, had me in a lot of emotional turmoil due to the way they criticised me and the fact that I was left with the blame for the patient's passing". ***Kgosi***

Evidently, Kgosi's early days of independent practice were characterised by challenges related to his clinical capabilities and were exacerbated by a lack of clinical support from his workplace. Unfortunately the lack of employer support led to Kgosi tendering his resignation and seeking new employment.

Clinical decision-making was reported to be part of the experienced independent practice challenges. Pat, a first-time employee without any prior EMS professional experience reported that clinical decision-making challenges were exacerbated by the work environment and pressure from colleagues who expected clinical leadership from him. The following is Pat's description of this challenge:

"Clinical decision-making now becomes a challenge since you are on your own and you have to make the decision on your own. Everyone's looking up to you. So, whatever you say has to go". ***Pat***

Pat shared a clinical experience in his reflective journal entry that corroborated the above-mentioned challenges. This self-written experience gave an opportunity to further understand the type of challenges Pat referred to regarding clinical decision-making exacerbated by peer pressure. He reflected:

"Today I had to resuscitate a patient on the side of the road after being involved in a car accident. I was the senior on scene and my very first resuscitation as an independent practitioner. I felt overwhelmed by the scenario and under a lot of pressure as all decisions had to be taken by me, I felt very unsure of what to do next even though I have all the knowledge I needed but putting it all in use at that time was a challenge". ***Pat***

Evidently, Pat's early days of independent clinical practice were characterised by challenges in clinical decision-making exacerbated by a lack of support systems in his work environment.

Challenges regarding clinical decision-making were frequently reported by the participants during the FGDs. Tumi and Kgosi supported Pat's experience regarding clinical decision-making challenges. Kgosi related to it as cognitive information overload that needed to be developed into meaningful knowledge through experience; Kgosi explained:

“I had four years of knowledge that the university imparted to me and it didn’t form a cohesive thought process. It was more of a jumbled-up information and then on the scenes that tended to come out, where I’ll start thinking about for example in AMI (acute myocardial infarction), I’d start thinking about treatment protocols but then on top of that I’m thinking about the worst outcome i.e. cardiac arrest and then my brain would start focusing on the cardiac arrest. It was just the initial shock of “trying to get a flow and not having to worry the whole time about the treatment and the outcome being the worst-case scenario”. ***Kgosi***

Tumi further related the challenges with clinical decision-making to a lack of knowledge and clinical exposure. Tumi explained:

“Sometimes you come across a patient where you do not understand what is happening and you have never come across such a patient before. So, you don't really know what to do”. ***Tumi***

One of the participants, an HOD described his observations on challenges related to clinical decision-making as attributed to graduate paramedics being subjected to accelerated clinical changes as they transition from students to independent practitioners. This accelerated pace of activities makes the transition difficult to cope with, especially without employer support. The HOD explained his views as follows:

“I think it's very difficult for them (graduate paramedics) most of the times, probably it's a change that they are forced to make, perhaps a lot faster than the normal person or the newly graduated paramedic would want to have to make. I think it's a very accelerated timeline and one that perhaps a lot of them find difficult to navigate, especially in the beginning and then sort of after”. ***Ext 8***

Another participant, an EMC educator agreed with the HOD and extended the argument with her observations of the recent cohort of graduate paramedics being younger than in the previous years. She remarked that the young age of graduate paramedics makes it challenging to clinically transit into independent practice as expected by the profession and employers. She described her views as follows:

"I think that clinical transition is really a difficult thing for them to do, because as they qualify an average paramedic graduate is 22 years old. In terms of life experience that's also quite young and there's a lot of pressure placed by the services on them as graduates at that age". ***Ext 1***

In addition to their age, the same educator stated that employers place a great deal of service delivery pressure on the graduates. It was reported that the younger graduates are forced to deal with high work stress without any necessary skills and support to cope with it. Psychological stress was reported to be experienced by graduate paramedics because of their work environment. An EMC educator explained it as follows:

"I think mentally, it is something that is a bit straining to them, knowing that they are what we refer to as the hope of the EMS or the patients. Some of them, I mean come straight from school, they graduate and they go straight to work". ***Ext 3***

In his reflective journal, Tumi shared his first day of work experience as a young first-time employee, responding for the first time with an emergency vehicle to his first critical patient as an independent practitioner. Tumi's reflective journal entry corroborated the challenges highlighted by the EMS educators above regarding graduate paramedics' high-stress work environment. Tumi wrote:

"An ET tube dislodgement on a head injured patient on my first day at work after (earlier) scratching the company vehicle before responding to the incident. I was feeling terrible after the case and I thought maybe the job was not meant for me, I should have chosen another career". ***Tumi***

Tumi's first-day experience was not isolated. Lerato shared a similar experience from a public servant perspective through his reflective journal entry; he wrote:

"Today I have experienced that the information about newborn patients (especially preterm babies) may not be fully covered in our course. The resources in terms of the equipment and clinical support (consultant on call) may also not be fully supported in EMS systems especially in the government structures. I feel very disappointed in the system I am working under". ***Lerato***

This reflective journal entry highlights the psychological impact of the work environment on Lerato. The system appeared to have failed him and the newborn baby to whom he was rendering emergency care. Tumi and Lerato's experiences corroborated the observations made by external stakeholders regarding the psychological and emotional impact of the clinical challenges that graduate paramedics experience as they transition to independent practice.

The reported challenges extended beyond the graduate paramedics' clinical competencies and included the work environment. Graduate paramedics reported to have experienced a non-supportive work environment during their clinical transition from both the public and private EMS organisations. These reported experiences were also supported by the larger EMS community. The participants reported on workplace challenges related to a lack of orientation, training, clinical mentorship, and clinical equipment unavailability.

Regarding clinical mentorship, participants reported that they could have benefited from having mentors working alongside them during their clinical transition into independent practice. Tumi and Kgosi, both working for private EMS organisations shared their experiences. Tumi stated he felt overwhelmed and found himself forgetting to do basic medical investigations required by patients. However, he believed the presence of a mentor would have resulted in real-time support and guidance. Tumi explained:

"I feel like we should be given someone for a period of months, who can orientate us on how to diagnose patients. As I have worked for these few weeks, I even forget to do a basic diagnostic test". ***Tumi***

Kgosi supported Tumi and referred to the abrupt changes from working under a clinical supervisor as a student where he was guided and supported to suddenly being expected to take full responsibility for patient safety and care. This created stress for him, and he did not feel ready for such responsibilities. He felt he still needed guidance. Kgosi described the challenge as follows:

"When I was a student, I wasn't solely responsible for the patient care and treatment. I always had someone to at minimum bounce ideas off and at best they could take over the decision-making from me. Now being the so-called last line, it's a little bit more stressful and more prominent when I am caught off guard. Purely because I don't have that additional person that used to point me in the right direction or give me some guidance". ***Kgosi***

Tumi and Kgosi's experiences were corroborated by an EMS operations manager. The manager reported that graduate paramedics are put in an inconducive work environment as novice practitioners. They are expected to function as experienced paramedics at a stage in their clinical development where they should be gaining clinical experience. She explained it as follows:

"These practitioners go from where there was always somebody as backup and as clinical guide, which they could always turn to and say, listen, I'm having issues. Now, when they start working, they get put in an environment where they are seen as the senior practitioner on the shift and in fact, they actually don't have the experience to be a senior practitioner". ***Ext 5***

Participants reported on the lack of workplace orientation during the clinical transition to independent practice. Kgosi described the challenge regarding lack of workplace orientation as a "swim or sink situation", an environment he expressed as far too common within the EMS profession. He described it as follows:

"I never got the opportunity to be orientated; it was more a sink or swim situation as it is common with our field". ***Kgosi***

An EMS educator supported Kgosi's experiences regarding the lack of workplace orientation. He attributed the situation to the inadequate number of paramedics in the workplace to guide graduate paramedics. He explained it as follows:

"Because there is usually no person due to a lack of advanced life support or ECP that are available in most private companies to receive a graduate. So, they find that they are the only one and they've just come out of university. They still have to find their feet in terms of how the EMS in general operates and also how the actual organization that they are employed (in) also work(s). So, I think the introduction or the guidance from university to EMS operations is lacking". ***Ext 3***

The duration spent during undergraduate clinical learning was closely related to the inadequate number of available paramedics to support both undergraduate and graduate paramedics. Extending from the lack of paramedic clinical mentors, an HOD highlighted that graduate paramedics spend inadequate time under clinical supervision during work-integrated learning. The HOD explained it as follows:

"One of the things that we can't ignore is the amount of experience that the graduates get when working as students. So, they get to practice in the field under supervision of other practitioners. The amount of time that they get doing that period, one could argue is not sufficient". ***Ext 6***

Regarding the public EMS, Lerato reported a lack of clinical equipment as a challenge that affected his clinical practice and patient care. Lerato described his experience as follows:

"You kind of struggle to get the equipment you need to work but at the same time, you are expected to perform at your best to help patients". ***Lerato***

In support of Lerato's experience, two public EMS operations managers highlighted the lack of clinical equipment including emergency medications as affecting the graduate paramedics' ability to diagnose and treat patients. The first manager explained:

"The other thing that is experienced by new paramedics is that they don't have the right equipment to perform their duties. They don't have the equipment that is supposed to assist in clinical care. When they are out there alone their patient treatment is not of the standard that they are supposed to be giving because there is no one assisting them and there is no appropriate equipment to use. They don't have suitable equipment to make the right diagnosis of the patient condition including equipment to treat patients, that includes medication as well. They find all these things when they start to practice after university graduation. They are not experienced and want to do what is best for the patient but then they cannot due to the challenges in the service". ***Ext 4***

Furthermore, the public EMS was reported to have financial constraints, which limits their procurement of clinical equipment with similar quality standards to what graduate paramedics were trained with by the university. The second manager explained his views as follows:

"I'll speak from the public sector point of view. Most of the equipment that we teach these guys with (at) the university, when they are qualified as ECP they have got this ideal, perfect world that they've been trained under. When they get back to the reality, they find that half of the equipment is not even there". ***Ext 9***

The above sub-theme captured the challenges experienced by graduate paramedics during their clinical transition into independent practice. Evidently, the experienced challenges were related to clinical competencies, work environment and undergraduate training received. Furthermore, the psychological and emotional impact of such challenges were evident as reported by the participants.

5.4.1.3 Sub-Theme 3: Adopted Coping Strategies

This sub-theme describes the strategies adopted by graduate paramedics to cope with challenges experienced during their clinical transition to independent practice. Participants reported coping strategies initiated by both graduate paramedics and employers.

Participants reported on a self-initiated clinical consultation strategy adopted to cope with independent practice challenges. Lerato, a public service graduate paramedic described consulting accessible senior hospital doctors and experienced paramedics within his workplace when he needed medical advice and guidance. Lerato described it as follows:

"What I'm doing so far is to use whatever level resources I have in terms of the work team around me. The hospital staff and specifically doctors and some senior ECP's (emergency care practitioners) in the service. Not only ECP, even CCA (Critical Care Assistants- old phased out EMS paramedic short course qualification) and other ALS (advanced life support) paramedics. It's not something that is very effective, but I have created (for) myself (a support system) by asking (help from) colleague(s), especially senior colleague(s) like doctors and well experienced paramedics, either by call or by physical contact when we meet". ***Lerato***

Lerato further cautioned that the system is not very effective. However, it was what he had access to for coping with his clinical transition challenges.

Pat and Kgosi followed a similar approach to Lerato's self-initiated coping strategy. Both participants made use of colleagues and friends for debriefing. Pat had access to a colleague whom he described as "always available to discuss cases". Pat explained it as follows:

"I have a lot of support from my colleagues, especially the other ECP that I'm working with. So, she's always available when I need her. She's always available to discuss (the) case that I go through when I ask her. Just a debrief on what I could have done differently and how to approach things and how basically things work in this company that I'm working at". ***Pat***

Kgosi reported having access to a medical doctor in his new employment service who could debrief cases with him. Furthermore, he had friends studying medicine and used them for *"*case debriefing and unloading*"*. The following are Kgosi's explanations:

"If I have a clinical case that I would like to have reviewed, I take it to our medical officer, him and I will sit and have a meeting over it and we'll focus very heavily on developing the (clinical) decision making instead of just looking at all of the negative points that were done on that call". ***Kgosi***

"Beyond the debriefing that I do with my colleagues and my higher qualified supervisors, I've got friends that (are) still studying various forms of medicine that I also tend to debrief and unload on them as well". ***Kgosi***

An interesting finding was Tumi's reported coping strategy approach to dealing with independent practice challenges. Tumi a private EMS organisation employee, without any prior employment experience, adopted an approach where he relied on his previous mentors during his undergraduate education. Tumi explained that there was already a developed rapport between him and these mentors; thus, his continued reliance on their support during his clinical transition into independent practice became a natural progression. Tumi explained as follows:

"It is much easier for me to talk to someone whom I know and I have worked with before (during undergraduate studies), because they understand me and I understand how they work. I know how much they know about the certain conditions and I know that they have got experience in those type of conditions. I can easily talk to them. So, it is much easier to call them". ***Tumi***

The approach by graduate paramedics to self-initiate coping strategies was highlighted as commendable and aligned to other health professions' practices. The HOD described it as follows:

"We should encourage graduates to say if I'm stuck, let me call for help or ask somebody within the organisation or phone my (former) lecturer. If I need to phone the class colleague that also graduated, phone them. Contact somebody senior within the organization to say, this is what I got, what do you suggest? This is a common practice amongst medical doctors and other health professionals". ***Ext 6***

Kgosi was the only graduate paramedic privileged to be supported by his employer through developmental courses to aid his clinical transition. With this support, he was able to improve his clinical decision-making skills as part of his clinical transition. Kgosi explained the additional training and its benefits as follows:

"With additional training courses and things that I've been taking part in, I feel like the clinical decision-making and depth of thought that's been going into each case has been much more consistent and appropriate to each case in comparison to the initial stages where it was a lot of chaotic thoughts". ***Kgosi***

Kgosi's employer described this approach as a standard practice within their organisation. The following was her expression:

"They (graduate paramedics) get sent on to AHA (American Heart Association) courses, that is just the internal aid that we give to new ECP". ***Ext 7***

The benefits from the employer-initiated clinical transition support system, particularly through the provision of additional courses that were offered to Kgosi were evident in Kgosi's clinical development. Kgosi reported that after receiving "the additional training", he could "reflect on what he has done" regarding patient care rendered. The following is Kgosi's explanation:

"*Treating those patients after I did the additional training programs, it was very nice to look back and reflect on what I've done, (if it) was correct and there were few improvements that I could have made (on my) patient (care). I actually had the ability now to effect that change, where if I compare it to the beginning, it was very much like a varsity thought process where we would be taught valuable information but because you're not practicing it every day and you're not treating enough of those specific patients, you never got to reflect and improve your clinical decision making and your clinical treatments in a way that it would reflect better outcomes and practice*". ***Kgosi***

Even though the graduate paramedics' self-initiated coping strategies were common amongst all the participants, the employer-initiated support strategies were inconsistent across all the employment services. An EMS educator reported on an observation where there is a lack of graduate paramedic support across EMS employers. The educator described it as follows:

"So, our company takes graduate paramedics on board and we show them what is expected from them. However, I know of some institutions that have this (support system) in place. But then on the other hand, I also know of institutions that just welcome you at your first day at work. They provide you with (a) uniform and there you go. So, it does have its benefits from an employee and employer's perspective. I think providing them with this support is invaluable to these graduate paramedics". ***Ext 2***

A HOD agreed with the educator's comments. However, he extended his argument that most of the EMS organisations only put support measures in place for graduate paramedics to mitigate the "medical-legal risk". The following was his explanation:

"We see this happening in some areas; it's happening in the larger private sector companies where they don't take graduates automatically and place them in the response car. They would ask him to work with somebody senior for a period of time and this is happening also in some of the provincial services. But it's not a universal practice, and it's being done really to protect the organisations because the liability of having a graduate paramedic come out and practice on their own and make a medical-legal risk is high". ***Ext 6***

The participants, mostly representing private EMS organisations reported on their adopted support strategies for graduate paramedics during their clinical transition. Some of these reported strategies confirmed the observations by the HOD as stated above. The following are descriptions from the two private EMS operations managers regarding their adopted support strategies for graduate paramedics:

“From my side in our private EMS operations, generally when we have a newly qualified paramedic starting with us, I will always put them, at least for their first couple of shifts with a very experienced ECP (emergency care practitioner). This person will generally show them what is expected of them from a company perspective, how the system works and how to do things. What is expected from them, from the company side and start mentoring them into knowing if they have any clinical issues, there is a number that they need to phone”. ***Ext 5***

“For assistance, we have the clinical consultation process where the graduate paramedics first 10 RSI (rapid sequence intubation) post-graduation is monitored. So, once they start working for us, their first 10 RSI they have to do clinical consultation, ideally prior to the RSI. We have a telephonic consultation, they discuss the case with the MO (medical officer), whether it's pre or post and then you submit your PRF (patient report form) for review on completion of the case”. ***Ext 7***

The above sub-theme captured the strategies adopted by graduate paramedics and employing services to cope with challenges experienced during the transition to independent clinical practice. It was evident that graduate paramedics had to initiate strategies suitable to their work environment to cope with their clinical transition challenges. Furthermore, it was evident that the employer-initiated support strategies were inconsistent across the entire South African EMS milieu. Some EMS employers, particularly the private services, attempted to initiate support strategies while others did not.

