Factors that Affect Academic Success: The Perspective of First Year Emergency Medical Care Students in a Private Institution in South Africa

By Anneke Jackson

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

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DECLARATION

I, Anneke Jackson, declare that this Dissertation being submitted for the requirements of the degree, Master of Science (MSc) Health Sciences Education, at the University of the Witwatersrand, Johannesburg, is my own work and has not been submitted before or any degree at any other institution. Ethics clearance no: H22/11/18.

Anneke Jackson Date: 3 October 2025

DEDICATION

This dissertation is dedicated to the most beautiful, amazing woman in the world I have ever known – my loving mother. Mom, you were my greatest supporter, my constant source of strength, and the light in my darkest moments. You were there with every word, tear, and every step, guiding me through life's challenges. Even though you are no longer physically here, your love continues to guide me and inspires everything I do.

To my father, whose wisdom, knowledge and strength have shaped me into who I am today. You and Mom built the foundation of my life, and your unwavering support and love have continued to be my anchor. Even through your deep sorrow, you remain our rock, providing strength and stability for our family. I am eternally grateful for everything you have thought me and for the love you continue to share with us.

I also dedicate this work to my loving, supportive husband. Your patience, understanding and love have been a constant source of comfort. I also dedicate this work to my wonderful children, brothers and sister whose presence, encouragement and unconditional love have been a constant in my life. To my family and friends, whose unwavering support and encouragement carried me through the hardest days when I struggled to find the strength to continue, you were there to lift me up, and for that, I will forever be grateful.

This achievement is as much yours as it is mine.

ABSTRACT

This study examines the factors that facilitate or impede the academic progression of first-year students in the Diploma in Emergency Medical Care (DEMC) program at a private South African institution. It focuses on the Emergency Medical Care I (EMC I) modules. The research adopted a qualitative approach, emphasizing a constructivist perspective to uncover the students' genuine experiences and identify factors that elevate or hinder them, particularly given that many do not progress beyond the first year. Given the scarcity of paramedics, the study seeks to understand the challenges these students face in EMC I.

The research conducted semi-structured interviews with thirteen first-year students explicitly selected for their diverse backgrounds. Their remarks were meticulously examined through reflexive thematic analysis, ensuring ethical rigor and robustness.

Three prominent themes, namely learning environments, personal factors, and support structures were identified in this study. Practical experiences including clinical shifts and simulations, ignite students' enthusiasm and enhance their skills, although the stress and distressing situations they encounter might overwhelm them. Their ability to manage pressure, motivation, life experience, and academic strategies significantly impact outcomes. Support from mentors, college resources, and familial encouragement sustain them. Nevertheless, several families do not fully grasp the demands of EMS. The relationship between intrinsic resilience and external assistance is crucial, particularly in health sciences, while emphasizing the often-overlooked domain of pre-hospital care.

The study promotes enhanced preparatory courses to strengthen foundational skills, resilience workshops to fortify mental toughness, additional mentorship opportunities to provide guidance, and supplementary simulations to alleviate anxiety. The study was limited to a single institution in Gauteng, which may not capture the diversity of student experiences across other programs or regions in South Africa. Broader implementation and longitudinal tracking are recommended to better understand and support the successful completion of DEMC students, equipping them to serve effectively in South Africa's demanding pre-hospital environment.

ACRONYMS AND ABBREVIATIONS

BAA	Basic Ambulance Assistant
DEMC	Diploma in Emergency Medical Care
EMC	Emergency Medical Care
EMC I	Emergency Medical Care I (refers to the first-year modules of the DEMC program)
EMS	Emergency Medical Services
GP	General Practitioner
HPCSA	Health Professions Council of South Africa
MSc	Master of Science
MVA	Motor Vehicle Accident
NQF	National Qualifications Framework
OSCE	Objective Structured Clinical Examination
PBL	Problem-Based Learning
PTSD	Post-Traumatic Stress Disorder
SIMS	Simulations (used in the context of simulated clinical learning environments)

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CHAPTER 1: OVERVIEW OF STUDY

1.1 Introduction

This study investigates factors that influence academic achievement of first-year students registered for the Diploma in Emergency Medical Care (DEMC) program and in particular within the context of the Emergency Medical Care I (EMC I) modules. This qualitative study, grounded in a constructivist paradigm, seeks to understand these students' experiences, identifying the enabling and constraining factors affecting their performance.

This chapter provides the context of the study, offering background information on the DEMC program and its first-year curriculum. It also defines the research problem, which stems from the high failure rate among first-year students in the EMC I modules. It emphasizes the significance of understanding the factors contributing to or hindering this program's academic success.

The chapter details the research's purpose and objectives and presents the research question. Additionally, it discusses the researcher’s positionality, acknowledging her background as a former first-year lecturer and how this may have shaped her approach to the study. This study is essential due to observed challenges in student retention and performance and gaps in the literature on emergency medical care students’ success. The chapter concludes with a summary of the forthcoming chapters in the dissertation.

1.2 Background

1.2.1 Emergency Medical Care

Emergency medical care is provided in any setting outside a traditional healthcare facility, such as hospitals or clinics. This includes unpredictable locations like accident scenes, homes, public spaces, and remote areas where healthcare professionals are unavailable onsite. The conditions vary depending on the patient's situation, ranging from motor vehicle accidents (MVAs) to less acute events like falls at home (Jin, Maimaitiming, Li, Hoving, & Yuan, 2023).