5.4.1.4 Sub-Theme 4: Recommended Support Mechanisms

This sub-theme describes the recommended support mechanisms for graduate paramedics' clinical transition into independent practice. The participants recommended an internship, workplace mentorship, workplace orientation, clinical consultation, a case review system, restructuring of the undergraduate paramedic program, development of EMS managers, and psychological and emotional support systems as support mechanisms to aid the clinical transition of future graduate paramedics.

Regarding introducing internships for graduate paramedics, Kgosi recommended a similar program to “medical doctors in South Africa”. He explained it as follows:

“I don’t know if you’re familiar with the internship program that they have for medical doctors in South Africa where they do six weeks to three months cycle on different blocks but as independent practitioners? However, they still have their medical officers around to assist them. I think if we had a similar system where we spent an additional six weeks or so in the ED (emergency department) but as practicing paramedics as well as a longer stint in road operations but partnered to someone else, (it) will help”. ***Kgosi.***

An EMS educator supported Kgosi’s internship recommendation for graduate paramedics. However, he cautioned that it should be a well-designed program with clear objectives. The following are his views regarding the EMS internship:

“I was going to comment around the same thing of internship kind of a program. Maybe with clear objectives as to what must be achieved over what period by the graduate paramedic before they can be fully released into independent practice”. ***Ext 3***

In contrast, an EMC HOD rejected the recommendations regarding the EMS internship. He argued that internship is a state-funded program and the state as the custodian of such a program must have funds to support it. He further cautioned that in the absence of state funding, the internship program will be adversely affected as already observed with other programs. The HOD explained:

“You know, we are constantly asked, why isn't there an internship for EMS? The fact of the matter is that there is no funding for these graduate paramedic’s internship posts. The state doesn't have the money to fund the paramedic internship. If you look at some of the other disciplines (except) medicine, which has these internship requirements. There are vast number of graduates that are unable to register because they are unable to get in the internship post. So, they get the qualification and then they sometimes wait years to get in a post so that they can enter internships. So, that's

*the one big challenge, because that funding currently has to come from the state for that internship to happen". **Ext 6***

Even though most participants including graduate paramedics favoured the EMS internship, the HOD advanced a compelling argument regarding the feasibility of an EMS internship, especially in the current format where the state funds the program. The HOD's persuasive argument regarding EMS internship feasibility was also informed by his experience as a member of the EMS regulatory authority, i.e. HPCSA. The HOD raised awareness amongst most participants making them appreciate the implications this might have on the profession should the state fail to fund the program as already experienced by other disciplines.

Participants recommended workplace mentorship for graduate paramedics as a support mechanism. Tumi and an EMC educator shared their views on this recommendation. Tumi felt that the duration of the mentorship period should be for the "first three months or according to how the individual graduate paramedic is improving" on his/her independent practice milestones. He explained as follows:

*"I believe that first for all newly qualified paramedics, there should be someone whom they will work with maybe for the first three months or according to how the person is improving or according to how they acquire their experience. So, I believe the EMS industry should provide someone new from the university with someone to work with and guide them through the clinical decisions, guide them through everything that is patient-related". **Tumi**.*

An EMC educator supported Tumi and reported on the employer's role in supporting new graduates in the workplace. She explained:

*"There is some role that employers have to play in order to support the new graduates when they do get into the field, with the system that allows them to work with someone experienced so that they can see how things are done". **Ext 1.***

The HOD supported the approach of workplace-driven mentorship programs in the absence of an EMS internship program that requires state funding. He expressed a need for EMS cultural practice change and the use of best practice systems. He expressed his views as follows:

"The other thing then obvious to follow in the absence of putting in place regulations that enforce internship is to develop some system of best practice where it's taken that organisations will then create a network based on best practice. There should be an EMS cultural practice change that when you qualify as an ECP expect to spend between three or six months or up to 12 months working under supervision under a mentor". ***Ext 6****.*

Tumi in his reflective journal documented an experience when he was provided with clinical mentorship by an experienced paramedic from another service during a critical case; he wrote:

"I intubated the patient, confirmed that there was air entry and did not inflate the cuff properly. The sats (saturation) did improve a lot for a bit and when I tried to exit the car and we tried to pull out the patient, I saw that the sats were dropping and when I auscultated, there was no longer (air) entry and when I assessed the tube, the tube was dislodged. That was a bit stressful but an ALS from the provincial EMS had arrived. He assisted me with re-intubating the patient; he performed the re-intubation and the tube was secured properly and inflated properly. I felt as he was assisting me, the stress was starting to go away because someone (was) here who has experience and if anything happens, he will be here to assist me. So, I started to calm down after the paramedic (had) arrived. After that he was talking to me like this is how you do it as everything was starting to calm down, I was starting to see what was happening around the scene". ***Tumi***

Tumi's reflective journal entry highlighted the importance of mentorship and support for graduate paramedics by experienced paramedics.

Participants reported workplace orientation for graduate paramedics as a recommended support mechanism. Tumi highlighted the importance of workplace orientation especially for graduate paramedics without any work experience. He reported as follows:

"The workplace should also get someone to orientate people who are new, coming from school and have never worked in the EMS industry before". ***Tumi.***

An EMC educator supported Tumi and specified the need for graduate paramedics to be guided "beyond clinical decision-making" but to also include the orientation on organisational policies and standard operating procedures (SOPs). He described it as follows:

"Guidance in terms of clinical decision making is one thing that is very important, however introduction to the company policies and SOP's (standard operating procedures) as well is important". ***Ext 3.***

In Tumi's reflective journal entry, the importance of workplace orientation especially on the organisation's SOPs and policies became apparent. He captured a moment where he thought he made the best transportation decision for the patient but realised he transgressed the company policy unknowingly. Tumi wrote:

"I took a patient to hospital in a response vehicle, the hospital was a 2 minutes' drive away from (the) scene and there were no ambulances available to transport the patient. I feel like what I did was risky but was to the benefit to the patient and I also did not know I was not supposed to take patients to hospital with a response vehicle". ***Tumi***

Participants recommended a formal clinical consultation system for graduate paramedics. Lerato compared the clinical consultation system to what doctors in hospital settings have access to. This system will allow graduate paramedics access to medical advice and guidance when needed. Lerato described it as follows:

"It would be great if we had a consultation system like the doctors do. Like a consultant online or anyone higher qualified who can be called at anytime and give advice on anything. So, I believe it should be someone who understands the paramedic field and understands the functioning of the hospital system to help you link the two together". ***Lerato.***

The HOD agreed with Lerato and argued that clinical consultation should be mandatory during the transition period and enforceable by the EMS regulators to ensure it becomes a standard practice across the entire South African EMS. He explained it as follows:

"We could say graduates should have a transitional period where we can still have an intermediary phase where they could consult, between the supervised practice and independent practice phases. Where some of the things that they would need to perform need to be reported upon. Now, the private sector as already (has) been mentioned does do this, where the graduate paramedics have to report when they do an RSI (rapid sequence intubation). They have to produce a report and that in some way is then holding the graduate paramedic accountable. The challenge is, that doesn't apply across the board. I think this is something that needs to then fall under the responsibility of the (EMS regulators)," ***Ext 6.***

Pat in his reflective journal entry, shared an experience where he had undertaken a clinical consultation during a first-time encounter using a neonatal ventilator during a critical case transfer. The clinical consultation resulted in a positive patient outcome and a "boosted self-confidence" for him. Pat wrote:

"Today I had to do my first neonatal intubated transfer from one facility to another, which I would say was very challenging to (for) me as it was my first time having to actually use the neonatal ventilator they have at work, which is completely different from the one I'm used to from back at varsity. I was feeling overwhelmed like I didn't know what to do for that case which made me to have lots of nerves. However, with the help I got, I was able to successfully complete the case without any complications

*and that boosted my self-confidence way high, made me to believe in myself much more". **Pat***

Aligned with the recommendations made by the HOD regarding the clinical consultation system, Kgosi recommended a clinical case review system for graduate paramedics where clinical cases can be debriefed. Kgosi explained:

*"Very regular thorough debriefs, looking at all of the cases that you did on shift and on your rotation cycle. That should be mandatory that you must sit and go through your cases for a time period, I don't know how long would be appropriate". **Kgosi.***

Participants recommended access to psychological support services through a workplace-based psychologist. Pat identified the need for a professional psychologist accessible to graduate paramedics to address cases that might negatively impact them. Pat explained as follows:

*"At work we should also get someone who will sit, maybe a professional who we can talk to about our mental health. Maybe when we get emotional calls, someone who can talk to us after we do such incidents and such cases". **Pat.***

Kgosi supported Pat and expressed a preference for a psychologist with an appreciation of the EMS profession and its challenges as an appropriate person for the task. He explained as follows:

*"Even though it's difficult, but if we had to have an ECP that was also a qualified psychologist that would make a big difference. If we had weekly or monthly meets with them and you had to go through all your emotional experiences as well as you know do some critical thinking activities of some degree to develop a more thorough critical thinking process with regards to clinical decision making". **Kgosi**.*

Participants recommended restructuring the current paramedics' undergraduate degree program, i.e. Bachelor of Health Science in Emergency Medical Care. A HOD expressed that the medical rescue credits can be restructured in favour of work-integrated clinical tuition by reducing the medical rescue credits and increasing the clinical learning credits. He described it as follows:

"Maybe the program could be re-structured in a way that in their final year, they get to spend a lot more time doing clinical work; this could be achieved by re-looking at the medical rescue component of the program" ***Ext 6****.*

An operational manager supported the HOD's recommendations to increase work-integrated learning credits and reduce medical rescue credits. She explained as follows:

"How necessary is the rescue? Because that's really not what we do. Shouldn't some of that time be sacrificed for more clinical time? I don't know what the answer is, but I definitely agree, and I don't think the clinical exposure hours is necessarily enough. It would already solve a big problem if the paramedic graduates are more experienced in actual care of the patients that we are going to be seeing" ***Ext 7.***

Specific to public EMS, a public EMS operations manager recommended the training and development of EMS management regarding the clinical transition of graduate paramedics. Some managers within the public EMS responsible for managing graduate paramedics were reported to be less qualified than graduate paramedics. She explained as follows:

"I think the managers also need to be trained, they don't understand what the newly qualified ECP needs or what is expected from them, because sometimes it's like they are more intimidated by the qualification as some graduate ECP's (emergency care practitioners) are being managed by people that are underqualified" ***Ext 4***

The above sub-theme presented the recommendations reported by graduate paramedics and external EMS participants regarding the support mechanisms to aid the clinical transition of future graduate paramedics. These recommendations were subjected to a Delphi study for validation. The results thereof will be presented in Chapter Six.

5.4.2 Theme 2: Employee and Employer Relations

This theme captures the employee and employer relations experienced by the graduate paramedics during their independent practice. These graduates were employed by selected public and private EMS organisations within the South African milieu. This relationship was explored from the employees' perspective (i.e. graduate paramedics) supported by the EMS stakeholders (i.e. private and public EMS employers, private and public EMC educators, private and public EMS HOD, EMS regulators) and the other healthcare professionals (i.e. doctors and nurses). Some findings from this theme might overlap with previously presented findings in theme one. However, the findings presented under theme two are contextualized accordingly. Two sub-themes were identified under this theme, i.e. roles and responsibilities and professional relations.

5.4.2.1: Sub-Theme 1: Roles and Responsibilities

This sub-theme describes the graduate paramedics' employment roles and responsibilities. The participants reported on their roles and responsibilities as informed by their perceived understanding and the experienced daily functions in the workplace. The EMS stakeholders' views aided the graduate paramedics' reports.

Participants reported on the graduate paramedic's job description. Kgosi reported that "his official job description was road operations (i.e. pre-hospital clinical patient care) and solely that". He described it as follows:

> *"My official job description is only for road operations and solely that. But in reality, I try and help the company out as much as I can. Often it ends up that I'm doing management-based tasks and I'm doing organizational based tasks, trying to make sure that the paperwork of the crews is in order".* ***Kgosi***

Even though Kgosi was employed for the pre-hospital patient care role, he reported fulfilling management roles and responsibilities, including supervising lower-qualified practitioners to assist the organisation. Tumi, a first-time employee corroborated Kgosi's report. Tumi reported that he "manages colleagues and performs paramedic duties". He described it as follows:

"My role is to manage the colleagues and perform the duties of an advanced life support paramedic. Only recently I believe I am improving on both because in the beginning, I really didn't have a clue (about) these roles I had to perform, but now I'm starting to understand the roles that I should play in the employment service". ***Tumi***

Tumi further conceded to an initial lack of understanding of his employment roles and responsibilities at the inception of his independent clinical practice. The aforementioned remarks can be attributed to Tumi being a first-time employee without employer support in terms of workplace orientation-this finding is already described above in theme one. Supervising less qualified colleagues in the workplace was frequently reported by participants. Pat described his supervisory role as follows:

"All my colleagues take me as their senior. Each week I have to sit down and check their patient report forms (PRFs) if they're in order and give comments. I'll say I'm on the senior level because most of the things they run by me should they need anything". ***Pat***

A private EMS operations manager corroborated the above reports from the graduate paramedics regarding their roles and responsibilities. Surprisingly, she further alluded to a practice where EMS employers expect graduate paramedics to be able to "do more than other crews" and to fulfil roles beyond their acquired novice experience and capabilities referring to it as "thrown in the deep end". She explained it as follows:

"When they qualify, they are seen as paramedics, which means they should know more than other crews. They should be able to do more than other crews. But none of them have all the qualities when they qualify. They are then thrown in the deep end where they have to make clinical decisions, they have to be seen as shift leaders or

operational leaders while they're not equipped to deal with so many things all at once". ***Ext 5***

A public EMS operations manager supported the private EMS manager regarding the roles and responsibilities of graduate paramedics going beyond pre-hospital clinical patient care. He reported that they "throw them in the deep end of EMS management" during their inception to independent practice. He explained his views as follows:

"Graduate paramedics have the mentality that they will be working in the PRV (primary response vehicle) only and be called upon as and when there's a (clinical patient care) need. But we throw them in the deep end of EMS management at various levels". ***Ext 9***

Evidently, the graduate paramedics' assigned roles and responsibilities are explicitly known by the EMS employers as contrary to their professional developmental stages as novice professionals. However, these findings are suggestive of a practice that is acceptable within the South African EMS milieu.

An EMS educator shared her views regarding the reported roles and responsibilities fulfilled by novice graduates beyond their capabilities. She reported that a "shortage of paramedics in the country" contributes to EMS employers expecting novice graduates to fulfil roles and responsibilities ordinarily reserved for experienced practitioners. She explained it as follows:

"Currently because we have a shortage of advanced life support paramedics in the country, these guys are expected to be at the level of a paramedic that has been qualified for five years, which is not correct and obviously because we all know that real learning starts once you start treating your real patients". ***Ext 1***

Another EMS educator supported her. He expressed that the EMS employers' anticipated level of competency from graduated paramedics is too high. He further advised that the graduate paramedics must still be developed within the professional work system by the EMS employers. He described it as follows:

“EMS expects a higher anticipated level of competency which is not actually what the graduates are coming out with because they've just graduated out of a university, so they still need to get used to the professional work system, to the EMS operations and to everything that is out there in the profession”. ***Ext 3***

Graduate paramedics expressed their views regarding their experienced employment roles and responsibilities. Lerato stated he is expected to be “perfect in his job” without support from the employer. He explained it as follows:

“I am expected to be perfect in my job; they (employers) don't want you to (make) mistakes, yet they are helping you less to avoid doing that. So, they want you to be on top of your game”. ***Lerato***

The absence of employer support as reported by Lerato was described in theme one above. In support of Lerato’s reported experience, Kgosi shared that his employer expected him to be a “God-like figure”, perfect in every way immediately after graduating from university. Kgosi explained it as follows:

“The employer genuinely expects that the paramedic leaving varsity knows every clinical condition. They know every treatment regime. They expect everyone to just know everything that they need to know and then more. Not to make any mistakes whether it be paperwork or treatments or interpersonal conflict. It creates to a degree that they expect you to be a God-like figure”. ***Kgosi***

In contrast to Lerato and Kgosi’s reported experiences, Pat reported that his manager had expressed her awareness regarding him as a novice professional. The employer was not expecting him to be perfect but to still make mistakes in his professional development journey. Pat described it as follows:

“I would say for me, in terms of the company, they are not expecting me to be perfect at this moment because they know I'm still new. At least that is what I was told by my manager. She told me that she's expecting me to make mistakes since I'm still new and still trying to find my feet on how everything works”. ***Pat***

The above sub-theme presented the roles and responsibilities as understood and experienced by graduate paramedics in their professional settings. A shortage of paramedics was reported to be a contributing factor affecting the graduate paramedics' experienced employment roles and responsibilities. It was also reported that the expectations of graduate paramedics' employment roles and responsibilities were employer specific.

5.4.2.2: Sub-Theme 2: Professional Relations

This sub-theme describes the relationship between graduate paramedics and other professionals in the work environment. While executing their daily clinical patient care responsibilities, graduate paramedics interact with various EMS practitioners within the same employment service, EMS practitioners outside their employment service and other healthcare professionals, i.e. medical doctors and nurses at various healthcare facilities, i.e. clinics and hospitals. During such interactions, professional relationships are developed.