Emergency medical care involves the immediate and urgent care provided to critically ill or injured patients before they reach a healthcare facility, delivered by various providers

including paramedics and, in some cases, general practitioners (GPs), though their involvement is typically minimal in emergency contexts. The primary goal is stabilizing the patient and ensuring safe transport to a hospital for further treatment (Jin et al. 2023).

Three components that are essential in emergency medical care are illustrated in Figure 1.

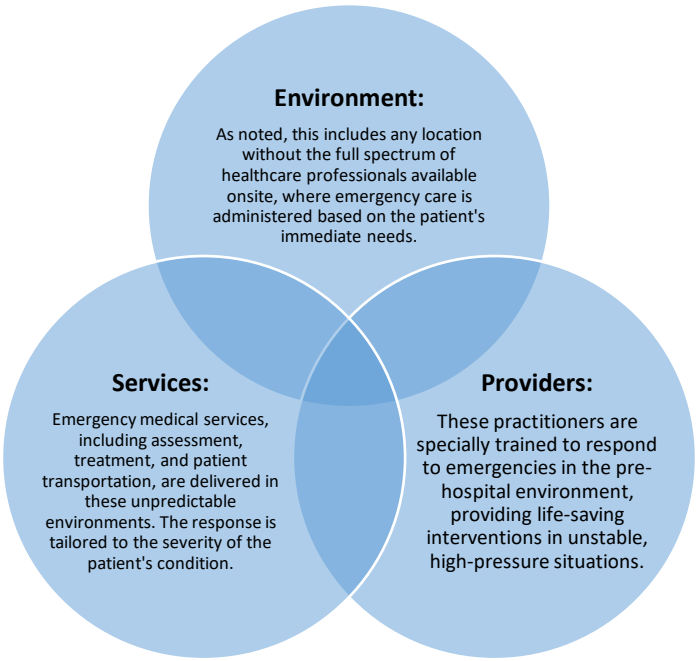

Figure 1: Key Components of Emergency Medical Care in the Pre-hospital Environment. *Note.* Adapted from information in Jin et al. (2023).

1.2.3 Diploma in Emergency Medical Care (DEMC)

The Diploma in Emergency Medical Care (DEMC), as offered at a private institution, which will remain nameless for confidentiality and maintaining the reputation of the provider under study, is a comprehensive, two-year qualification aimed at preparing students for the demanding role of a paramedic in South Africa. The program provides both theoretical knowledge and hands-on experience to ensure graduates can provide life-saving interventions in various pre-hospital settings, ranging from trauma scenes to medical emergencies (Jin et al. 2023).

The DEMC program builds on the historical development of emergency medical training and focused on preparing students to assess, treat, and manage patients across a broad spectrum of medical and trauma-related emergencies.

The curriculum covers a wide range of topics, detailed in Figure 1.2, including trauma management, medical emergencies, pharmacology, advanced life support, clinical practice, and foundational knowledge to create holistic paramedics.

The Diploma in Emergency Medical Care represents a critical step in professionalizing emergency medical services in South Africa. By offering a structured, in-depth education, the DEMC ensures that graduates are well-prepared to meet the diverse pre-hospital care challenges.

This study examines factors affecting academic success from the perspective of first-year Emergency Medical Care students at a private institution in South Africa, shedding light on how the program is perceived in terms of preparing students for emergency medical care realities and their challenges during training. High failure rates and limited prior research on pre-hospital care education, as noted earlier, underscore its relevance, linking to the problem statement.

1.2.3.1 Admission and Selection Criteria

Admission to the Diploma in Emergency Medical Care (DEMC) program is competitive, reflecting high academic and professional standards expected of future emergency care providers. The selection process not only considers academic performance in subjects, which include mathematics, physical science and life sciences but also prioritizes physical and health requirements to ensure that students are physically capable of meeting the demanding nature of emergency medical work.

Psychological and emotional fitness is assessed during admission to ensure candidates possess the resilience and emotional stability required for high-pressure emergency care environments. These criteria match the profession's demands ([redacted]). Prior experience in healthcare e.g., volunteering or first aid may give preference, as it is demonstrating commitment and familiarity.

These criteria aim to lower attrition, but their effectiveness is unclear, prompting further investigation into student experiences.

1.2.3.2 First-year Enrolment Categories

Students enrolling in the DEMC first year are classified into two categories—Standard and Extended—based on admission criteria, accommodating varying preparedness while maintaining standards. In the standard category, students must complete all first-year diploma fundamental and core modules within one year. In the extended category, students complete the fundamental modules in the first year and the core modules in the second year, taking a total of two years to complete the first year of the DEMC program. ([redacted]). This reflects the DEMC's aim to provide accessible, high-quality education while maintaining excellence.

1.2.4 DEMC First-year Learning Environments and Module Layout

The DEMC first-year curriculum provides comprehensive learning experience through campus-based and off-campus environments, developing theoretical knowledge, practical skills, physical preparedness, and clinical competency.

Campus-based learning includes credit-bearing theory modules (e.g., EMC Theory I), detailed in Figure 1.2, facilitated by qualified staff.

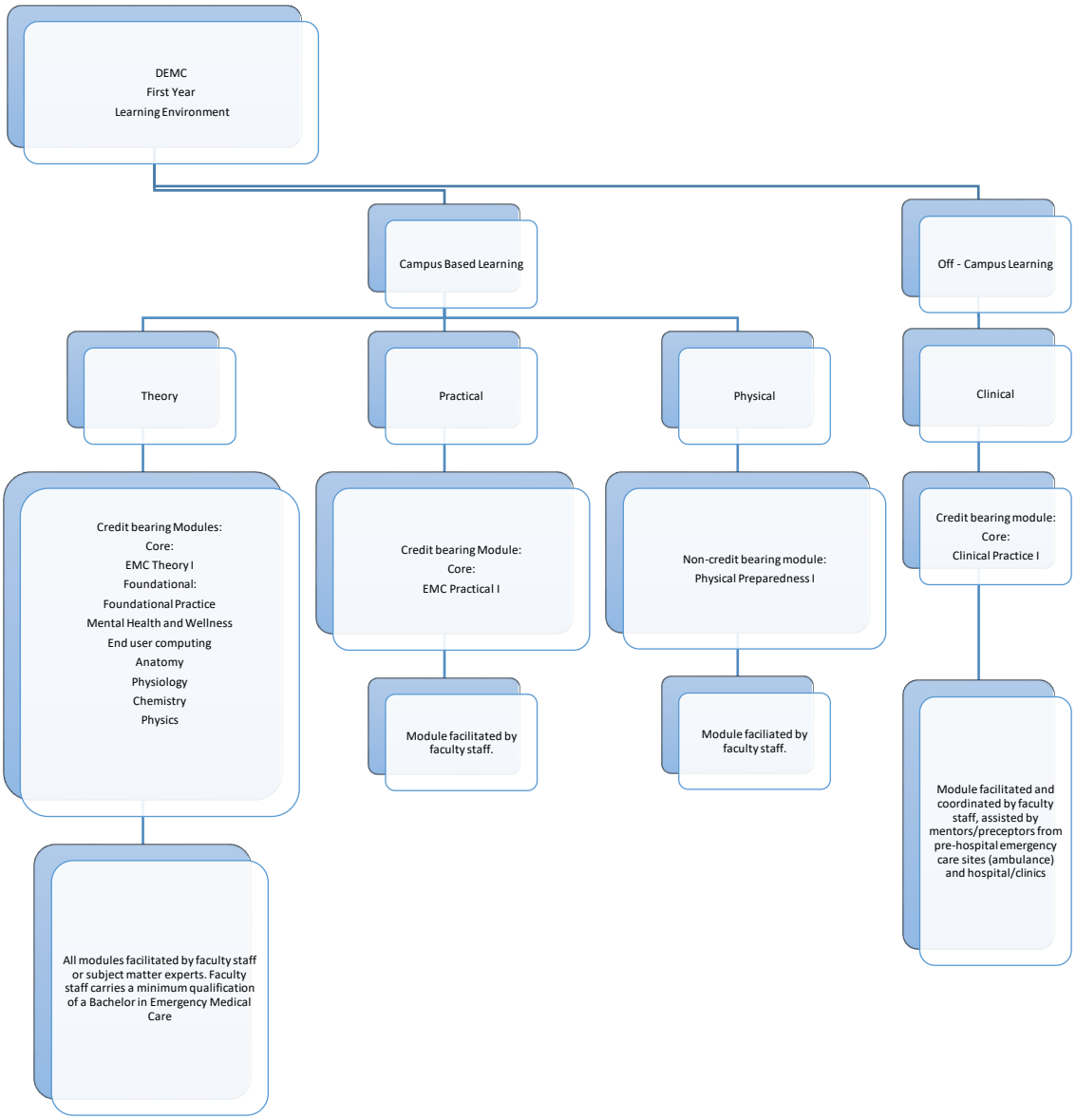

Figure 2: Overview of DEMC First-year Learning Environments and Module Layout

Per the ([redacted]), this approach ensures theoretical knowledge, practical skills via EMC Practical I, physical preparedness, and clinical experience; the researcher notes its balance is key to developing competent practitioners.

1.2.4.1 Progression Criteria

To advance to the second year of the DEMC, first year students are required to fulfill both academic and non-academic requirements. Progression requires passing all core modules annually, including theory, practical, and clinical components, with a minimum

50% mark ([redacted]). These criteria ensure second-year readiness by integrating theory, practice, and clinical experience.

1.3 Problem Statement

The Diploma in Emergency Medical Care (DEMC) program is experiencing a high failure rate among first-year students, particularly in the EMC I modules. This issue is concerning given the increasing demand for skilled emergency medical care professionals, which underscores the importance of effectively training and retaining students in this field. Many first-year students struggle to meet the rigorous demands of the DEMC program, leading to elevated attrition rates that hinder the development of a competent workforce in emergency medical care. Institutional data highlights these challenges, with first-year pass rates fluctuating between 26% and 36% in recent years. This research sought to investigate and examine the elements that either facilitate or hinder academic success for first-year students in the DEMC program. Through examining these factors, this study aimed to provide insights that can inform educational strategies and support mechanisms, ultimately improving student retention and success in this critical healthcare discipline.