A young paramedic graduate, Pat described his professional relationship with his colleagues in the same service as mutually respectful and cooperative. The following is his description:

> *"Even though experience-wise, I'm still new here but in terms of qualifications and academics, I'm their senior. So, they respect me and they always cooperate. They do take me as their senior, even though I look like I'm the youngest. I do have their respect that I think I deserve and I also give them the same respect as well".* ***Pat***

Pat further shared his experience with EMS personnel outside his employment service during a multiple casualty incident. In his reflective journal, he described an incident with absolute cooperation between himself and these practitioners. He described how that cooperative relationship made him "get over the fear of giving instructions". He wrote the following:

“I would say the people I was with on that scene, they (were) very much welcoming. They permitted me to give them instructions. They always asked me, what should we do now? What can we do for you? What can we help you with? Don't be afraid to just speak up whenever you need something. So, I would say that's how I eventually got over that fear of giving instructions”. ***Pat***

From a public EMS settings perspective, Lerato shared his professional relationship experience with his colleagues. He described it as an information-sharing professional relationship. His colleagues acknowledged him as knowledgeable and a source of information. Lerato explained it as follows:

“I think to some people or colleagues I'm a teacher or a lecturer. They will ask questions and expect me to teach them things as they think I know everything”. ***Lerato***

Kgosi supported Lerato and explained that his colleagues in the private EMS workplace related to him as a source of clinical knowledge and expertise. They contacted him for clinical advice and guidance. Interestingly, Lerato and Kgosi’s professional relationships with their colleagues were based on their colleagues’ high expectations of their clinical knowledge even though they were novice professionals. This was evident in Kgosi’s remarks regarding his colleague’s “despondency” when he could not assist them. Kgosi explained it as follows:

“When I'm dealing with the crews, regularly they'll phone me and ask for clinical advice and things of such nature. They expect me to have the answer, even if it's an extremely complicated case and I'm not too sure about treatment protocols or a certain disease and they've become very despondent when I can't give them a quick, precise, rapid answer”. ***Kgosi***

Regarding the relationship between graduate paramedics and other healthcare professionals, i.e. doctors and nurses in the healthcare facilities, Kgosi reported that it was based on misunderstood paramedics’ capabilities due to the hospital professionals' inability to distinguish between the different levels of paramedic training. He described it as follows:

“Hospital staff to be honest, they've had very low expectations of myself and my colleagues, purely because they haven't distinguished between the levels”. ***Kgosi***

In addition, Kgosi shared a view that due to their misunderstood paramedics’ capabilities these healthcare professionals were amused by his extensive skills when he delivered critical patients to them. He explained it as follows:

“Hospital staff most of the time when I take patients to them and I've given them extensive analgesia while I bring them (in) intubated and now stable from a critical condition, they tend to be quite astonished more than anything else”. ***Kgosi***

In contrast, Lerato, a public service paramedic, explained that in his professional relationship with the hospital healthcare personnel, paramedics are held in high regard. This is based on the historical interaction between healthcare professionals and experienced paramedics who were able to assist them with critical clinical interventions during patient care. Lerato expressed a misunderstanding from these professionals regarding the difference in paramedics’ clinical capabilities between novice and experienced paramedics. However, in this instance, the relationship between the healthcare professionals and paramedics was of mutual respect for all paramedics including a novice like him. Lerato explained as follows:

“Hospital staff is (are) expecting an advanced life support practitioner to know what they're doing. I think they have experienced that the guys know what they're doing and they can even get help from them in terms of using ventilators and intubating patients because I think they believe that we are doing it more. But for me as a new guy, I just go under the same umbrella even though I know that I don't know that much as yet”. ***Lerato***

The above sub-theme presented the professional relationships experienced by graduate paramedics with other EMS practitioners and healthcare professionals from hospitals and clinics. Participants reported relating well with EMS practitioners from their employment services and outside. Participants also reported their relationship with healthcare professionals from the hospitals and clinics to be collegial even though there was still confusion regarding the paramedics' knowledge, skills, and competencies.

5.4.3 Theme 3: Quality Assurance

This theme captures the quality assurance roles of the South African EMS regulator i.e. (Health Professions Council of South Africa-HPCSA) and the policy maker i.e. (National Department of Health-NDoH) during the clinical transition of graduate paramedics to independent practice. Two sub-themes were identified under this theme, i.e. current roles and recommendations.

5.4.3.1: Sub-Theme 1: Current Roles

The participants reported a noticeable absence from the EMS quality assurers, i.e. HPCSA and NDoH during the clinical transition of graduate paramedics to independent practice. This absence placed the responsibility of overseeing this clinical transition on the employing services without any oversight from the quality assurers. Kgosi reported that he had no expectations that the HPCSA or NDoH would “assist or hinder” his clinical transition into independent practice. Kgosi explained it as follows:

“I had very little expectation, I would even venture as far to say that I had no expectation that (the) HPCSA or Department of Health would assist me or hinder my clinical practice just based (on) my experiences as a BAA (basic ambulance assistant-phased out EMS short course qualification). They were very nonchalant and did not ever get involved in anyone’s clinical practice and pretty much just left it up to company independence. So, I had very little expectations that they would either assist or guide my clinical practice or hinder it”. ***Kgosi***

Kgosi's reported views were informed by his experience working as a lower-qualified practitioner in private EMS settings. An HOD supported Kgosi's views. He reported that the EMS policymaker and regulator afforded unregulated autonomy to graduate paramedics post-licensing as independent practitioners with minimal to no oversight during their clinical transition phase. He described it as follows:

"The other thing that is pretty unique in terms of EMS is the fact that once you graduate and you register with the Council, you could (can) do literally anything. You could go and work for the private sector, you could literally go the next day and open your own private ambulance service and start operating. I think therein lies a bit of the challenge. You know that period you don't have any supervision. You don't have any support and yet you can then go and practice independently on your own. I think for me that has always been a challenge". ***Ext 6***

The HOD reported the current practice within the South African EMS as an anomaly, where a novice paramedic had carte blanche to do anything desired including opening a private ambulance service without any restrictions from the quality assurance bodies.

The above sub-theme presented the reported quality assurance roles the HPCSA and NDoH fulfilled during the clinical transition of graduate paramedics. The participants reported on the absence of active meaningful roles fulfilled by these organizations (i.e. HPCSA and NDoH).

5.4.3.2: Sub-Theme 2: Recommendations

The participants recommended that the EMS regulator and policymaker initiate quality assurance systems to oversee the graduate paramedics' clinical transition to independent practice. A HOD reported that the regulators should implement measures to improve patient safety. He explained it as follows:

"The regulator should be putting in place measures to ensure ultimately that the practitioner(s) are practising safely and that the patients are not being harmed". ***Ext 6***

An EMC educator supported the HOD. She stated that the profession is “clinically governed”; therefore, the governing organisations must fulfil their responsibility of quality assuring the clinical transition of graduate paramedics to independent practice – “as it is an industry-wide experience that these graduate paramedics are struggling”. She explained her views as follows:

“Because we are clinically governed by the EMS regulator and policymakers as a profession, I do think that it’s an industry-wide experience that these graduates are struggling, I do think they need to look into it. I do feel that they have a responsibility towards assisting these graduates to transit into independent practice”. ***Ext 1***

The above sub-theme presented the recommendations by the EMS stakeholders to have the HPCSA and NDoH initiate and actively participate in the quality assurance process during the clinical transition of graduate paramedics to independent practice.

5.5 Summary

In answering the first research sub-question, findings are presented from the thematic analysis conducted. The participants reported on their clinical transition experiences which included expectations before independent clinical practice, challenges experienced, strategies adopted to cope with the challenges and recommended mechanisms to support future graduate paramedics.

Participants also reported on their relationships in the workplace, which included their roles and responsibilities as well as professional relations. The roles of quality assurance organizations within the South African EMS during the clinical transition of graduate paramedics were also reported upon. In the next chapter, I will present the verification of the recommended clinical transition support mechanisms (i.e. EMS praxis) for graduate paramedics that were identified through a Delphi study.

CHAPTER SIX: DELPHI STUDY DATA ANALYSIS AND RESULTS

6.1 Introduction

This chapter presents the data analysis and results from the Delphi study. The Delphi study was conducted to validate the recommendations made by the graduate paramedics and the EMS stakeholders regarding the support mechanisms to aid the clinical transition of graduate paramedics into independent practice within the South African EMS milieu (i.e. South African EMS Praxis).

6.2 Delphi Study Data Analysis

The data analysis and presentation of results from the Delphi study were guided by the adopted "CREDES" approach, i.e. guidance on Conducting and Reporting Delphi Studies (Jünger et al. 2016). The Delphi study aimed to validate the recommended support mechanisms for the clinical transition of graduate paramedics into independent practice, i.e. research sub-question two (2). The recommended support mechanisms were derived from the qualitative data presented in Chapter Five. The round-one Delphi questionnaire was developed from these recommendations, thus rendering this a modified Delphi study. The Delphi questionnaire was subjected to a tools testing process for content and construct validity before data collection by a different group of paramedics from those who participated in the study (Estrela et al. 2021). Appendix "I1" presents the round-one Delphi questionnaire incorporating all the changes suggested during tool testing.

6.2.1 Delphi Panel Demographics

A total of 15 EMS experts participated in the Delphi study, with the majority being males (66.7%). The public EMS had a higher representation in this study at 33.3% of the participants. A higher representation of EMS experts had a master's degree (46,7%). Most EMS experts (86%) were registered with the HPCSA as emergency care practitioners (ECP)- the highest registerable category for paramedics in the South African EMS. Most experts had over 20 years in the EMS (53.3%). See Table 6.1 below.

Table 6. 1: Characteristics of EMS Experts

	N(%)
	n=15
SEX	
Male	10(66.7)
Female	5(33.3)
AREA OF EXPERTISE	
Public EMS	5(33.3)
Public HEI	3(20.0)
Private EMS	3(20.0)
Private HEI	2(13.3)
EMS Regulation	2(13.3)
HIGHEST QUALIFICATION	
PhD	2(13.3)
Master's Degree	7(46.7)
Bachelor's Degree	5(33.3)
Short Course Certificate	1(6.7)
HPCSA REGISTRATION CATEGORY	
ECP	13(86.7)
ANT	2(13.3)
YEARS IN EMS	
5-10	1(6.7)
11-15	1(6.7)
16-20	5(33.3)
>20	8(53.3)
DATA	n(%)

EMS-Emergency Medical Service; **HEI-**Higher Education Institution; **ECP-**Emergency Care Practitioner

6.2.2 Delphi Study Consensus Building

The consensus level for this study was set at a median of six (6) or more, an Interquartile Ratio (IQR) of two (2) or less and an average panel agreement of 60% or more (Chalmers & Armour 2019). These descriptive statistics and the adopted 7-Point Likert scale strengthened the study's internal validity (Chalmers & Armour 2019; Taherdoost 2019). Refer to Chapter Four for a detailed explanation.

6.2.3 Round 1 Delphi Results

All Delphi questionnaires were distributed directly to 15 panellists using their email addresses to ensure anonymity and minimise panellists' influencing each other's responses. The panellists were allocated two weeks (i.e. 14 days) to respond to every Delphi round, with a reminder email sent on the 7th and the 13th day. The distributed round-one Delphi questionnaire had eight (8) sections with 31 questions that had to be answered using the 7-Point Likert scale, see Appendix I1.

The response rate for the 1st round was 100%. Table 6.2 below depicts the first-round results. The panellists reached a consensus on ten (n=10) out of the 31 questions, i.e. Q1-a,h,j; Q2-a; Q3-a; Q4-a; Q5-a; Q6-a; Q7-a and Q8-a. One question, i.e. Q1-i, had a median of 6, but the IQR was above two and the average below 60%; thus, no consensus was reached per the study's criteria. Highlighted in Table 6.2 below are questions that the panellists reached a consensus on during Round 1.

Table 6. 2: Round 1 Delphi Results

QUESTION	EXP 1	EXP 2	EXP 3	EXP 4	EXP 5	EXP 6	EXP 7	EXP 8	EXP 9	EXP 10	EXP 11	EXP 12	EXP 13	EXP 14	EXP 15	MEDIAN	Q3	Q1	IQR	Average
Q1a	7	7	7	7	7	6	6	6	4	6	7	6	6	7	7	7	7	6	1	93%
Q1b	1	6	4	6	7	6	2	2	1	2	4	5	4	4	1	4	5.5	2	3.5	27%
Q1c	1	3	4	4	1	1	2	2	1	2	4	5	4	4	1	2	4	1	3	0%
Q1d	1	2	6	7	1	3	6	5	2	2	4	6	6	4	1	4	6	2	4	33%
Q1e	7	7	4	2	7	1	1	2	2	6	4	5	1	4	1	4	5.5	1.5	4	20%
Q1f	1	3	4	2	7	1	1	2	2	2	4	5	1	4	1	2	4	1	3	7%
Q1g	1	2	5	2	7	1	6	7	6	2	6	7	3	4	7	5	6.5	2	4.5	47%
Q1h	7	7	6	7	7	2	5	6	6	6	6	6	6	4	6	6	6.5	6	0.5	80%
Q1i	7	3	7	7	7	6	4	6	4	5	4	7	1	4	7	6	7	4	3	53%
Q1j	7	7	7	7	6	7	6	6	7	6	6	7	6	7	7	7	7	6	1	100%
Q1k	1	1	1	2	1	3	2	3	1	2	2	1	1	1	1	1	2	1	1	0%
Q2a	7	7	7	7	6	6	6	5	4	7	4	6	6	4	7	6	7	5.5	1.5	73%
Q2b	3	4	4	7	6	6	3	2	2	6	4	5	4	4	1	4	5.5	3	2.5	27%
Q2c	3	5	6	2	1	1	5	6	5	7	4	5	6	4	6	5	6	3.5	2.5	33%
Q2d	7	7	5	2	1	1	5	5	6	5	4	5	1	4	6	5	5.5	3	2.5	27%
Q2e	3	6	5	2	1	1	6	4	7	2	4	5	1	4	5	4	5	2	3	20%
Q2f	1	1	1	2	1	1	1	1	1	2	4	3	1	1	1	1	1.5	1	0.5	0%
Q3a	7	5	6	7	6	3	7	5	6	5	6	4	6	4	7	6	6.5	5	1.5	60%
Q3b	1	1	1	6	6	1	1	5	4	2	2	4	1	4	7	2	4.5	1	3.5	20%
Q3c	3	5	2	7	6	3	2	6	6	5	4	4	6	4	7	5	6	3.5	2.5	40%
Q3d	1	1	2	2	1	4	1	1	2	5	2	4	4	4	7	2	4	1	3	7%
Q4a	7	7	7	7	6	5	5	6	6	6	6	7	7	7	7	7	7	6	1	87%
Q4b	1	1	1	2	1	2	3	1	2	1	2	1	1	1	1	1	2	1	1	0%
Q5a	7	7	7	7	6	1	6	7	7	6	6	7	7	4	7	7	7	6	1	87%
Q5b	1	1	1	2	1	7	1	1	1	1	2	1	1	4	1	1	1.5	1	0.5	7%
Q6a	5	7	6	7	6	2	5	6	7	7	1	5	6		7	6	7	5	2	60%

Q6b	1	1	3	2	1	3	1	1	1	1	2	3	1		1	1	2	1	1	0%
Q7a	7	7	7	7	6	4	4	5	7	7	6	7	7	4	7	7	7	5.5	1.5	73%
Q7b	1	1	1	2	1	4	4	1	1	1	2	1	1	4	1	1	2	1	1	0%
Q8a	7	7	7	7	6	6	6	6	7	7	6	7	6	7	7	7	7	6	1	100%
Q8b	1	1	1	2	1	3	3	1	1	1	2	1	1	1	1	1	1.5	1	0.5	0%
GREEN HIGHLIGHT – ROUND 1 CONSENSUS REACHED PRAXIS																				

6.2.4 Round 2 Delphi Results

After the first-round data analysis, a second Delphi questionnaire was developed and distributed to all panellists. This second version of the Delphi questionnaire had amendments that reflected the group ratings (i.e. the median) and the individual rating as part of controlled feedback, see Appendix I2. Panellists were allowed to reconsider their initial ratings from the first round. A total of 11 panelists responded to the second Delphi questionnaire, with a response rate of 73.3%. From the 11 panelists who responded, only six (n=6) amended their round one rating on the second-round questionnaire, whilst the other five (n=5) retained their initial ratings.

In addition to the consensus that was reached in Round 1, consensus was reached by the group on Q1- i. One question, i.e. Q1- g, had a median of 6, but the IQR was above two and the average below 60%; thus, consensus was not reached based on the study criteria. Highlighted in Table 6.3 below are questions that the panelists reached a consensus on during Rounds 1 and 2. No further Delphi rounds were conducted beyond this round. Round 2 concluded the Delphi process with stable results as observed in Table 6.4 below.