1.4 Purpose of the Research

The purpose of this study was to identify and examine the obstacles and resources that affect first-year Diploma in Emergency Medical Care (DEMC) students' educational experiences.

1.5 Research Question

The research question that guided the study was**:** Which factors enable or constrain the academic success of a DEMC first-year student in the EMC I modules?

1.6 Research Objectives

There were two research objectives for this study. The first objective was to explore the enabling factors for academic success of first-year students in the DEMC program. The second was to explore the constraining factors for academic success of first-year students in the DEMC program.

1.7 Significance of the Research

As noted earlier, this research seeks to provide valuable insights into how the learning environment, institutional support, and student preparedness impact academic outcomes for first-year students in the Diploma in Emergency Medical Care (DEMC) program, particularly concerning the EMC I modules. This study addresses these issues by exploring factors that enable or constrain success, critical to developing competent emergency care providers given the profession's demands. The significance lies in understanding these factors among a population—pre-hospital emergency care students—filling a critical literature gap, as highlighted in the background.

Examining experience provides insights into challenges and enablers, leading to recommendations for curriculum design, teaching methods, and student support structures to enhance success and address high failure rates via targeted interventions. This research contributes to health sciences education by focusing on pre-hospital emergency care, informing future strategies to better prepare students for training and career development. The research will help shape strategies for improving retention rates, enhancing student preparedness, and ensuring first-year students thrive.

1.8 Researcher Positionality

The researcher is an experienced emergency care practitioner with a Postgraduate Diploma in Health Sciences Education (2017), deepening her understanding of teaching and curriculum design. In 2019, she coordinated the first-year course at a private institution in South Africa. During her time as a first-year lecturer for Emergency Medical Care students [3 years], she observed high failure rates in EMC I modules, motivating this study. Now teaching pre-hospital emergency care elsewhere, her interest in curriculum and student achievement drives this research. Her lecturer experience inspired giving voice to students. To mitigate bias, she employed peer debriefing, member checking, and reflexive journaling, (Wilkinson, 1988). Reflexivity minimized bias through disciplined self-reflection.

1.9 Outline of the Research

The dissertation is structured as follows:

Table 1 Outline of the Research

Chapter	Description
Chapter 1	Overview of Study
Chapter 2	Literature Review
Chapter 3	Methodology
Chapter 4	Research Findings and Discussion
Chapter 5	Conclusion

1.10 Summary

This chapter offered an overview, by setting the context, defining the purpose and significance, presenting the research question, and describing the positionality of the researcher. It outlined the structure of the dissertation. The next chapter reviews relevant literature to contextualize the study within existing research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The aim of this literature review is to provide a detailed overview of existing research related to the factors influencing academic success among first-year students enrolled in emergency medical care programs. The review is structured to explore the internal and external factors affecting academic performance, the distinct challenges encountered by first-year students in health science disciplines, and the impact of institutional support and pedagogical approaches. By situating the current study within the broader academic discourse, this chapter aims to highlight existing gaps and build a foundation for this study's research question.

At a private higher education institution in South Africa, first-year DEMC students face significant challenges, including high failure rates, as observed in the program under study, which contribute to elevated attrition and hinder the development of a competent emergency medical care workforce.

This problem persists due to the rigorous demands of the curriculum, the unique stressors of pre-hospital emergency care training, and a lack of tailored support for students, particularly those who fail year one. While some studies have addressed student success in health sciences broadly, there is limited research on pre-hospital emergency care students, and little is known about whether these factors have been addressed at the research site or the extent of their implementation, necessitating this study to explore these issues in the specific context of the DEMC program.

2.2 Academic Success in Health Sciences Education

Academic success in health sciences education is a complex concept shaped by a variety of factors, including individual student characteristics, institutional support, and teaching methodologies (Mohamed Wazil, Suthakaran, Perera, Arulanantham, Arasaratnam, Murugesu, & Vasantharajah, 2025). First-year students, particularly those in rigorous programs like emergency medical care, which have evolved significantly in South Africa from short courses like the two-week Basic Ambulance Assistant (BAA) in the 1980s to comprehensive diplomas by the 2000s (Sobuwa & Christopher, 2019), often face

significant challenges that impact their academic success (Abdolalipour, Namdar-Areshtanab, Ghaffarifar, Ghaffari, & Mirghafourvand, 2024).

These challenges include adapting to a demanding curriculum, managing practical training, and balancing academic and personal responsibilities.

2.2.1 Internal Factors

Key internal factors influencing student academic success include student preparedness, motivation, coping strategies and resilience.

Student Preparedness and Motivation: Research by Van der Merwe, Groenewald, Venter, Scrimger-Christian, & Bolofo (2020) indicates that student preparedness, which encompasses prior academic background, study habits, and motivation levels, plays a crucial role in academic outcomes. Students entering programs such as the DEMC with a strong foundation in mathematics, physical science, and life sciences are generally better equipped to handle the complexities of the curriculum. Deci and Ryan's Self-Determination Theory (2000) emphasizes that intrinsic motivation profoundly affects a student's capacity to tackle tough academic assignments. Empirical data by Vallerand, Pelletier, Blais, Brière, Sénécal, & Vallières (1993) show that students with high levels of intrinsic motivation exhibit greater perseverance and academic performance, reinforcing the practical implications of the Self-Determination Theory. These findings emphasize that fostering intrinsic motivation through curriculum design and student support services can be pivotal in promoting academic success.

Coping Mechanisms and Resilience: Coping strategies and emotional resilience are also significant predictors of academic success. A study by Smith and Brown (2018) found that students who employ effective stress management techniques and demonstrate resilience are more likely to succeed in high-stress educational settings. The DEMC program's emphasis on both theoretical knowledge and practical skills requires students to maintain composure under pressure, making resilience an essential trait for success. This aligns with Lazarus and Folkman's Stress and Coping Theory (1984), which suggests that students' assessment of stress and their capacity to employ adaptive coping techniques can substantially influence their performance.

Additional studies, such as those conducted by Anderson (2017), reveal that resilience training programs aimed at improving coping skills, self-efficacy, and stress management have yielded positive outcomes in student performance, suggesting that similar interventions could benefit first-year DEMC students.

2.2.2 External Factors

External factors that influence student academic success in emergency medical education are institutional support systems and effective teaching methodologies.

Institutional Support: The importance of institutional support systems cannot be overstated. Support services such as academic advising, tutoring, and psychological counseling have been shown to improve retention rates (Tinto, 2017). In the context of emergency medical education, mentorship programs and structured clinical placements provide students with practical guidance and professional insight that enhance their learning experience (Ross, Williams, & Cooper, 2019). This corresponds with Bandura's Social Learning Theory (1977), which posits that learning through observation and mentorship from seasoned individuals are essential for student development. Empirical evidence from a study by Crisp and Cruz (2009) indicates that structured mentorship improves student engagement and retention rates, particularly in demanding educational fields.

Teaching Methods and Curriculum Structure: Effective teaching methodologies tailored to the unique demands of emergency medical education can significantly impact student performance. Active learning approaches, such as problem-based learning (PBL) and simulation training, have proven effective in fostering critical thinking and practical skills (McGaghie, Wayne, Barsuk, & Issenberg, 2020). Simulation-based education aligns with Kolb's Experiential Learning Theory (1984), which highlights learning through concrete experience and reflective observation. Jeffries' Simulation Theory (2015) supports the value of simulation as a link between theoretical knowledge and practical application, helping students gain competence and confidence in a controlled environment. Recent research by Williams, Abel, Khasawneh, Ross, & Levett-Jones, (2016) found that simulation training in paramedic education significantly improves students' self-

confidence and readiness for clinical practice, reinforcing its role as a critical pedagogical tool.

2.3 Challenges Faced by First-Year Students in Emergency Medical Care

First-year students in health sciences, particularly those enrolled in emergency medical care programs, face distinct challenges. The transition from secondary education to the rigorous demands of a diploma program can be overwhelming (Ajani & Gamede, 2020). Factors such as heavy coursework, clinical placements, and the need for physical and emotional resilience contribute to high stress levels and potential burnout (Babenko, Daniels, Ross, White, & Oswald, 2019). This aligns with Yerkes-Dodson's Law (1908), which suggests that optimal performance occurs at moderate levels of stress, while excessive stress impedes cognitive function and learning.

High Attrition Rates: A key concern in emergency medical education is the high attrition rate among first-year students, including those who fail year one. Research by Pinzon, Turenne, Jacquier, and Poulin, (2024) highlights that the combination of academic pressure, physical demands, and emotional strain often leads to student dropout, a challenge observed in the DEMC program at the private institution under study. First-year DEMC students face distinct challenges due to early exposure to traumatic clinical experiences, high-performance expectations in critical environments, and the demanding balance between practical training and academic responsibilities. While some institutions have implemented support structures, such as extended curriculum programs, the extent of their implementation at the research site remains unclear, and their effectiveness in addressing failure rates is under-researched (Steyn & Sibanda, 2016). Addressing these challenges requires a multifaceted approach, incorporating both academic and psychosocial support as discussed by Steyn and Sibanda (2016) regarding burnout prevention.

Statistics from recent studies show that programs with comprehensive support structures report up to 30% lower attrition rates (Kent, Malau-Aduli, & Zimitat, 2020), suggesting that targeted interventions can significantly enhance student retention.

2.4 Institutional and Pedagogical Interventions

Structured Academic Support: Effective academic support includes preparatory workshops in key subjects like mathematics and life sciences, which can bridge gaps in student knowledge (Fraser & Killen, 2005). Additionally, peer mentoring programs have been found to foster a sense of community and improve student confidence (Kent et al., 2020). This aligns with Kolb's Experiential Learning Theory (1984). Institutions offering emergency medical programs need to implement comprehensive support systems that cater to the academic and personal needs of students.

An example from Ramaila and Reddy (2015) shows that extended curriculum programs designed for first-year students reduce academic pressure and improve retention by offering tailored support.