Table 6. 3: Round 2 Delphi Results

QUESTION	EXP 1	EXP 2	EXP 4	EXP 5	EXP 6	EXP 7	EXP 8	EXP 9	EXP 11	EXP 14	EXP 15	MEDIAN	Q3	Q1	IQR	Average
Q1a	7	7	7	7	7	6	6	4	7	7	7	7	7	6.5	0.5	93%
Q1b	4	6	6	7	4	2	2	1	4	1	1	4	5	1.5	3.5	20%
Q1c	1	3	4	1	2	2	2	1	2	1	1	2	2	1	1	0%
Q1d	1	2	7	1	4	5	5	2	4	1	1	2	4.5	1	3.5	7%
Q1e	4	7	2	7	4	4	2	2	4	6	1	4	5	2	3	20%
Q1f	1	3	2	7	2	2	2	2	4	1	1	2	2.5	1.5	1	7%
Q1g	5	2	2	7	5	6	7	6	6	1	7	6	6.5	3.5	3	55%
Q1h	7	7	7	7	6	5	6	6	6	4	6	6	7	6	1	80%
Q1i	7	3	7	7	6	4	6	4	6	6	7	6	7	5	2	73%
Q1j	7	7	7	6	7	6	6	7	7	7	7	7	7	6.5	0.5	100%
Q1k	1	1	2	1	3	1	3	1	1	1	1	1	1.5	1	0.5	0%
Q2a	7	7	7	6	6	6	5	4	6	4	7	6	7	5.5	1.5	73%
Q2b	3	4	7	6	6	3	2	2	4	4	1	4	5	2.5	2.5	20%
Q2c	3	5	2	1	5	5	6	5	4	3	6	5	5	3	2	13%
Q2d	7	7	2	1	5	5	5	6	4	3	6	5	6	3.5	2.5	27%
Q2e	3	6	2	1	4	5	4	7	4	3	5	4	5	3	2	13%
Q2f	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0%
Q3a	7	5	7	6	6	7	5	6	6	4	7	6	7	5.5	1.5	60%
Q3b	1	1	6	6	2	2	3	4	2	2	7	2	5	2	3	20%
Q3c	3	5	7	6	5	4	6	6	5	3	7	5	6	4.5	1.5	33%
Q3d	1	1	2	1	4	1	1	2	2	3	7	2	2.5	1	1.5	7%
Q4a	7	7	7	6	7	6	6	6	7	7	7	7	7	6	1	87%
Q4b	1	1	2	1	1	2	1	2	1	1	1	1	1.5	1	0.5	7%
Q5a	7	7	7	6	7	6	7	7	7	6	7	7	7	6.5	0.5	87%
Q5b	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0%
Q6a	5	7	7	6	6	6	6	7	5	6	7	6	7	6	1	60%
Q6b	1	1	2	1	1	1	1	1	2	1	1	1	1	1	0	0%
Q7a	7	7	7	6	7	5	5	7	7	7	7	7	7	6.5	0.5	73%
Q7b	1	1	2	1	1	2	1	1	1	1	1	1	1	1	0	0%
Q8a	7	7	7	6	7	6	6	7	6	7	7	7	7	6	1	100%
Q8b	1	1	2	1	1	2	1	1	2	1	1	1	1.5	1	0.5	0%
GREEN HIGHLIGHT – ROUND 1 CONSENSUS REACHED PRAXIS																
YELLOW HIGHLIGHT – ROUND 2 CONSENSUS REACHED PRAXIS																

Table 6. 4: Comparison Between Round 1 and 2 Delphi Results

	ROUND 1			ROUND 2		
QUESTION	MEDIAN	IQR	Average	MEDIAN	IQR	Average
Q1a	7	1	93%	7	0.5	93%
Q1b	4	3.5	27%	4	3.5	20%
Q1c	2	3	0%	2	1	0%
Q1d	4	4	33%	2	3.5	7%
Q1e	4	4	20%	4	3	20%
Q1f	2	3	7%	2	1	7%
Q1g	5	4.5	47%	6	3	55%
Q1h	6	0.5	80%	6	1	80%
Q1i	6	3	53%	6	2	73%
Q1j	7	1	100%	7	0.5	100%
Q1k	1	1	0%	1	0.5	0%
Q2a	6	1.5	73%	6	1.5	73%
Q2b	4	2.5	27%	4	2.5	20%
Q2c	5	2.5	33%	5	2	13%
Q2d	5	2.5	27%	5	2.5	27%
Q2e	4	3	20%	4	2	13%
Q2f	1	0.5	0%	1	0	0%
Q3a	6	1.5	60%	6	1.5	60%
Q3b	2	3.5	20%	2	3	20%
Q3c	5	2.5	40%	5	1.5	33%
Q3d	2	3	7%	2	1.5	7%
Q4a	7	1	87%	7	1	87%
Q4b	1	1	0%	1	0.5	7%
Q5a	7	1	87%	7	0.5	87%
Q5b	1	0.5	7%	1	0	0%
Q6a	6	2	60%	6	1	60%
Q6b	1	1	0%	1	0	0%
Q7a	7	1.5	73%	7	0.5	73%
Q7b	1	1	0%	1	0	0%
Q8a	7	1	100%	7	1	100%
Q8b	1	0.5	0%	1	0.5	0%

GREEN HIGHLIGHT- CONSENSUS REACHED EMS PRAXIS

6.3 Delphi Validated South African EMS Praxis

This modified Delphi study validated the South African EMS-specific praxis that may aid the clinical transition of graduate paramedics to independent practice. South African-based EMS experts reviewed the recommended support mechanisms and anonymously expressed their individual views through two rounds of Delphi questionnaire ratings. As a result of this Delphi process, 11 support mechanisms from a total of 31 initially recommended were validated. These support mechanisms are summarised in Table 6.5 below.

Table 6. 5: Validated South African EMS Clinical Transition Praxis

VALIDATED PRAXIS	
1.	**Introduction of an internship period for graduate paramedics** • *A formal program designed and regulated by the NDoH and HPCSA to facilitate the clinical transition of graduate paramedics.*
a.	Development of an EMS policy on internship for paramedic graduates.
h.	A specific internship period for graduate paramedics with a rotation between rural and urban EMS settings.
i.	A specific internship period for graduate paramedics with a rotation between HEMS, ICU ambulance and PRV operations.
j.	Internship period for graduate paramedics with clearly defined objectives and duration.
2.	**Introduction of a workplace clinical mentorship program for graduate paramedics** • *An employer specific clinical transition program for every graduate paramedic enforceable by the statutory regulator.*
a.	Develop an EMS policy on workplace clinical mentorship for graduate paramedics.
3.	**Restructuring the BHSc EMC program by redesigning medical rescue modules and increasing patient clinical care period** • *An HPCSA, NDoH, DHET and EMS consulted restructuring of the current BHSc EMC with focus on increasing credits for clinical experiential learning by reducing medical rescue credits.*
a.	Restructure the medical rescue modules to increase clinical experiential learning period.
4.	**Incorporation of non-clinical workplace orientation program for graduate paramedics** • *An employer specific workplace orientation program for every new graduate paramedic with focus on organization policies, SoP and administrative processes.*
a.	A compulsory period for graduate paramedics to be orientated on the organisation processes, policies and SoPs by the employer.
5.	**Implementation of a clinical case review system for graduate paramedics** • *An employer specific clinical case review program for every new graduate paramedic enforceable by the statutory regulator.*
a.	Compulsory regular clinical case reviews for graduate paramedics with a structured debriefing session.

6.	**Implementation of clinical consultation system for graduate paramedics** • *An employer specific clinical consultation system for every new graduate paramedic, enforceable by the statutory regulator.*
a.	Compulsory clinical consultation system for graduate paramedics.
7.	**EMS Management Development regarding competencies and clinical transition of graduate paramedics** • *Training and development of EMS managers regarding the competencies and needs of newly graduated paramedics.*
a.	Training and development of EMS managers regarding the competencies and needs of newly graduated paramedics employed by their services.
8.	**Introduction of a psychological and emotional support services for graduate paramedics** • *A professional psychological support services accessible to graduate paramedics during their clinical transition period.*
a.	Provision of professional psychological support services by the employer, accessible to graduate paramedics during their clinical transition period.

6.4 Summary

This chapter presented the results from the Delphi study that validated the recommended support mechanisms to aid the clinical transition of graduate paramedics to independent practice, i.e. South African EMS praxis. The Delphi panellists validated i) the introduction of internship, ii) the introduction of a workplace clinical mentorship, iii) restructuring of the BHSc EMC program, iv) non-clinical workplace orientation, v) clinical case review, vi) clinical consultation, vii) development of EMS managers and viii) psychological and emotional support services for graduate paramedics. The next chapter discusses the study findings.

CHAPTER SEVEN: DISCUSSION

7.1 Introduction

This chapter discusses and integrates the qualitative findings and quantitative results relative to the reviewed literature. In the qualitative phase, three themes with eight sub-themes were identified. During the quantitative phase, the recommended clinical transition support mechanisms were developed into a data collection tool and validated through a Delphi study (See Chapters Five and Six). Figure 7.1 below represents the sequence of this study's findings and results.

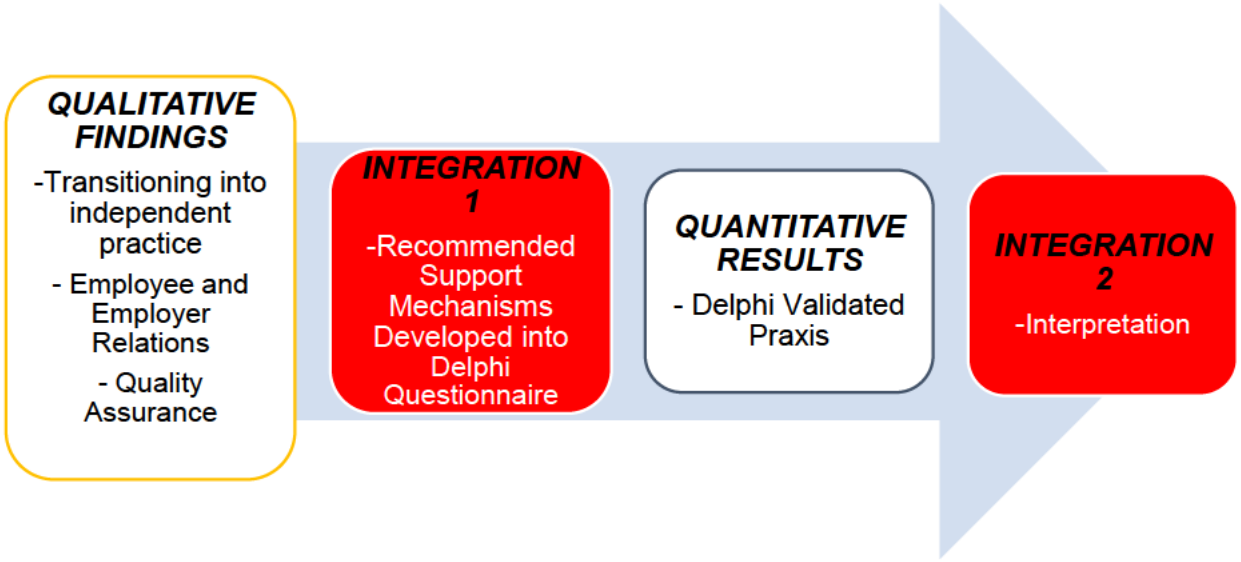

Figure 7. 1: Exploratory Sequential Mixed Method Design Joint Display, adapted from Creswell & Creswell (2018) and Harrison et al. (2020)

7.2 Transitioning into Independent Practice

7.2.1 Expectations

This study's findings present divergent views regarding graduate paramedics' self-expectations of clinical capabilities during their transition to independent practice. An easy clinical transition to independent practice was an expectation informed by graduate paramedics' experiences of their classroom simulated practice and supervised clinical practice during their undergraduate training. However, the actual clinical transition was not easy as they experienced challenges due to changes that were part of the transition from a student to a professional, from operating in a university setting to a professional workplace environment. This is referred to as transition shock in the literature.

Transition shock is an extensively researched and documented phenomenon experienced by graduates when they transit to professionals (Casey et al. 2004; Duchscher 2008; Dyess & Sherman 2009; Clipper & Cherry 2015; Ivins, Copenhaver and Koclanes 2017; Duchscher & Windey 2018; Cai 2021). Transition shock theory requires that graduates reconstruct their university-taught curriculum and translate it into professional practice in the work environment (O'Brien, Moore, Dawson & Hartley 2014; Duchscher & Windey 2018; Cai 2021). Furthermore, functioning within the work environment while acquiring experience aids graduates' transition to professionals; in this study's context, working within the EMS environment fosters such changes. Kolb & Kolb (2009) extensively argued the importance of experience in developing and advancing learning.

A contradictory view was expressed by one of the graduate paramedics who expected a phased-in progression into independent practice. This cautious self-expectation was informed by prior EMS operations work experience. This aspect of the study's findings on graduate paramedics' self-expectations during clinical transition corroborated with the published literature on transition shock and experiential learning theory while further highlighting the arguments advanced by Benner (1982) in her skills development model. Benner (1982) argued that novice professionals still require experience and guidance to develop their clinical skills and capabilities post-graduation. Graduate nurses (Benner 1982) and, to a larger extent, graduate

paramedics (Willis, Williams, Brightwell, O'Meara & Pointon 2010) enter the professional work environment as novice professionals who must develop their clinical skills and capabilities over time within the workplace.

However, the study found that EMS employers' expectations of graduate paramedics' clinical capabilities were "*ill-informed and unfair*" but still imposed. Graduate paramedics are expected to meet their professional work obligations by functioning as experts immediately upon their inception to independent clinical practice. These include being clinically competent to independently treat all daily patient categories, including meeting the employer's clinical and professional expectations on service delivery standards. This reported economic hegemony imposed on novice paramedics forms the basis of the argument advanced by Critical theorists regarding the oppression of the marginalised and disempowered while benefiting those in power and authority (How 2003). There is a high level of reported graduate unemployment in South Africa at 33.5% (Statistics South Africa 2023), albeit the actual number of unemployed graduate paramedics is unknown. The natural progression for graduate paramedics is to seek employment and earn a living as novice professionals practising their trade. Unfortunately, this is against a backdrop where the South African economic conditions unfavourably affect graduates' employment choices. The potential risk this employment environment creates is an opportunity where employers might take advantage of graduates' desperation for employment and possibly expose them to undesirable work demands during their inception to professional practice.

Even though undesirable, the high employer expectations of graduate paramedics are not unique to the South African EMS operations environment. It is reported that Australian EMS employers expected graduate paramedics to have clinical competence and proficient patient care immediately post-graduation (Willis et al. 2010). These EMS employers' expectations are contrary to Dreyfus & Dreyfus's (1980) skills acquisition model and Benner's (1982) skills development model. Benner (1982) argued that most graduates will function as novices upon their inception to professional practice and will require exposure and experience in the work environment to develop further. The EMS employers' expectations of a higher level of clinical capabilities undermine the role that the EMS working environment is meant to fulfil in developing novice graduate paramedics at their inception to professional

practice (Wyatt 2003; Willis et al. 2010). The post-graduation experience contributes to graduate paramedic's clinical competency and professional development (Wyatt 2003; Reid, Street, Beatty, Vencatachellum & Mills 2019). This study's Delphi experts corroborated the need for a supportive transition to independent practice in the workplace. Most of the Delphi experts (73%) agreed to an introduction of a workplace clinical mentorship program for graduate paramedics (IQR: 1.5). These Delphi results support the importance of graduate paramedics gaining clinical experience through mentoring as they grow into their new professional roles.

The findings also report on graduate paramedics expecting their employers to assist them in transitioning to professional practice by affording them workplace orientation and training opportunities. Most of the Delphi experts (87%) agreed on the importance of workplace non-clinical orientation programs for graduate paramedics (IQR:1). The development of an EMS policy that would ensure compulsory workplace orientation would contribute to the multi-faceted support that is required for graduate paramedics to transition into their professional roles. This study's findings concur with the report that medical professionals have high expectations of their employers to provide them with a conducive work environment (Pomaranik & Kludacz-Alessandri 2023; See, Koh, Baladram & Shorey 2023). Workplace orientation, a supportive work environment and skills development programs were some of the expectations prioritised by medical professionals at the beginning of their practice (Hirst, Stares & El-hussein 2022; Pomaranik & Kludacz-Alessandri 2023; See et al. 2023). While this study is different from the former studies with regards to study population (i.e. paramedics and medicine) and geographical context, workplace orientation is still highlighted as a key factor.

7.2.2 Experienced Challenges

This study's findings highlighted challenges experienced by graduate paramedics during their transition to independent clinical practice. The first "*60 to 90 days of independent clinical practice*" were reported as challenging for the graduates and were characterised by a lack of confidence including uncertainty with patient management. These findings corroborates the first 60-90 days of professional practice, termed the "*doing phase*" under the transition shock theory (O'Brien et al. 2014; Duchscher & Windey 2018; Cai 2021). This phase exhibits a heightened sense of anxiety,

uncertainty, psychological and emotional vulnerability as graduates attempt to discover their professional roles, duties and responsibilities (Duchscher & Windey 2018; Graf et al. 2020). Challenges such as lack of confidence and uncertainty in the execution of duties and responsibilities by graduate paramedics during this phase of transition are mostly experienced without any support system offered by the employers (Duchscher & Windey 2018; Graf et al. 2020).

One of the findings in this study was challenges with clinical decision-making affecting patient management. Banning (2007) defined clinical decision-making as a cognitive process that integrates the patient's condition with best practice, the practitioner's knowledge, clinical capabilities and experience. The findings from this study revealed that the young age of graduate paramedics and their lack of experience may have been contributing factors to their challenges with clinical decision-making. The employer's expectations of the graduates to be proficient with several non-clinical competencies competed with their clinical practice and affected their ability to develop clinical decision-making skills.

The emergence of young graduate paramedics within the South African EMS may be attributable to the changes in the EMS education landscape. In 2017 there was a promulgated decision to phase out the old EMC short courses training model and give preference to the university-based education system as part of implementing the National Emergency Care Education and Training (NECET) policy (Sobuwa & Christopher 2019). The NECET policy aimed to produce prehospital professionals who are better equipped with clinical knowledge and clinical decision-making skills (Sobuwa & Christopher 2019). Arguably, the changes in the South African EMS education approach could have been attributed to the observed situation where younger graduate paramedics are mostly produced by universities. Historically, the post-employment, short course-driven EMS training system allowed the paramedics to grow and mature within the service as they ascended the qualification matrix from basic ambulance personnel to critical care paramedics (Sobuwa & Christopher 2019). It was common for the basic ambulance personnel to spend approximately five years developing to a critical care assistant paramedic level. These five years were spent studying and working in a professional environment while acquiring work and clinical experience. However, the short courses and skills-based training were not aligned with

the South African Higher Education Act 101 of 1997 and limited academic growth, development and lifelong learning principles (Council of Higher Education 1997; Sobuwa & Christopher 2019). Observations from the short course era are that paramedics were mostly mature and had acquired experience within the EMS work environment while also fulfilling the short courses progression requirements i.e. 1000 clinical hours working as practitioners within the EMS professional environment to be eligible to qualify for next level progression (Moodley 2016). However, they were skills-focused and lacked the clinical and diagnostic acumen required in an evolving South African prehospital profession (Vincent-Lambert 2015).