Innovative Teaching Strategies: The use of simulation-based education is a notable intervention in emergency medical training. Studies by Buykx, Kinsman, Cooper, McConnell-Henry, Cant, & Endacott, (2018) show that simulation training helps students develop practical skills and improves their readiness for real-world emergency scenarios. Simulation-based education enhances competence by allowing students to practice in a controlled, low-risk environment (Jeffries, 2015). Research by Sandy, Meyer, Oduniyi, & Mavhandu-Mudzusiet (2021) found that learners involved in simulation-based learning showed a 40% increase in practical skill proficiency, demonstrating the substantial impact of these educational interventions. This method aligns with the DEMC program's emphasis on experiential learning, combining theoretical knowledge with hands-on practice.

2.5 Gaps in Current Research

While significant research has been conducted on academic success in health sciences, studies focusing specifically on emergency medical care students remain limited, particularly at the specific private institution under study where this research is conducted. Existing literature often generalizes findings across various health science disciplines without accounting for the unique challenges faced by emergency care students, such as those in the DEMC program who face high failure rates and traumatic clinical

experiences. Furthermore, insufficient focus has been directed towards the first-year experience, the potential of specific interventions to reduce high attrition rates, and the degree to which these interventions have been executed at the research site. While some health science programs have implemented support structures, their application to pre-hospital emergency care education, especially for students who fail year one, is under-explored.

A recent review by Burger (2018) pointed out the need for more nuanced research that distinguishes between different health science disciplines, particularly those involving high-intensity clinical training like emergency medical care. This study aims to fill these gaps by exploring the experiences of first-year DEMC students, including those who failed, at a private institution in South Africa, and identifying specific enablers and constraints that influence their academic success in this context. By doing so, it seeks to provide actionable insights that can inform curriculum development, teaching methodologies, and student support services.

2.6 Summary

The literature reviewed highlights the intricate interaction of internal and external factors that influence academic success in health sciences programs. It underscores the need for tailored institutional support and innovative teaching strategies to address the unique challenges encountered by first-year students, particularly those who fail, in the DEMC program at the private institution under study.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter provides an overview of the research methodology employed in this study, detailing each step from conceptualization to implementation. A thorough description of the research design and methods employed to collect and analyze data is provided.

Emphasis was placed on the purposive sampling approach utilized, guaranteeing that participants were chosen to effectively represent the diversity of experiences within the EMC program. Semi-structured interviews served as the primary method to gather data, while the data analysis process, encompassing coding and thematic analysis, was delineated to ensure that the conclusions were rooted in the participants' viewpoints. This chapter ultimately examined ethical considerations, encompassing participant confidentiality and informed permission, along with the methods implemented to ensure the study's reliability. The research process rigor was meticulously evaluated through the dimensions of credibility, transferability, dependability, and confirmability.

This methodology chapter laid the foundation for understanding the experiences of EMC students and provided the framework for interpreting the factors influencing their academic success.

3.2 Research Design

This study adopted a qualitative approach, rooted in the constructivist paradigm, which posited that knowledge was co-constructed through interaction between individuals and their environment (Adom, Yeboah, & Ankrah, 2016). Within this paradigm, the subjective experiences of the participants formed the basis of this research. By exploring these experiences, the study aimed to uncover the factors that either enabled or constrained the students' academic success. This descriptive study sought to describe and understand the participants' experiences and gain insight into their perceptions of academic success in the EMC I modules (Neubauer, Witkop, & Varpio, 2019). As specified by Creswell and Poth (2018), the primary purpose of a qualitative study was to reduce individual experiences to a description of the key factors influencing success—

what the participants experienced and how they experienced it to reveal unique individual perceptions from participants.

Furthermore, this study employed a social constructivist approach (Creswell & Poth, 2018; Boyland, 2019) which narrowed the paradigm to emphasize social and cultural context. Guided by ontological, epistemological, axiological, and methodological assumptions (Guba & Lincoln, 1985), this perspective shaped how knowledge was generated from participant viewpoints.

3.2.1 Ontology

Ontology focused on the nature of reality, and this study adopted the social constructivist view that multiple realities existed (Creswell & Poth, 2018). Social constructivist ontology posited that reality was subjective, shaped by individual experiences and interactions with the environment. In this study, the researcher embraced the assumption that each participant in the DEMC program experienced the world differently based on personal, academic, and social factors.

For example, students from different educational backgrounds might have perceived the challenges in the EMC I modules differently. A student with strong foundational knowledge in emergency care might have experienced success more easily, while another student with limited exposure to the field might have struggled with the same material. This notion of multiple realities recognized that these students' realities were shaped by their unique contexts, such as prior education, socio-economic status, and access to academic resources (Crotty, 1998).

The study aimed to capture these diverse perspectives by exploring how different realities were formed and how they influenced academic success. This ontological stance was particularly relevant in understanding how students made sense of their educational journey. By acknowledging these different realities, the research offered a thorough understanding of the varied factors contributing to academic outcomes in the EMC program.

3.2.2 Epistemology

Epistemology pertains to the interaction between the researcher and the participants, emphasizing the co-construction of knowledge (Guba & Lincoln, 1985). In qualitative research, the epistemological perspective frequently focuses on narrowing the gap between the researcher and those being studied. This study embraced a social constructivist epistemology, which posited that knowledge was generated through the interaction between the researcher and participants, rather than existing independently of this relationship.