In contrast, the university pre-employment, EMC education system mostly attracts high school graduates and educates them for a minimum of four years for the bachelor's degree in EMC to become paramedics (Sobuwa & Christopher 2019), with limited exposure and experience in EMS operations, mostly acquired through work-integrated learning as supervised students. However, older, mature, experienced EMS personnel may apply for the university paramedic program through Recognition of Prior Learning (RPL), albeit a small percentage of below 10% of the total class population get accepted into the programs (Cermak 2016). The young graduates, on average, are 22 years of age and expected to be the clinical lead and, at times, shift supervisors at their inception to professional practice. Challenges related to independent patient management are exacerbated by administrative roles of personnel supervision, including conflict management. Undeniably, it is unknown how the taught curriculum prepares these graduates for such roles and responsibilities at a young age. The majority of the Delphi experts (60%) agreed to the restructuring of the BHSc EMC in favour of increasing patient care time for the paramedic students (IQR:1.5). Reducing the tuition time spent on medical rescue, and increasing the duration of clinical care practice translates to more clinical exposure and acquiring clinical experience thus strengthening patient care competencies. The study's findings regarding younger, inexperienced paramedic graduates entering the South African EMS profession reiterate the arguments presented by Benner (1982), Wyatt (2003) and Kolb & Kolb (2009) in which the emphasis is placed on the importance of novice young graduate paramedics' acquiring workplace clinical exposure and experience to develop proficiency in clinical decision-making as essential.

The majority of the South African EMS personnel are graduates from the phased-out short courses system (Sobuwa & Christopher 2019). Even though the South African EMS profession has mostly transitioned into the university education system, it is still trying to adjust to the young university-graduated paramedics dominating the echelons of prehospital clinical practice. Some of the EMS personnel, including managers, may still hold a biased expectation informed by the experiences from the phased-out short courses system. This appears to result in high clinical expectations of the younger, inexperienced graduate paramedics when they start independent professional practice. Relatable to this challenge is the emigration of experienced graduate paramedics from South Africa, resulting in a shortage of experienced practitioners (Gangaram 2015). This creates a void that the employers attempt to address through inexperienced, novice graduate paramedics by imposing expectations beyond their capabilities. The emigration of paramedics from South Africa is a phenomenon experienced internationally across most health professions (Gangaram 2015; Domagała, Kautsch, Kulbat & Parzonka 2022).

As already alluded to above, there is a need for some of the South African EMS professionals to fully comprehend the implications of the new EMC education system changes, especially on the graduate paramedics' clinical and professional capabilities, including clinical decision-making. There is a need for EMS managers to be aware of the scholarly arguments presented by Benner's (1982) skills development model and Kolb & Kolb's (2009) experiential learning theory. The above stated is confirmed by the Delphi study, where most of the Delphi experts (73%) agreed that South African EMS managers need training and awareness to gain an understanding and appreciation of the novice graduates' competencies, including their clinical transition process (IQR:0.5). This kind of EMS management training and development should empower them to appropriately manage the graduates' clinical transition process and implement the necessary support mechanisms. The challenges related to changes from short courses to university programs within the South African EMS milieu corroborate with the challenges experienced in Australia, the United Kingdom and Canada when they embarked on such transitions (Wyatt 2003; Willis et al. 2010).

A supportive work environment was an expectation expressed by graduate paramedics; however, part of this study's findings presents a contrary experienced reality. Graduate paramedics were not afforded sufficient and consistent support in the workplace during their inception to professional practice from either the public or private EMS organisations. The inception of professional practice without any form of support was described as a *"Swim or Sink*" situation. The sudden transition from having a clinical supervisor as a student to becoming an independent practitioner and a clinical team leader immediately upon assuming independent practice presented a transition shock to the graduate paramedics.

Not only did graduate paramedics have to grapple with their clinical transition challenges, but also the added responsibility of supervising other lower qualified personnel and paramedic students due to a shortage of experienced paramedics. These findings regarding the overwhelming multifaceted workplace challenges experienced by graduate paramedics appeared to have a negative psychological impact on them to the point that some participants expressed regret in joining the profession. Graduate paramedics reported exposure to traumatic cases and experienced high work demands, resulting in psychological and emotional pressure. All Delphi experts (100%) agreed to the provision of professional psychological and emotional support services for graduate paramedics (IQR:1). A critical stress incident (CSI) is defined as a stressful event in the workplace that results in acute stress which may impair functionality on a short or long term basis (Halpern, Maunder, Schwartz & Gurevich 2012; Loef et al. 2021). Literature reports that paramedics are exposed to CSIs in their course of duty (Halpern et al. 2012; Loef et al. 2021). Exposure to paediatric calls, gruesome patient injuries and death of patients, injuries to colleagues, attacks on paramedics and managing sick or injured family members can evoke the feeling of helplessness and trigger a CSI for paramedics (Halpern et al. 2012). Critical incident stress is associated with post-traumatic stress disorder (PTSD) in 12-20% of paramedics (Halpern et al. 2012; Loef et al. 2021). This includes burnout, depression and anxiety amongst paramedics, resulting in high work absenteeism and sickness compared to other health professionals (Halpern et al. 2012; Loef et al. 2021).

In a study that explored the reasons for new graduate nurses quitting their profession, high job stress and poor interpersonal relations were presented as the highest contributors to them quitting within three months post-graduation (Yeh & Yu 2009). Pathmanathan & Snelling (2023) also reported that medical doctors in the United Kingdom expressed a lack of support as one of the reasons for quitting medicine. In another study, Wilson, Abrams & Simpkin Begin (2021) identified burnout as the biggest reason for medical doctors quitting their profession. Although none of the study participants left the EMS profession during data collection, this study's findings highlight similar thoughts of quitting due to lack of support, corroborating similar studies. Furthermore, this study's findings highlight the fast-paced nature of the EMS profession and the associated multifaceted challenges that graduate paramedics must comprehend during their inception to professional practice.

The findings from this study are consistent with those from an EMS study conducted in Israel, where burnout was a finding that paramedics experienced due to high stress and high demands from their work (Nirel, Goldwag, Feigenberg, Abadi & Halpern 2008). Burnout presented itself as a form of mental illness and eventually led to paramedics being unable to cope with the high demands of their work, resulting in them quitting the profession (Nirel et al. 2008). With the above in mind and extending to various professions, it is evident that the findings of this study specific to psychological challenges experienced by graduate paramedics is a phenomenon experienced across various health professions as corroborated by multiple studies, thus not limited to the South African EMS profession. Therefore, this study highlights the phenomenon from an upper-middle-income country within an African context.

Even though the lack of medical equipment was a finding limited to public EMS organisations in this study, the budget constraints in the public sector were the obvious contributor to such a situation (Mould-Millman et al. 2017). A constant annual decline of the allocated public health budget in South Africa results in service delivery challenges, mostly noticed through a lack of medical equipment, life-saving medicines and healthcare personnel shortage (Coovadia, Jewkes, Barron, Sanders & McIntyre 2009). The lack of medical equipment and emergency medications prevented graduate paramedics from adequately practising their clinical skills and providing patients with the best possible medical care. This phenomenon is not limited to South

Africa as an upper-middle-income country but is consistent with findings in Europe where they also experience a shortage in medical equipment (Paker, Dagar, Gunay, Cebeci & Ersin's 2015; Bęczkowska, Grabarek, Pilip, Szpakowski & Zkowski's 2020). Paker et al. (2015) concur that the absence of prehospital medical equipment affects the quality of treatment rendered to patients, including life-saving interventions that might be required.

The absence of female representation in the study's main cohort, i.e. graduate paramedics, meant that the clinical transition challenges specific to females were not explored. However, publication within the EMC settings report that female paramedics experience high psychological stress compared to their male counterparts from exposure to traumatic events and work demands (McCann-Pineo et al. 2024). Female paramedics are subjected to sexual harassment, gender discrimination and bullying in the workplace from both patients and male peers in the workplace (Yoo, Kim, Yoon & Kim 2019; Hanna-Osborne 2022; Cassidy, Hunt, McFarlane & Beovich 2023; McCann-Pineo et al. 2024). EMS is a male-dominated profession with reports stating the profession is less responsive to female challenges (McCann-Pineo et al. 2024), resulting in few females reporting sexual harassment and bullying to senior colleagues (Cassidy, Hunt, McFarlane & Beovich 2023; McCann-Pineo et al. 2024). With an increase in females entering the EMS profession and intending to develop it into a career, it becomes crucial that EMS organisations review their culture, practice and policies to ensure they are responsive to female paramedics' challenges (McCann-Pineo et al. 2024).

7.2.3 Adopted Coping Strategies

This study's findings revealed that graduate paramedics-initiated strategies to cope with their experienced challenges during their inception to professional practice. These strategies were reported as individualised, unstructured and inconsistent across the participants. In most instances, graduates had to utilise resources available to them to cope with professional practice challenges. Coping is defined as a reaction that is behaviourally, emotionally and cognitively appropriate to deal with an unfavourable situation (Loef et al. 2021). Whereas a coping strategy is a pattern of behaviour primarily initiated to deal with a new, unusual or unfavourable situation (Loef et al.

2021). The previous discussion highlighted many challenges graduate paramedics experienced and exacerbated by the lack of support from their employers.

Peer debriefing was reported as one of the primary preferred coping strategies adopted by the graduates. Graduates valued discussing their challenges with other paramedics within their workplace or fellow graduates from the same university. Familiarity with these individuals was the basis of their comfort for the debrief. Debriefing is a reflective conversation about performance, including the provision of feedback (Arriaga, Szyld & Pian-Smith 2020). Furthermore, debriefing is an important part of learning from an experience as it allows for the identification of areas of growth and development, including the evaluation of the psychological and emotional impact an experience has on the practitioners (Gardner 2013; Arriaga et al. 2020; Lee et al. 2023). Gardner (2013) argues that to facilitate an effective debriefing, one should establish an open, safe environment for discussions, focus on key learning objectives, acknowledge the value of each participant, encourage self-reflection and assure confidentiality of the discussions. In this study, graduate paramedics preferred debriefing with familiar people with whom they had built rapport and trust. Similarly, in a study of emergency department doctors, participants preferred debriefing with peers and advanced the argument of trust and a safe space to freely express their thoughts and feelings (Lee et al. 2023). This study's findings are congruent with Lee and colleagues (Lee et al. 2023) while also emphasising the importance of debriefing as advanced by Gardner (2013), Arriaga et al. (2020) and Lee et al. (2023).

Another coping strategy presented as a finding from this study was the establishment of Communities of Practice (CoP) by graduate paramedics within and outside their employment organisations. The graduates relied on the CoP for clinical consultations when they experienced challenges with patient care. Graduates established relations with senior doctors from local health facilities and senior practitioners within their organisations. These relationships served as the basis for the CoP. The experienced medical practitioners were identified as informative and held in higher regard, thus capable of guiding the novice graduates when they encountered clinical challenges during patient care. CoP as a concept is rooted within situated learning theory (Lave & Wenger 1991; Farnsworth, Kleanthous & Wenger-Trayner 2016). Clinical experts are identified as core participants, while novice graduates are peripheral participants

(Lave & Wenger 1991; Farnsworth, Kleanthous & Wenger-Trayner 2016). As the graduates consult with experienced practitioners for clinical guidance, they establish rapport and legitimise their participation (Lave & Wenger 1991; Farnsworth et al. 2016). Progressively, as the graduates acquire experience and learn the sociocultural practice of the CoP, they eventually move from peripheral participants to core participants and are regarded as experts by the community (Lave & Wenger 1991; Farnsworth et al. 2016). This growth and development become important with time for other newcomers in the future.

The findings in this study revealed the importance of access to medical experts by graduates for clinical consultation while they are busy with patient care. Most Delphi experts (60%) agreed to the establishment of a clinical consultation system for graduate paramedics (IQR: 1). This study's findings revealed that some private EMS organisations have already instituted clinical telephone consultation processes for novice practitioners. However, this practice was not consistent across all South African EMS organisations. The Delphi study consensus acknowledges the importance of a consistent and standardised clinical consultation practice in the South African EMS milieu. The clinical case review process is related to the clinical consultation to ensure that graduate paramedics can reflect on their practice with experts within the CoP, as already discussed above. Most of the Delphi experts (60%) agreed to the introduction of a clinical case review system for graduate paramedics (IQR: 1). A Canadian urban EMS teleconsultation study concluded that this approach assisted practitioners while on the scene to access: i) clinical advice on complex cases and procedures, ii) support in transportation decision-making and iii) specialists recommendations on patient care (Armour, Helmer & Tallon 2022). The paramedic's experience of the Canadian teleconsultation system was reported as positive, preferable and assisted with practitioner confidence (Armour et al. 2022). Another Australian remote site study on the use of telehealth also reported on the importance of teleconsultation by paramedics and the use of image-transmitting technology like electrocardiogram (ECG), X-ray and ultrasound images in aiding clinical decision-making and patient care (Johnston & Acker 2022). Teleconsultation and telehealth are reported to improve prehospital safe patient care (Armour et al. 2022; Johnston & Acker 2022).

7.3 Employee and Employer Relations

This study's findings revealed a hegemonic employment relationship between graduate paramedics and their employers. The graduates held an understanding of their employment roles and responsibilities to solely work as clinicians responsible for pre-hospital patient care, while the employers-imposed functions and responsibilities beyond patient care, which included personnel management and clinical quality assurance. Critical Theorists describe this kind of employment relationship as an economic hegemony in favour of the employer (Kellner 1993; How 2003; Asghar 2013). This finding was an unexpected shock for the graduates, particularly as they were mostly young, first-time employees without employment and clinical experience. As already discussed above in Point 7.2, this situation could be attributed to i) a lack of experienced paramedics within the profession, ii) the absence of clearly defined roles and responsibilities and iii) the lack of workplace orientation and support. Beyond the possible contributory factors, this study's findings revealed an employment relationship between graduate paramedics and their employers that lacked the attributes of an effective transition from student to professional practice.

Benner's (1982) novice to expert model is based on the clinical development of nurses, and it applies to numerous other professions, including EMS (Willis et al. 2010; Kennedy, Kenny & O'Meara 2015; Reid et al. 2019). This model provides a blueprint to guide the transition of graduates to professional practice. Fundamental to Benner's (1982) argument is the developmental process that a graduate will undertake to eventually become an expert in professional practice settings. Benner (1982) argues that, at most, clinical professionals will start practice as novices. A novice is described as a beginner without experience in the situation they are expected to function within (Benner 1982). A novice can transcend the skills development stages by acquiring experience and providing workplace support (Benner 1982). Willis et al. (2010) and Reid et al. (2019) corroborate Benner's (1982) argument applicability to the graduate paramedic's clinical development.

Benner (1982) elaborates that in the process of developing clinical proficiency, a novice practitioner will shift from relying on abstract principles to using past experiences to inform their clinical practice. Willis et al. (2010) argues that working in the pre-hospital setting allows the graduate paramedic to acquire the essential concrete experience needed to develop proficiency in clinical care and professional practice. With this understanding, the employee and employer relations realised in this study contradict the published literature as presented by Benner (1982) and supported by Willis et al. (2010) and Reid et al. (2019). This implies that assigning managerial responsibilities to novice practitioners at an early stage of their professional practice without any concrete experience in practice might harm the natural progression of their clinical and professional development. This kind of approach can create frustration for the graduates and stunt their clinical and professional proficiency, especially in the absence of employer support as revealed by this study's findings.

This study's findings further report on the graduate paramedic's employment relations with colleagues and other healthcare professionals. The graduates were highly regarded by less qualified colleagues due to their possession of a higher medical qualification i.e. BHSc EMC degree. They are identified as knowledgeable and capable of clinically guiding the lower qualified colleagues. As already discussed in Point 7.2 above, graduates are members of a CoP. However, in their employment relations with lower qualified colleagues, they are identified as core participants, knowledgeable and able to guide practice (Lave & Wenger 1991). Due to the majority of lower qualified personnel in the South African EMS qualifying from the discontinued short courses i.e. basic ambulance assistant and ambulance emergency assistant (Sobuwa & Christopher 2019), the graduate paramedics are naturally considered clinical experts in the South African prehospital setting. They can thus advise the lower qualified personnel on patient care based on their higher clinical skills and capabilities (Health Professions Council of South Africa 2018), irrespective of their clinical inexperience.

A concerning finding from this study was the reported confusion held by nurses and doctors regarding the different levels of qualifications within the South African EMS, including the level at which graduate paramedics practice clinical care. This finding could be attributed to the changes in the EMS qualification matrix as the profession migrated into a university-based education system (Sobuwa & Christopher 2019), including the sudden surge of young graduate paramedics in recent years. This kind of challenge is not unique to the South African EMS. O'Brien et al. (2014) and Reid et al. (2019) report on similar findings from the Australian experiences, where the larger health profession took time to adjust to the changes within EMS qualifications and paramedics' capabilities. This study's findings corroborate the findings of O'Brien et al. (2014) and Reid et al. (2019) while presenting them from an upper-middle-income country with an African context.