In this study, the researcher engaged with participants through semi-structured interviews to explore their experiences. The researcher created an open and collaborative environment, where participants were urged to share their personal insights and viewpoints (Baxter & Jack, 2008). For instance, participants were not treated as passive subjects; rather, their input was critical in shaping the knowledge that emerged from the study. This aligned with the social constructivist view that knowledge was created through dialogue and shared understanding (Charmaz, 2014).

The researcher also took steps to ensure that this relationship remained collaborative throughout the study. For example, during interviews, open-ended questions were employed to allow participants to lead the conversation, providing insights into their experiences in their own words. This approach ensured that the knowledge produced was closely tied to the participants' subjective realities and not solely shaped by the researcher’s interpretation.

3.2.3 Axiology

Axiology pertains to the importance of values and ethics throughout the research process. The social constructivist paradigm recognized that research is intrinsically value-laden, indicating that the researcher’s values and prejudices are perpetually present in the research process (Heron & Reason, 1997). In this study, the researcher acknowledged the significance of disclosing her own values and their potential impact on the research. The researcher’s professional background as a first-year lecturer in a private higher education institution informed her interest in understanding the academic challenges

confronted by students in the DEMC program. To mitigate potential biases, the researcher disclosed her prior role in the institution and ensured that there were no power dynamics between herself and the participants, as she no longer held any influence over the students' academic progression (Morrow, 2005).

Moreover, the researcher adhered to rigorous ethical standards throughout the study. All participants gave their consent after being provided with the necessary information. Their confidentiality was protected by anonymizing the interview transcripts. The ethical principles governing this research were approved through the Human Research Ethics Committee, ensuring that the study met the standards of ethical rigor required in academic research (Johnson, Adkins, & Chauvin, 2019).

3.3 Research Setting

This research was performed at a private higher education institution in Gauteng, South Africa, which provided the Diploma in Emergency Medical Care (DEMC) program. During the 2020-2021 and 2021-2022 academic years, this institution provided a structured academic environment for first-year students enrolled in the EMC I modules, balancing theoretical coursework with clinical training in pre-hospital emergency care settings.

The setting reflected the diversity of the South African educational context, accommodating students from varied socio-economic, educational, and cultural backgrounds, which influenced their experiences within the program (Spaull, 2013).

3.4 Population

In qualitative research, the population should have included individuals who experienced the topic under investigation and could provide rich, detailed insights into their experiences (Creswell & Poth, 2018). The population for this study was selected based on the aim of exploring the experiences of first-year students enrolled in the DEMC program for the EMC I modules. As Creswell (2014) noted, it was important to define the population clearly so that it was directly connected to the experience being studied. In this case, the population included students who were likely to provide valuable insights into the factors influencing their academic outcomes.

For this study, the identified population comprised all first-year students enrolled in the EMC I modules at a private Higher Education Institution in Gauteng during the 2020-2021 and 2021-2022 academic years. The population of this study was defined as N = 29, representing all students who had enrolled in the EMC I modules during the specified time frame.

The identified population reflected the diversity of the student body, with a variety of socio-economic, educational, and cultural backgrounds. This was essential in a South African context, where historical inequalities in education persisted (Spaull, 2013). By considering students from different backgrounds, the study aimed to ensure that the population reflected the varied realities and experiences of students in the program.

3.5 Sample

Purposive sampling was used in this study, as it intentionally selected participants and sites that could best provide insight into the research problem (Creswell & Poth, 2018). The study sample was selected from a population of 29 students enrolled in the DEMC program for the EMC I modules. According to Braun and Clarke (2022), qualitative research did not require a fixed sample size; rather, the sample was sufficiently diverse to reflect the full complexity of the experience being studied. Qualitative research, as used in this study, was particularly focused on obtaining depth and diversity in the data rather than aiming for large sample sizes.

To select the sample, the researcher invited all 29 students to participate in semi-structured interviews. The selection process was straightforward: students who had completed the EMC I modules during the specified academic years were invited to participate. Out of 15 students who responded, and 13 participants consented to take part in the interviews and to be recorded. This resulted in a final sample size of 13 participants, which was deemed adequate for achieving rich qualitative data, given the sample's representation of diverse demographics including gender, racial, and socio-economic backgrounds reflective of the population (Patton, 2002).

There were no exclusion criteria in this study, as the researcher sought to include a broad range of student experiences. The only inclusion criterion was that participants had to

have been enrolled in the EMC I modules during the specified academic years. This open inclusion policy ensured that the sample could capture the diversity of students' academic and personal backgrounds, which was critical for understanding how various factors influenced academic success in the EMC I modules.

Furthermore, considering the South African context, the researcher prioritized ensuring that the sample represented the socio-economic and cultural diversity of the student population.

3.6 Data Collection

This section offered a summary of the data collection method employed in the research project. Semi-structured interviews were used to gather qualitative data. The researcher focused on fostering an environment that encouraged participants to share their experiences openly, contributing to a comprehensive understanding of the factors that impacted academic success in Emergency Medical Care (EMC) students.

3.6.1 Gaining Access to Participants

Access to participants was a crucial element in the data collection process, and particular care was taken to ensure the recruitment process was ethical and aligned with the objectives of the study. The researcher began by obtaining formal approval from the institution's faculty manager to access the student list. This list included all students who had completed the EMC I modules.