7.4 Quality Assurance

This study's findings revealed that the Health Professions Council of South Africa (HPCSA) and the National Department of Health (NDoH) do not actively fulfil any significant roles during the clinical transition of graduate paramedics into professional practice. The HPCSA is the professional regulator; it registers paramedics and issues practice licences (Health Professions Council of South Africa 1974), and it prescribes the paramedic's clinical practice through published clinical practice guidelines (Health Professions Council of South Africa 2018). The NDoH is the custodian of healthcare in South Africa, including prehospital healthcare; it develops healthcare policies and gazettes the HPCSA's regulations (Republic of South Africa 2003). The absence of these two organisations during the inception of graduate paramedics' professional practice creates a regulation and practice void that becomes the responsibility of EMS-employing organisations to fulfil at their discretion.

This study further found the process of graduate paramedics' clinical transition to professional practice to be unstructured and inconsistent in both public and private EMS organisations. While some EMS organisations (i.e. mostly large private companies) might have some form of systems and practices in place to support and guide the graduates during their inception to professional practice, some organisations (i.e. mostly public and small private companies) have no systems in place; graduate paramedics are expected to find their means and function independently without any

support. This approach to the clinical transition of graduate paramedics into professional practice by the HPCSA, NDoH and the South African EMS profession at large is an anomaly within the South African healthcare system.

Medicine is regulated by the Medical and Dental Board of the HPCSA (Health Professions Council of South Africa 2017) and nursing is regulated by the South African Nursing Council (National Department of Health 2005). These regulators actively facilitate the graduates' clinical transition into professional practice under the auspices and direction of the NDoH. Nursing has a compulsory period of community service for their graduates (Nkoane & Mavhandu-Mudzusi 2020), while medicine has an internship and community service periods (Ross, Naidoo & Dlamini 2018; Reid 2018).

There are reported challenges with internships in South Africa in healthcare services, mostly due to funding of either internship and/or community service graduate posts, the appointment of mentors and the lack of suitable medical facilities (Sein & Tumbo 2012; Ross et al. 2018; Reid 2018; Abiodun, Daniels, Pimmer & Chipps 2019; Naidoo & Van Wyk 2022). However, there are also reports of good, quality clinical exposure and supervisory support experienced by graduates resulting in the novice practitioners feeling ready for independent practice after the period of internship and/or community service (Reid, Peacocke, Kornik & Wolvaardt 2018; Abiodun et al. 2019; Hutton et al. 2024).

This study's Delphi experts (93%) agreed to the development of an EMS policy on internship (IQR: 0.5). A further agreement by the Delphi experts (80%) was the internship period must be inclusive of both rural and urban EMS settings rotations (IQR: 1). The Delphi experts (73%) also agreed that the internship must include a rotation on the primary response vehicle (PRV), intensive care unit (ICU) ambulance and the helicopter emergency medical services (HEMS) operations (IQR: 2). Lastly, all Delphi experts (100%) agreed that the internship must have clearly defined objectives and duration (IQR: 0.5). Recently, there have been attempts to initiate internship within the South African EMS, particularly from the public service organisations in two major provinces i.e. KwaZulu Natal and Gauteng (KwaZulu Natal Department of Health 2023; Gauteng Department of Health 2024). Even though these

public organisations published adverts to recruit graduate paramedics for an internship, their cohorts were surprisingly different. KwaZulu Natal provincial EMS aimed to recruit unemployed graduate paramedics in possession of a BHSc EMC degree (KwaZulu Natal Department of Health 2023), while the Gauteng provincial EMS aimed to recruit basic ambulance assistants (BAA), ambulance emergency assistants (AEA), emergency care technicians (ECT)- all part of the phased out EMS qualifications and the newly introduced university entry-level program graduates i.e. emergency care assistants (Gauteng Department of Health 2024).

The dichotomously opposed recruitment of EMS internship cohorts by these government entities depicts a possible misalignment of government efforts in the absence of a national EMS policy on internship that can guide the process. Thus, this study's Delphi expert's agreement on the development of this policy is justifiable. The introduction of an internship for South African EMS is perceived to assist the graduate paramedics, particularly those who graduated with a BHSc EMC degree, with an opportunity to efficiently transition into professional practice while also strengthening patient safety (Jansen Van Vuuren 2019). This study's findings revealed that even though the current internship practice in the South African healthcare system is burdened with financial constraints, South African EMS should explore an approach where a public/private partnerships model can advance this process with minimum to no additional fiscal burden to the government. This could possibly be realised by allowing graduate paramedic interns to be placed in both public and private EMS organisations while rotating in various practice areas as agreed by the Delphi experts. This would be a unique hybrid model practised in the South African EMS and being responsive to local needs as the medical and nursing graduates solely undertake their internship and/or community service in public facilities (Reid 2018; Reid et al. 2018).

7.5 Summary

This chapter discussed findings from this study. Qualitative findings and the Delphi results were integrated and related to published literature. The South African graduate paramedic's clinical transition to professional practice is arguably unstructured and inconsistent compared to international counterparts in Australia, Canada, the United Kingdom and New Zealand. An argument is advanced for the urgent involvement of the South African health professions regulatory authority i.e. HPCSA and the custodian of healthcare services i.e. NDoH to initiate measures that will regulate and guide this critical phase of graduate paramedic’s development. The next chapter presents the study's conclusion and recommendations.

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

This chapter concludes the study with a synopsis of findings in relation to the research aim and questions. The study's significant contributions to the body of knowledge, areas of future research and the study limitations are also presented.

8.2 Synopsis of Key Findings

The study aimed to explore through a Critical Theorist stance, the transition of graduate paramedics from dependent to independent clinical practice at a selected university in KwaZulu Natal province, South Africa. This longitudinal, sequential exploratory mixed method study gravitated towards the graduate paramedics' narrative of the studied phenomenon as guided by the adopted theoretical framework. The qualitative phase developed three (3) themes and eight (8) sub-themes from the interviews, focus group discussions and reflective journals (See, Chapter Five). These qualitative findings assisted with the formulation of an in-depth understanding of the studied phenomenon. Furthermore, these qualitative findings aided the subsequent development of a quantitative data collection tool that was used in a modified Delphi study to validate the recommended South African EMS-specific, graduate paramedics' clinical transition support praxis (See, Chapter Six).

The main question and sub-questions asked in this study were:

1. How do graduate paramedics transition from dependent to independent clinical practice?

    1.1 What is the interplay between the work environment and the transition of graduate paramedics to independent clinical practice?

    1.2 What mechanism/s must be instituted within the South African EMC profession to support the transition of graduate paramedics to safe, independent clinical practice?

This study's findings revealed that graduate paramedics' clinical transition to professional practice is unstructured, individualised and lacking in essential support systems from paramount stakeholders. Clinical patient care was found to compete with multiple corporate functions and responsibilities imposed upon graduate paramedics, which extended beyond their perceived primary roles and responsibilities, i.e. pre-hospital clinical patient care. The first 60 to 90 days of independent professional practice for these graduates was reported as the pinnacle of their experienced challenges during the inception to professional practice. This was exacerbated by the lack of support from their employers including the profession's regulatory authority i.e. Health Professions Council of South Africa (HPCSA) and the custodian of healthcare in South Africa i.e. the National Department of Health (NDoH). These two critical public institutions were reported to not fulfil any active role during the clinical transition of graduate paramedics to independent practice. This study's findings were contrary to the well-known functions that these healthcare regulatory institutions fulfil with other healthcare professions within the South African healthcare i.e. Medicine and Nursing. The regulatory void created by these institutions was found to have left the obligation to manage the graduate paramedic's clinical transition at the sole discretion of employing organisations, in both the public and private EMS sectors.

8.2.1 Sub-Question One

This study's findings regarding the interplay between the work environment and the clinical transition of graduate paramedics revealed that the recent university-produced graduate paramedics start their professional practice at a young age i.e. approximately 22 years, with most being first-time employees. These young novices are then required to function at a higher level of proficiency than what the university capacitated them. This study's findings corroborated similar international studies from EMC in Australia, New Zealand and Canada (See, Chapter Seven). In the workplace, graduate paramedics were expected to fulfil managerial roles and responsibilities as shift leaders. This translated to them managing crews on their shift, mentoring paramedic students and quality-assuring clinical practice of less qualified crews on their shift. Furthermore, conflict management, managing medical resources and having oversight of patient documentation were some of their responsibilities that extended beyond patient care that graduate paramedics had to grapple with during their inception to professional practice.

All these multiple workplace functions and responsibilities including those extending beyond clinical practice were reported to have resulted in clinical transition challenges for graduate paramedics, which impacted negatively on their self-confidence and resulted in difficulties with clinical decision-making including, experiencing psychological and emotional stress. The study revealed public EMS employed graduates were sometimes expected to practice without appropriate medical equipment and lifesaving medications while treating patients. Graduates experienced these clinical transition challenges with little to no support from their employers and the statutory regulators. This study's findings revealed that in most instances, graduate paramedics initiated coping strategies to deal with the experienced challenges and maintain productivity within the workplace as expected by both colleagues and their employers. These strategies ranged from peer debriefing to forming communities of practice within and outside their workplaces. Few graduates were offered developmental short courses linked to the American Heart Association©. However, most of the graduates throughout the 12 months of data collection were never offered development courses by their employers. This study also reports that none of the graduates were offered workplace orientation or mentorship opportunities. Even though the employers never rendered sufficient structured support and guidance to the novice practitioners, they expected them to be able to meet their employment obligations and service delivery standards without fail. This was termed *"a Sink or Swim Situation"*.

8.2.2. Sub-Question Two

Part of this study's findings was the development of recommended support mechanisms that can be instituted by the South African EMS to aid the clinical transition of graduate paramedics to professional practice. These recommended support mechanisms i.e. EMS praxis, were validated by a panel of Delphi experts, with a composition that fairly represented the broader South African EMS community (See Chapter Six). Table 8.1 below presents the summative support mechanisms per designated institution/s. Even though the NDoH and HPCSA are the key stakeholders in the implementation of this proposed praxis, the categories in Table 8.1 depict the actioning institution/s for ease of operationalising the praxis. Refer to Chapter Six for a detailed description of each proposed praxis.

Table 8. 1: Summary of Recommended Clinical Transition Support Mechanisms

NDoH/HPCSA	EMS EMPLOYERS	DHET/HPCSA/NDoH
a. Introduction of an internship period for graduate paramedics	a. Incorporation of non-clinical workplace orientation program for graduate paramedics	a. Restructuring the BHSc EMC program by redesigning medical rescue modules and increasing patient clinical care period
	b. Introduction of a workplace clinical mentorship program for graduate paramedics	
	c. Implementation of clinical consultation system for graduate paramedics	
	d. Implementation of a clinical case review system for graduate paramedics	
	e. EMS Management development regarding competencies and clinical transition of graduate paramedics	
	f. Introduction of psychological and emotional support services for graduate paramedics	

NDoH: National Department of Health
HPCSA: Health Professions Council of South Africa
EMS: Emergency Medical Services
DHET: Department of Higher Education and Training

8.4 Contributions to Body of Knowledge

This study applied Critical Theory to explore the clinical transition of graduate paramedics. In addition to this theoretical orientation, Critical Participatory Action Research methodology was adopted to empower the study cohort i.e. graduate paramedics to have agency in narrating and driving the investigated phenomenon, thus bringing to life the adopted theoretical framework. This approach to CT is novel to this study.

This study's design employed a sequential exploratory mixed method. The incorporation of traditional qualitative approach methods i.e. interviews and focus group discussions, with a modified Delphi study within a South African EMC setting, gives perspective to a topical phenomenon from a developing country.

The clinical transition of graduate paramedics has been mostly explored with a focus on high-income countries. Even though South Africa is regarded as one of the African countries with advanced EMC programs and systems, before this study there was a paucity of research that explored the clinical transition of graduate paramedics. This study has explored this phenomenon from the context of an upper-middle-income country within an African context with resource constraints. Lastly, this study developed a South African EMS validated praxis to guide the clinical transition of graduate paramedics into professional practice. This ties in with the adopted theoretical framework, which prescribes through agency the development of actionable solutions to reverse the experienced hegemony. The praxis also sets the scene for South African EMS contextualised solutions to address experienced clinical transition challenges.

8.5 Future Research Possibilities

Areas of future research are described as follows:

1. Exploring the phenomenon of graduate paramedics' clinical transition with a larger population of BHSc EMC graduates by involving all the universities that offer this program in South Africa could provide a deeper and broader understanding from multiple voices of a larger population.

2. Adopting an alternative quantitative data collection method to the Delphi study, with an opportunity to recruit a larger quantitative sample group, such as a survey circulated to South African paramedics with a BHSc EMC degree, can determine broad views of the recommended praxis and possibly provide power to the quantitative results.

3. A focused study that explores the implementation of the South African EMS internship program, with minimum fiscal impact on the South African Department of Health and minimising the reported historic challenges affecting internships in South Africa, can potentially guide the implementation of EMS internship adopting the most efficient, context responsive approach.

4. A focused study that explores the active involvement of both the NDoH and HPCSA in the clinical transition of graduate paramedics by instituting guidelines for employers to implement as reflected in Table 8.1 above and capacitating the HPCSA and NDoH to have oversight as part of the professional board of emergency care (PBEC), sub-committee and the NDoH EMS forum responsibilities, has the potential to empower the regulatory function without necessarily over prescribing practice in the South African EMC profession.

5. A focused study that explores the implementation of this study's recommended praxis will validate the proposed recommendations and contribute to the development of the praxis.

6. A study that will explore the experiences of female graduate paramedics' clinical transition to practice and the related challenges in the workplace will elevate the female voices.

7. Lastly, a focused study that explores the risk in the pre-hospital patient care settings, associated with the current practice of graduate paramedic's clinical transition without any regulatory oversight, can enlighten the stakeholders on the impact of the status quo, shall practice remain.

8.6 Limitations

This study's limitations are based on the graduate paramedics' sample size. Only one group out of four universities that offer the BHSc EMC program in South Africa participated in this study. The graduate paramedics' cohort did not have a female representative. Thus, the female graduate's experiences were not explored, there is a need to explore their experiences. However, the rest of the Delphi study participants had female representation. The study had a dominant qualitative phase, thus the

qualitative findings cannot be generalised but provide a deeper understanding of the phenomenon. The quantitative phase questionnaire was limited to a purposefully selected panel of EMS experts who participated in a Delphi study. The questionnaire could have benefitted from being circulated to a larger BHSc EMC paramedics' community through a survey to elicit broader stakeholder views on the recommended praxis, then later validated through a Delphi. Time constraints on data collection were a factor.

8.7 Dissemination Plan

The study findings will be disseminated through multiple platforms including but not limited to: 1) A copy of the thesis will be made available through the Durban University of Technology research repository, 2) Key findings will be published through open access journals and 3) The study will be presented at local and international conferences.

8.8 Summary

This chapter concludes the study. A synopsis of the findings, significant contributions, possible areas for future research and the study limitations were presented.

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APPENDICES

Appendix A1: Ethics Clearence Certificate

Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

1 March 2022

Mr A R Mosiane
04 Phomolong Street
Lotus Gardens
Ext 2
Pretoria West

Dear Mr Mosiane

From dependent to independent clinical practice, the transition of graduate paramedics from a University of Technology in KwaZulu Natal: A Critical Participatory Action Research Study
Ethical Clearance number **IREC 293/21**

The Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letters.

Please note that FULL APPROVAL is granted to Phase I-IV of your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely

Chairperson: IREC

Appendix A2: Request to Access Student Population

TO : WHOM IT MAY CONCERN

DATE : _____/_____/202_

RE : REQUEST TO ACCESS STUDENT POPULATION

Dear Sir/ Madam

I, **Andrew Rammu Mosiane**, Student no: **208128442**, currently registered at Durban University of Technology (DUT), Department of Emergency Care and Rescue for a Doctor of Philosophy in Emergency Medical Care request access to fourth year BHSc EMC students to participate in my study. The research I wish to conduct focuses on the clinical transition of graduate paramedics from DUT, which requires me to recruit participants post-graduation however, prior to commencement of independent clinical practice. The study has an ethical clearance approval from DUT IREC with number: (Ethical Clearance number: IREC). Furthermore, the study is supervised by **Associate Prof. Patricia Mc Inerney**, contactable on: (011) 4314471 and Co- supervised by **Dr Simpiwe Sobuwa** contactable on: (031) 3735203. My study details are summarised as follows:

Title: From dependent to independent clinical practice, the transition of graduate paramedics from a University of Technology in KwaZulu Natal: A Critical Participatory Action Research Study.

Brief introduction and Purpose of this study:

Independent clinical practice is the ultimate objective for graduate paramedics in South Africa. Undergraduate paramedic students train under supervision to acquire clinical skills and knowledge needed to independently manage critical patients. There is a paucity of research in the South African EMC milieu exploring the clinical transition of graduate paramedics from students (supervised clinical practice) to professionals (independent clinical practice). Whilst the profession expects these paramedic graduates to proficiently and safely manage critical patients during their daily practice, it is unknown how they transit into safe independent clinical practice as there is no documented empirical support system in place.

The purpose of this study is to explore, through a Critical Theorist stance, the transition of paramedic graduates from DUT from dependent to independent clinical practice. Critical Theory (CT) positions this study to explore the phenomena from the paramedic graduates' narratives. Furthermore, CT allows the study to develop a praxis that will bring change to the current EMC practice.

Benefits of this Research:

The potential benefits of the proposed study include the following:

It is the first of its kind in South Africa attempting to understand the clinical transition of paramedic graduates from dependent to independent practice and produce an actionable praxis for the South African emergency medical care field. This study will also introduce the application of Critical Participatory Action Research (CPAR) methodology within the South African EMC milieu.

The findings of this study will be presented at local and international emergency care conferences. In addition to submitting the findings of this study to appropriate journals for publication, the completed

study thesis will be available on the DUT online repository, thus further contributing to the body of knowledge related to the EMC field.

All data will be handled with the strictest confidentiality. All participants will remain anonymous and only the researcher and supervisors will have access to the raw data. Furthermore, the completed thesis will be made available to the DUT department of EMC for their potential benefits.

A copy of my study proposal (Pg2a) including copies of the relevant appendices i.e. consent forms to be used in the research process, as well as a copy of the ethics approval letter are attached.

If you require any further information, please do not hesitate to contact me (+971 50 246 2899; amosiane@hotmail.com).

Thank you for your time and considering my request.

Yours Sincerely,

Andrew Rammu Mosiane
Principal Researcher

Approved **Not Approved**

_____ _____
Full Name and Surname **Position**

_____ _____/_____/202_
Signature **Date**

Appendix A3: Request to Access Employee/s

TO : WHOM IT MAY CONCERN

DATE : _____/_____/202_

RE : REQUEST TO ACCESS EMPLOYEE/S

Dear Sir/ Madam

I, **Andrew Rammu Mosiane**, Student no: **208128442**, currently registered at Durban University of Technology (DUT), Department of Emergency Care and Rescue for a Doctor of Philosophy in Emergency Medical Care request access to your employee i.e. 2021 BHSc EMC graduate from DUT to participate in my study. The research I wish to conduct focuses on the clinical transition of graduate paramedics from DUT, which requires me to recruit participants post-graduation however, prior to commencement of independent clinical practice. The study has an ethical clearance approval from DUT IREC with number: (Ethical Clearance number: IREC). Furthermore, the study is supervised by **Associate Prof. Patricia Mc Inerney**, contactable on: (011) 4314471 and Co- supervised by **Dr Simpiwe Sobuwa** contactable on: (031) 3735203. My study details are summarised as follows:

Title: From dependent to independent clinical practice, the transition of graduate paramedics from a University of Technology in KwaZulu Natal: A Critical Participatory Action Research Study.

Brief introduction and Purpose of this study:

Independent clinical practice is the ultimate objective for graduate paramedics in South Africa. Undergraduate paramedic students train under supervision to acquire clinical skills and knowledge needed to independently manage critical patients. There is a paucity of research in the South African EMC milieu exploring the clinical transition of graduate paramedics from students (supervised clinical practice) to professionals (independent clinical practice). Whilst the profession expects these paramedic graduates to proficiently and safely manage critical patients during their daily practice, it is unknown how they transit into safe independent clinical practice as there is no documented empirical support system in place.

The purpose of this study is to explore, through a Critical Theorist stance, the transition of paramedic graduates from DUT from dependent to independent clinical practice. Critical Theory (CT) positions this study to explore the phenomena from the paramedic graduates' narratives. Furthermore, CT allows the study to develop a praxis that will bring change to the current EMC practice.

Benefits of this Research:

The potential benefits of the proposed study include the following:

It is the first of its kind in South Africa attempting to understand the clinical transition of paramedic graduates from dependent to independent practice and produce an actionable praxis for the South African emergency medical care field. This study will also introduce the application of Critical Participatory Action Research (CPAR) methodology within the South African EMC milieu.

The findings of this study will be presented at local and international emergency care conferences. In addition to submitting the findings of this study to appropriate journals for publication, the completed study thesis will be available on the DUT online repository, thus further contributing to the body of knowledge related to the EMC field.

All data will be handled with the strictest confidentiality. All participants will remain anonymous and only the researcher and supervisors will have access to the raw data. Furthermore, the completed thesis will be made available to the DUT department of EMC for their potential benefits.

A copy of my study proposal (Pg2a) including copies of the relevant appendices i.e. consent forms to be used in the research process, as well as a copy of the ethics approval letter are attached.

If you require any further information, please do not hesitate to contact me (+971 50 246 2899; amosiane@hotmail.com).

Thank you for your time and considering my request.

Yours Sincerely,

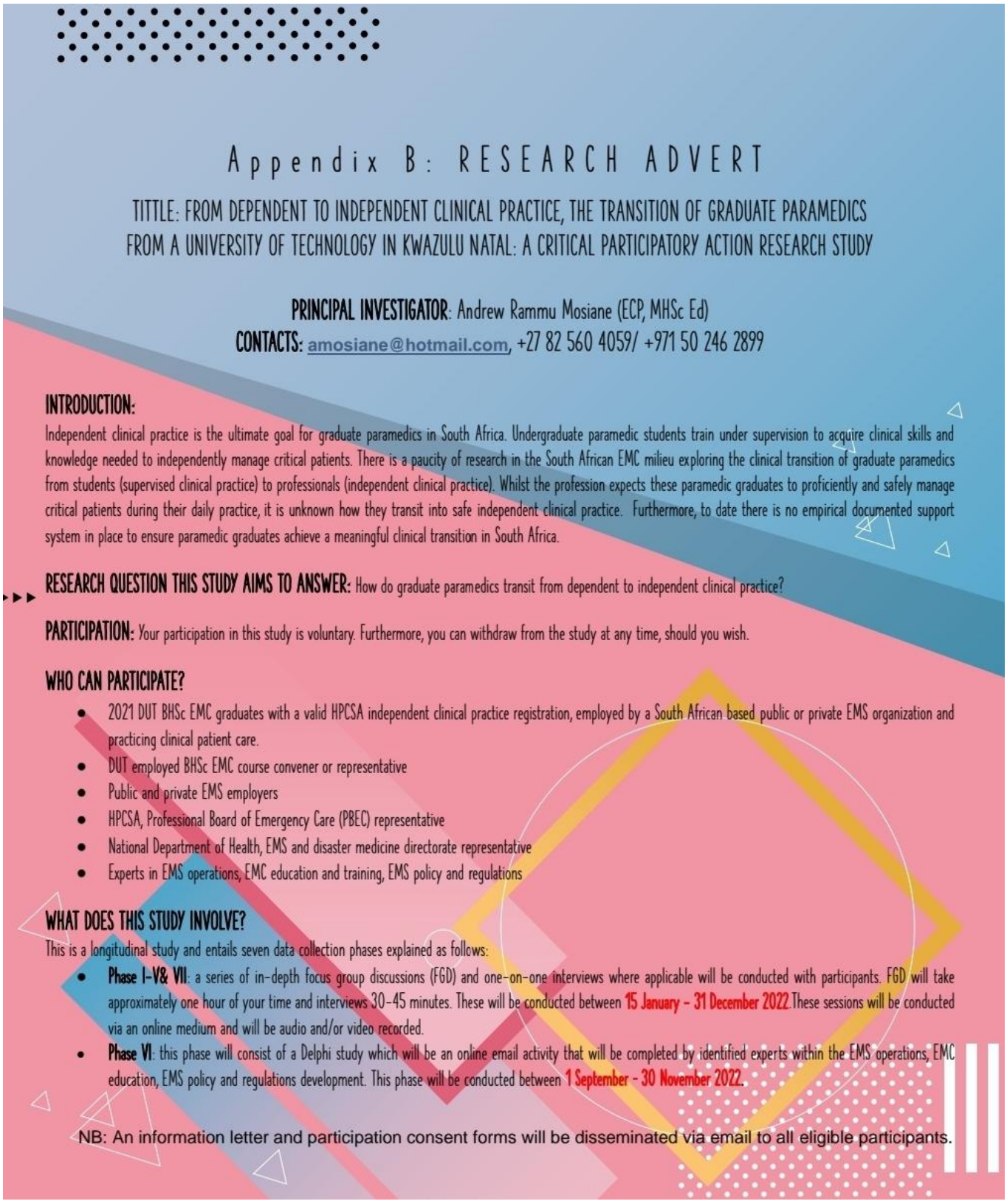
Andrew Rammu Mosiane
Principal Researcher

Approved **Not Approved**

_____ _____
Full Name and Surname **Position**

_____ _____/_____/202_
Signature **Date**

Appendix B: Research Advertisement



Appendix C: Study Information Letter

STUDY INFORMATION LETTER

Dear Participant,

Thank you for your interest in this study. Your participation will share valuable information, key to this study. Please see also the study consent form should you wish to participate in this study.

My name is **Andrew Rammu Mosiane**, an ECP and DUT alumnus. I am currently conducting a research project in fulfilment of the Doctor of Philosophy in Emergency Medical Care Degree (D. Phil EMC) at the Durban University of Technology. I would like to invite you to participate in my research study. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. However, before you decide whether you would like to participate, it is important that you understand what your participation will involve and why this research is being done. Please take the time to read the following information letter carefully and feel free to contact me should you have anything that needs clarification or additional information.

Title of the Research Study: From dependent to independent clinical practice, the transition of graduate paramedics from a University of Technology in KwaZulu Natal: A Critical Participatory Action Research Study.

Principal Investigator/researchers: Andrew Rammu Mosiane (ECP, MHS Ed)

Supervisor: Associate Prof Patricia Mc Inerney (PhD)

Co- Supervisor: Dr Simpiwe Sobuwa (PhD)

Brief introduction and Purpose of this study:

Independent clinical practice is the ultimate objective for graduate paramedics in South Africa. Undergraduate paramedic students train under supervision to acquire clinical skills and knowledge needed to independently manage critical patients. There is a paucity of research in the South African EMC milieu exploring the clinical transition of graduate paramedics from students (supervised clinical practice) to professionals (independent clinical practice). Whilst the profession expects these paramedic graduates to proficiently and safely manage critical patients during their daily practice, it is unknown how they transit into safe independent clinical practice as there is no documented empirical support system in place.

The purpose of this study is to explore, through a Critical Theorist stance, the transition of paramedic graduates from DUT from dependent to independent clinical practice. Critical Theory (CT) positions this study to explore the phenomena from the paramedic graduates' narratives. Furthermore, CT allows the study to develop a praxis that will bring change to the current EMC practice.

Outline of the Procedures:
This is a longitudinal study and it entails seven data collection phases explained as follows:

- **Phase I-V & VII:** a series of in-depth focus group discussions (FGD) and/or one-on-one interviews where applicable will be conducted with purposely selected participants at various phases of the study, *see inclusion criteria*. FGD will take approximately 1-1.5 hours of your time and interviews 30-45 minutes. These will be conducted between **15 January - 31 December 2022**.These sessions will be conducted via an online medium and will be audio and/or video recorded.
- **Phase VI:** this phase will consist of a Delphi study which will be an online email activity that will be completed by identified experts within the EMS profession, *see inclusion criteria*. This phase will be conducted between **1 September – 30 November 2022**.

Inclusion criteria:

The purposive sampling approach at all phases of this study will be employed to recruit participants deemed knowledgeable, information rich, able to provide deep insights and commitment to this longitudinal study exploring the clinical transition of paramedic graduates.

Phase I-V & VII: the composition of participants will vary throughout the study depending on the phases. However, we aim to recruit participants who will meet the below stated criteria:

- 2021 DUT BHSc EMC graduate with a valid HPCSA independent clinical practice registration, employed by a South African based public or private EMS organization and practicing clinical patient care. (*Main Cohort of the study*)
- DUT Employed BHSc EMC course conveners or representative
- Public and private EMS employers
- HPCSA, Professional Board of Emergency Care (PBEC) representative
- National Department of Health, EMS and disaster medicine directorate representative

Phase VI: I aim to only recruit participants deemed as experts within the South African EMS profession under the following categories:

- EMS operations
- EMC education and training
- EMS policy and regulations formulations

Confidentiality:

If you agree to participate in this study, you will be asked to complete a **consent form** for each of the respective phases you participate in. Upon doing so, pseudonyms will be assigned and you will remain anonymous for the remainder of the study. While some demographic and epidemiological data will be required for the analysis component in the study, no personal information that could associate this information with you, will be shared. Every effort will be made to ensure confidentiality throughout this study. All data related to this study will be stored on a password protected device and only the principal investigator and supervisors will have access to the data.

Risks or Discomforts to the Participants:

There are no risks to you. The only possible discomfort envisioned, is that which may be experienced by you when disclosing experiences, thoughts or feelings related to the phenomena being studied. Should you become distressed by anything that is raised in the FGD / interview that stimulates memories of an occurrence from your student days or from the independent clinical practice then you should contact:

Candice Leith : Acting Senior Psychologist
Telephone number : (031) 373 2266 (Office number)
Email for booking : Counsbookingdbn@dut.ac.za

Benefits:

The proposed study is the first of its kind in South Africa attempting to explore the clinical transition of paramedic graduates from dependent to independent practice and produce a praxis for the South African emergency medical care field.

The findings of this study will be presented at local and international emergency care conferences. In addition to submitting the findings of this study to appropriate journals for publication, the completed study thesis will be available on the DUT online repository, thus further contributing to the body of knowledge related to the EMC field.

Withdrawing from the study:

Your participation is completely voluntary and there is no obligation to participate. If you decide to participate in this study, you may withdraw at any stage without giving a reason. There are no consequences for refusing to take part or withdrawing from this study.

Remuneration: None

Cost of the study: All costs associated with this study will be covered by the researcher.

Research-related injury: No research related injury is expected during this study.

Storage of all electronic and hard copies including tape recordings:

All electronic data related to this study will be stored on a password protected device and only the principal investigator and supervisors will have access to the data. The hard copies will be stored in a safe and all data (electronic and hard copies) will be stored for a duration of five years with or without publications as per the DUT data storage policy.

Persons to Contact in the Event of Problem or Queries:

Please feel free to contact the researcher, **Andrew Rammu Mosiane** (Contact no: +971 50 246 2899), my supervisor: **Assoc Prof Patricia Mc Inerney** (Contact no: +271 11 4314471), Co-supervisor: **Dr Simpiwe Sobuwa** (Contact no: +271 31 3735203) or the **Institutional Research Ethics administrator** on +271 31 3732375. Complaints can be reported to the Director: Research and Postgraduate Support Dr L Linganiso on +271 31 3732577 or researchdirector@dut.ac.za

Appendix D: Participant Consent Form

Dear Participant,

Thank you for agreeing to being involved in this study. Please see also the *study information letter*.

Full Title of the Study: From dependent to independent clinical practice, the transition of graduate paramedics from a University of Technology in KwaZulu Natal: A Critical Participatory Action Research Study.

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, **Mr Andrew Rammu Mosiane**, about the nature, conduct, benefits and risks of this study – Research Ethics Clearance Number: **IREC**
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, geographical location and academic history will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in this study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in this study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature/Right Thumb print**

I, **Andrew Rammu Mosiane** herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**
_____	_____	_____
Full Name of Witness (if applicable)	**Date**	**Signature**

Appendix E: Consent to Voice and/or Video Recording

CONSENT TO VOICE AND/OR VIDEO RECORDING

I _____, hereby consent to my voice and/or image being audio and/or video recorded with the use of an audio and/or video recording device during the focus group/interview discussion. I also agree that all information contained on the audio and/or video recordings may be used in any way for the Research Study titled: "**From dependent to independent clinical practice, the transition of graduate paramedics from a University of Technology in KwaZulu Natal: A Critical Participatory Action Research Study."**

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature/Right Thumb print**

I, **Andrew Rammu Mosiane** herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**

_____	_____	_____
Full Name of Witness (if applicable)	**Date**	**Signature**

Appendix F: Reflective Journal Template

REFLECTIVE JOURNAL TEMPLATE

Date: _____/_____/20____ **Entry No: _____**

REFLECTION GUIDE	RESPONSE
1. What have you experienced?	
2. What are your thoughts about it?	
3. How do you feel about it?	
4. Who was part of the experience?	
5. What role did you play in the experience?	
6. What was positive about the experience?	
7. What was negative about the experience?	
8. What can you change/better about the experience?	
9. What lessons did you learn from the experience?	
10. Any other thoughts or comments about the experience?	

Participant Name: _____ Signature: _____

NB: use additional paper if needed.

Appendix G: Focus Group Discussion Guide

Focus Group Discussion Guide

Longitudinal studies require a creative approach to the development of a Focus Group Discussion Guide to be used in the different phases of data collection with questions adapted to determine the specific aspect of the study under investigation at that point. This guide will speak to the above stated study phases.

Welcome and opening remarks:

- Introduce myself and the purpose of the focus group discussions (FGD).
- Facilitate a brief introduction of participants in the group.
- You were selected because of your knowledge and specific rich information you may provide to the researcher regarding the clinical transition from supervised to independent practitioners as newly graduated paramedics.
- This is a longitudinal, CPAR based study, which entails multiple focus groups and one-on-one interviews over a period of twelve months.
- During the FGD, there are no right or wrong answers, only different points of view.
- Due to the nature of these sessions, you are reminded of the need for me to record (audio and/or video) these sessions, ***see Appendix E***.
- To further ensure confidentiality, I humbly request all participants to refrain from disclosing what was said during these sessions with others out of this group afterwards.
- All participants and organisations mentioned here will remain anonymous. In addition to this, your participation is completely voluntary, and you are under no obligation to participate. You may withdraw from the study at any time and there are no consequences for refusing to take part or withdrawing from this study.
- I ask that you put your cell-phones on silent mode. Should you need to take a call, please do so as quietly as possible and re-join us as quickly as you can.
- My role will be to facilitate the discussions and guide the conversations.

Our topic for Phase I: Readiness for independent clinical practice

Grand Tour Question

You are about to initiate independent clinical practice as a newly graduated paramedic, what are your expectations on the interplay between the South African EMS social factors (i.e. societal structures, economy and politics) and your inception to independent clinical practice?

- Societal structures i.e. EMS professional practice, training and development received
- Economy i.e. Employer/ employee relations expectations
- Politics i.e. Statutory regulator and National department of health roles and expectations

Participants' responses to the grand tour question will prompt further exploration and questioning. The following are questions I will use to facilitate the discussion.

- Do you feel the undergraduate training you received adequately prepared you for independent clinical practice?
- What kind of structure and support system do you expect to receive during the early days of your independent clinical practice?
- What do you perceive to be expectations from your employer and peers during the early days of your independent clinical practice?
- What role/s do you perceive are fulfilled by the HPCSA/PBEC and National Department of Health during your early days of independent clinical practice?
- Are you aware of a reflective journal and how to use it?

The findings from **Phase I** FGD will set the scene from the graduate paramedics' perspectives of their expectations and readiness to commence independent clinical practice. Furthermore, a reflective journal will be introduced and discussed as an aid to data collection and for triangulation.

Thank you all for your participation and the immense value you have contributed to this phase of the study. I will be in touch with you on a monthly basis to conduct one-on-one interviews regarding your clinical transition journey and the reflective journal entries.

THE END.

Our topic for Phase III: Challenges and adopted coping mechanisms for independent clinical practice transition.

Grand Tour Question

You have been practicing independently as a graduate paramedic for three months now, how have you experienced the transition?

The Participants' responses to the grand tour question will prompt further exploration and questioning. The following are questions I will use to facilitate the discussion.

- Have you identified any shortcomings between your undergraduate training and actual independent clinical practice?
- What challenge/s have you experienced with your independent clinical practice transition?
- What support system have you received during your transition into independent clinical practice?
- What expectations did your employer and peers have of you during your independent clinical practice transition?
- What is your role within the employment structure and how are you received by various role players i.e. employer, peers and stakeholders?
- What mechanism/s have you adopted to cope with independent clinical practice transition?
- How effective are your adopted coping mechanism/s?
- What do you perceive to be an appropriate solution/s to your clinical transition challenge/s?
- Which role players do you identify as key to the realisation of your proposed solution/s?
- What is your experience with using a reflective journal?

The findings of the **Phase III** FGD will capture the lived experiences of graduate paramedics during the first three months of independent clinical practice transition including their individual coping mechanisms. This phase will extend into confirming/amending the research question and identifying possible praxis to challenge the status quo. A foundation will be laid to challenge the status quo and initiate a praxis including identification of key role players accessible to the cohort. Furthermore, a reminder of reflective journal entries and importance will be shared with the cohort.

Thank you all for your participation and the immense value you have contributed to this phase of the study. I will be in touch with you on a monthly basis to conduct one-on-one interviews regarding your clinical transition journey and the reflective journal entries.

THE END.

Our topic for Phase V: contextualizing paramedic graduate clinical transition challenges within a broader South African EMS profession audience and identify a mutually shared praxis to address the challenges of graduate paramedic clinical transition.

Grand Tour Question

I have extended an invitation to a broader EMS profession representative to explore the issue of graduate paramedic clinical transition. What are the identified challenges experienced by graduate paramedics during clinical transition and how do they relate to the South African EMS social factors (i.e. societal structures, economy and politics)? Furthermore, what praxis can address these challenges in order to better the graduate paramedics clinical transition experiences and the professional practice in the South African EMS?

- Societal structures i.e. EMS professional practice, training and development received
- Economy i.e. Employer/ employee relations expectations
- Politics i.e. Statutory regulator and National Department of Health, roles and expectations

The participants' responses to the grand tour question will prompt further exploration and questioning. The following are questions I will use to facilitate the discussion.

- What are the shortcomings between undergraduate paramedic training and the EMS expectations for independent clinical practice?
- What challenges have been experienced by paramedic graduates as they transit into independent clinical practice?
- What support systems and structures are available to aid the transition of graduate paramedics into independent clinical practice?
- What roles and responsibilities are fulfilled by the employer/s to aid the clinical transition of graduate paramedics to independent practice?
- What roles and responsibilities are fulfilled by the statutory regulators and policy makers to aid the clinical transition of graduate paramedics to independent practice?
- What role/s do graduate paramedics fulfil within the employment structure?
- How are graduate paramedics received by various role players i.e. employer, peers and stakeholders during the inception of independent clinical practice?
- What mechanisms can be adopted to address the challenges experienced by graduate paramedics during independent clinical transition?
- What appropriate actionable solutions can be adopted to facilitate a meaningful clinical transition for graduate paramedics?
- How can the actionable solutions be implemented in the broader South African EMS?
- Which South African EMS experts do you identify as key to the realisation of your proposed actionable solution/s?

The findings of the **Phase V** FGD will capture the broader views of the studied phenomena from the perspective of a heterogeneously composed focus group, made-up of external stakeholders (see, inclusion criteria) and paramedic graduates at six months post independent clinical practice. This phase fulfils the identification of a praxis to aid the clinical transition of graduate paramedics and a foundation for the Delphi statement to be validated during a Delphi study. Furthermore, a reminder of the reflective journal's importance and keeping it to date will be shared with the cohort.

Thank you all for your participation and the immense value you have contributed to this phase of the study. I will be in touch with you on a monthly basis to conduct one-on-one interviews regarding your clinical transition journey and the reflective journal entries.

THE END.

Our topic for Phase VII: Present the praxis validated through the Delphi study to the graduate paramedics.

Grand Tour Question

I have engaged with the identified experts in the South African EMS through a Delphi study and validated a praxis to aid the clinical transition of graduate paramedics into independent practice in the South African EMS. What is your perception on the validated praxis (i.e. already prior distributed) intended to aid the clinical transition of graduate paramedics in South African EMS?

The participants' responses to the grand tour question will prompt further exploration and questioning. The following are questions I will use to facilitate the discussion.

- Is the praxis relevant/appropriate to aid the clinical transition of graduate paramedics into independent practice in the South African EMS?
- Are there any challenges you may perceive with this proposed praxis?
- What support systems and structures need to be in place for the successful implementation of this praxis?
- What advantages and disadvantages will this praxis have on the South African EMS?
- What advantages and disadvantages will this praxis have on the clinical transition of graduate paramedics to independent practice in the South African EMS?
- How can this praxis be implemented to the broader South African EMS?

The findings of the **Phase VII** FGD will serve to verify the praxis validated through a Delphi study by identified EMS experts. This phase will be at twelve months post inception of the independent clinical practice by the paramedic graduates. This phase will conclude the study with verification of the praxis and reflection on the reflection on the independent clinical transition journey. Furthermore, the final reflective journals will be collected from the participants to incorporate into data analysis and triangulation of findings.

Thank you all for your participation and the immense value you have contributed to this phase and entire study. This was the last phase for data collection. Next will be the data analysis and interpretation of findings. As part of study validation, you will be contact for member checking.

THE END.

Appendix H: One-on-one Interview Guide

One-on-one Interview Guide

Longitudinal studies require a creative approach to the development of a One-on-one Interview Guide to be used at different phases of data collection with questions adapted to determine the specific aspect of the study under investigation at that point. However, the phases of this study that require a one-on-one interview will focus mainly on the Reflective journal entries and offering participants clinical support. This guide will speak to those stated study phases.

Welcome and opening remarks:

- Introduce myself and the purpose of the interview.
- Facilitate a brief introduction by the participant.
- You were selected because of your knowledge and specific rich information you may provide to the researcher regarding clinical transition from supervised to independent practitioners as newly graduated paramedics.
- This is a longitudinal, CPAR based study, which entails multiple one-on-one interviews over a period of twelve months.
- During the interviews, there are no right or wrong answers, only your points of view.
- Due to the nature of these sessions, you are reminded of the need to record (audio and/or video) these sessions, ***see Appendix E***.
- To further ensure confidentiality, I humbly request you to refrain from disclosing what was said during these sessions with others afterwards.
- Everything mentioned here will remain anonymous, in addition to this, your participation is completely voluntary, and you are under no obligation to participate. You may withdraw from the study at any time and there are no consequences for refusing to take part or withdrawing from this study.
- I ask that you put your cell-phone on silent mode. Should you need to take a call, please to do let me know so I can pause the session and you may re-join as quickly as you can.
- My role will be to facilitate the interview and guide the conversation.

Our topic for Phases II & IV: Provide guidance on reflective journal entries and clinical support on identified challenges and coping strategies.

<u>Grand Tour Question</u>

Please tell me your experience of using the reflective journal?

The participants' responses to the grand tour question will prompt further exploration and questioning. The following are questions I will use to facilitate the discussion.

- What entries have you made in the reflective journal?

- Have you had any interesting clinical/ non clinical encounters during your practice?
- How did you deal with the clinical/ non clinical encounters?
- Was there any support that you needed to address the clinical/ non clinical encounters?
- What can you change or better in the future should you encounter a similar situation in the future?
- What have you learned from this clinical/ non clinical encounter?
- What advice can you give to your future self-regarding similar encounters?
- Do you have any other matter to discuss?

Phases II & IV one-on-one interviews will serve as an opportunity for the researcher to support and guide the paramedic graduates on their clinical practice including building a rapport with them as an active participant in the study. Furthermore, all the reflective journal entries will be done in writing for analysis and triangulation of findings. A reminder will be shared with the participant to send the written reflective journal entry with the researcher as soon as possible.

Thank you all for your participation and the immense value you have contributed to this phase of the study.

THE END.

Appendix I 1: Round 1 Delphi Questionnaire

PROPOSED PRAXIS	SD	D	SLD	N	SLA	A	SA
1. Introduction of an internship period for graduate paramedics • *A formal program designed and regulated by the NDoH and HPCSA to facilitate the clinical transition of graduate paramedics.*							
a. Development of an EMS policy on internship for paramedic graduates.							
b. 3-6 months internship period with a public EMS provider only.							
c. 3-6 months internship period with a private EMS provider only.							
d. 3-6 months internship period rotating between public and private EMS providers.							
e. 6-12 months internship period with a public EMS provider only.							
f. 6-12 months internship period with a private EMS provider only.							
g. 6-12 months internship period rotating between public and private EMS providers.							
h. A specific internship period for graduate paramedics with a rotation between rural and urban EMS settings.							
i. A specific internship period for graduate paramedics with a rotation between HEMS, ICU ambulance and PRV operations.							

j. Internship period for graduate paramedics with clearly defined objectives and duration.							
k. No internship period for graduate paramedics.							
Comments:							
2. Introduction of a workplace clinical mentorship program for graduate paramedics • *An employer specific clinical transition program for every graduate paramedic enforceable by the statutory regulator.*							
a. Develop an EMS policy on workplace clinical mentorship for graduate paramedics.							
b. 3 months workplace clinical mentorship period with an experienced ECP.							
c. 3-6 months' workplace clinical mentorship period with an experienced ECP.							
d. 6-9 months' workplace clinical mentorship period with an experienced ECP.							
e. 9-12 months' workplace clinical mentorship period with an experienced ECP.							
f. No workplace clinical mentorship period.							
Comments:							

3. Restructuring the BHSc EMC program by redesigning medical rescue modules and increasing patient clinical care period • *An HPCSA, NDoH, DHET and EMS consulted restructuring of the current BHSc EMC with focus on increasing credits for clinical experiential learning by reducing medical rescue credits.*							
a. Restructure the medical rescue modules to increase clinical experiential learning period.							
b. Extend the current BHSc EMC program duration to allow for an increase in clinical experiential learning period.							
c. Redesign clinical experiential learning with a key focus of increasing duration spent in the prehospital settings.							
d. No changes done to the current design and structure of the BHSc EMC program.							
Comments:							
4. Incorporation of non-clinical workplace orientation program for graduate paramedics • *An employer specific workplace orientation program for every new graduate paramedic with focus on organization policies, SoP and administrative processes.*							
a. A compulsory period for graduate paramedics to be orientated on the organization processes, policies and SoPs by the employer.							
b. No orientation period for graduate paramedics on the organization processes, policies and SoPs.							
Comments:							

5. Implementation of a clinical case review system for graduate paramedics • *An employer specific clinical case review program for every new graduate paramedic enforceable by the statutory regulator.*							
a. Compulsory regular clinical case reviews for graduate paramedics with a structured debriefing session.							
b. No clinical case reviews and debriefing for graduate paramedics.							
Comments:							
6. Implementation of clinical consultation system for graduate paramedics • *An employer specific clinical consultation system for every new graduate paramedic, enforceable by the statutory regulator.*							
a. Compulsory clinical consultation system for graduate paramedics.							
b. No clinical consultation system for graduate paramedics.							
Comments:							
7. EMS Management Development regarding competencies and clinical transition of graduate paramedics • *Training and development of EMS managers regarding the competencies and needs of newly graduated paramedics.*							
a. Training and development of EMS managers regarding the competencies and needs of newly graduated paramedics employed by their services.							
b. No training and development of EMS managers regarding the competencies and needs of newly graduated paramedics employed by their services.							
Comments:							

8. Introduction of a psychological and emotional support Services for graduate paramedics • *A professional psychological support services accessible to graduate paramedics during their clinical transition period.*								
a. Provision of professional psychological support services by the employer, accessible to graduate paramedics during their clinical transition period.								
b. No provision of professional psychological support services by the employer for graduate paramedics.								
Comments:								
Panellist Additional Inputs Section:								

LEGEND								
SDA	Strongly disagree	SA	Strongly Agree		NDoH	National Department of Health	HEMS	Helicopter Emergency Medical Services
D	Disagree	A	Agree		HPCSA	Health Professions Council of South Africa	ICU	Intensive Care Unit
SLA	Slightly disagree	SLA	Slightly Agree		DHET	Department of Higher Education and Training	PRV	Primary Response Vehicle
N	Neutral				EMS	Emergency Medical Services	ECP	Emergency Care Practitioner

Appendix I2: Round 2 Delphi Questionnaire

PROPOSED PRAXIS	ROUND 1 RATING		NEW ROUND RATING						
	GR	IR	SD	D	SLD	N	SLA	A	SA
1. Introduction of an internship period for graduate paramedics • *A formal program designed and regulated by the NDoH and HPCSA to facilitate the clinical transition of graduate paramedics.*									
a. Development of an EMS policy on internship for paramedic graduates.	7								
b. 3-6 months internship period with a public EMS provider only.	4								
c. 3-6 months internship period with a private EMS provider only.	2								
d. 3-6 months internship period rotating between public and private EMS providers.	4								
e. 6-12 months internship period with a public EMS provider only.	4								
f. 6-12 months internship period with a private EMS provider only.	2								
g. 6-12 months internship period rotating between public and private EMS providers.	5								
h. A specific internship period for graduate paramedics with a rotation between rural and urban EMS settings.	6								

i. A specific internship period for graduate paramedics with a rotation between HEMS, ICU ambulance and PRV operations.	6								
j. Internship period for graduate paramedics with clearly defined objectives and duration.	7								
k. No internship period for graduate paramedics.	1								
Comments:									
2. Introduction of a workplace clinical mentorship program for graduate paramedics • *An employer specific clinical transition program for every graduate paramedic enforceable by the statutory regulator.*									
a. Develop an EMS policy on workplace clinical mentorship for graduate paramedics.	6								
b. 3 months workplace clinical mentorship period with an experienced ECP.	4								
c. 3-6 months' workplace clinical mentorship period with an experienced ECP.	5								
d. 6-9 months' workplace clinical mentorship period with an experienced ECP.	5								
e. 9-12 months' workplace clinical mentorship period with an experienced ECP.	4								
f. No workplace clinical mentorship period.	1								

Comments:										
3. Restructuring the BHSc EMC program by redesigning medical rescue modules and increasing patient clinical care period • *An HPCSA, NDoH, DHET and EMS consulted restructuring of the current BHSc EMC with focus on increasing credits for clinical experiential learning by reducing medical rescue credits.*										
a. Restructure the medical rescue modules to increase clinical experiential learning period.	6									
b. Extend the current BHSc EMC program duration to allow for an increase in clinical experiential learning period.	2									
c. Redesign clinical experiential learning with a key focus of increasing duration spent in the prehospital settings.	5									
d. No changes done to the current design and structure of the BHSc EMC program.	2									
Comments:										
4. Incorporation of non-clinical workplace orientation program for graduate paramedics • *An employer specific workplace orientation program for every new graduate paramedic with focus on organization policies, SoP and administrative processes.*										
a. A compulsory period for graduate paramedics to be orientated on the organization processes, policies and SoPs by the employer.	7									
b. No orientation period for graduate paramedics on the organization processes, policies and SoPs.	1									

Comments:									
5. Implementation of a clinical case review system for graduate paramedics • *An employer specific clinical case review program for every new graduate paramedic enforceable by the statutory regulator.*									
a. Compulsory regular clinical case reviews for graduate paramedics with a structured debriefing session.	7								
b. No clinical case reviews and debriefing for graduate paramedics.	1								
Comments:									
6. Implementation of clinical consultation system for graduate paramedics • *An employer specific clinical consultation system for every new graduate paramedic, enforceable by the statutory regulator.*									
a. Compulsory clinical consultation system for graduate paramedics.	6								
b. No clinical consultation system for graduate paramedics.	1								
Comments:									
7. EMS Management Development regarding competencies and clinical transition of graduate paramedics • *Training and development of EMS managers regarding the competencies and needs of newly graduated paramedics.*									
a. Training and development of EMS managers regarding the competencies and needs of newly graduated paramedics employed by their services.	7								

b. No training and development of EMS managers regarding the competencies and needs of newly graduated paramedics employed by their services.	1								
Comments:									
8. Introduction of a psychological and emotional support Services for graduate paramedics • *A professional psychological support services accessible to graduate paramedics during their clinical transition period.*									
a. Provision of professional psychological support services by the employer, accessible to graduate paramedics during their clinical transition period.	7								
b. No provision of professional psychological support services by the employer for graduate paramedics.	1								
Comments:									
Panellist Additional Inputs Section:									