After finalizing the participation list, an invitation email was sent to 29 prospective participants. The email contained an information sheet [refer to Annexure A] detailing the study's goal, the voluntary nature of participation, and confidentiality guarantees. The email included a link to a Google Form [refer to Annexure B] where participants could submit their consent, biographical details, and availability for the interviews. The email invitation included an information sheet that explained the purpose of the study, outlined what participation entailed, and assured participants of their anonymity and the voluntary nature of their involvement. This research approach was consistent with Creswell (2013), which highlights the significance of informed consent, confidentiality, and the voluntary participation of respondents. The Google Form responses were automatically captured,

and the researcher immediately reviewed the data to schedule interviews at the convenience of each participant.

To further ensure transparency and trust, the invitation also detailed how participants' data would be used, stored, and protected, following ethical protocols (Creswell & Poth, 2018). The inclusion of this information allowed participants to make informed decisions about their involvement in the study, fostering an environment of trust and openness.

Following the initial recruitment, the researcher maintained regular communication with participants, confirming interview dates and ensuring that participants felt comfortable with the process. This included providing additional information where necessary and addressing any concerns raised by the participants. By maintaining open channels of communication, the researcher helped build rapport with participants, which was essential in qualitative research where trust played a key role in the quality of data collected (Shenton, 2004).

3.6.2 Data Collection Method

The data for this study was obtained via semi-structured interviews, a prevalent method in qualitative research for obtaining comprehensive, detailed insights into participants' experiences. Creswell and Poth (2018) characterized interviews as interactive processes in which knowledge is collaboratively created by the researcher and participant. In this context, interviews were not just a means of gathering data but a dynamic space for participants to reflect on their personal experiences related to academic success in Emergency Medical Care (EMC) education.

Semi-structured interviews facilitated flexibility in questions, permitting the researcher to explore areas of interest more thoroughly while remaining aligned with a predetermined interview guide. According to Kallio, Pietila, & Johnson, (2016), semi-structured interviews struck a balance between the depth of open-ended questions and the structure needed to ensure all relevant topics were covered. This approach was essential for capturing the participants' nuanced experiences, making it ideal for the qualitative framework employed in this study.

Braun and Clarke (2022) emphasized the importance of being spontaneously responsive during interviews. This meant allowing participants to lead certain parts of the conversation, giving them the freedom to delve into topics they found most relevant to their personal and academic experiences. While semi-structured interviews followed a guide, the flexibility inherent in this method encouraged richer, more detailed responses, ultimately leading to a greater understanding of the experience under study.

In terms of the interview medium, Zoom was selected as the platform for conducting the interviews. Archibald et al. (2019) highlighted the benefits of using Zoom in qualitative research, particularly its ease of use, security features, and ability to record sessions for accurate transcription. Zoom facilitated real-time interaction via video conferencing, which played a key role in building rapport and establishing trust between the researcher and participant—an essential component when discussing personal experiences (Archibald et al., 2019). The decision to use Zoom was also driven by its convenience, especially in overcoming geographical barriers and ensuring that participants could engage in the research from locations most comfortable for them.

3.6.3 Data Collection Tool

The primary instrument for data collection was a semi-structured interview guide. The interview guide consisted of open-ended questions aimed at uncovering both enablers and barriers to success in the Emergency Medical Care (EMC) program. Open-ended questions, as discussed by Braun and Clarke (2022), were particularly useful in qualitative research because they allowed participants to express themselves in their own words, yielding richer and more nuanced data. The structure of the guide ensured that each interview remained focused on the research questions, while still allowing flexibility for participants to bring up unanticipated topics or concerns.

During the development of the interview guide, a thorough review of relevant literature was conducted to ensure that the questions aligned with established research in the field of health sciences education. For instance, insights from Turner (2010) were used to craft questions that would generate detailed responses about participants' perceptions of the academic and clinical challenges they faced. Furthermore, the guide was carefully

designed to avoid leading questions, ensuring that participants' responses were not influenced by the wording of the questions.

By carefully crafting and refining the interview guide, the researcher ensured that it was a robust tool for collecting meaningful data that aligned with the study's objectives. The final version of the interview guide [see Annexure C] was used consistently across all interviews to ensure uniformity in the data collection process.

3.6.4 Piloting and Preparing for Data Collection

Prior to the beginning of formal data collecting, a piloting phase was carried out to enhance the interview procedure and elevate the quality of data collection. Conducting pilot interviews was an essential phase in qualitative research, enabling researchers to evaluate and refine the interview guide, ascertain the clarity of questions, and hone interview techniques (Kallio et al., 2016). Conducting pilot interviews enable the researcher to identify any potential issues with the interview structure or content, ensuring that the main study is conducted smoothly, and that rich, meaningful data were collected.

According to Turner (2010), piloting ensures that participants can understand the questions and that questions align with the research objectives. In this study, the researcher conducted practice interviews with colleagues and the research supervisor to refine the process. These practice interviews were critical for identifying any ambiguities in the questions and refining the interview guide to ensure that it captured the intended data. Feedback from the practice sessions was used to modify the language of certain questions, improve the flow of the interview, and reduce the risk of interviewer bias (Gray, Wong-Wylie, & McArthur, 2021).

In addition to refining the interview guide, the piloting phase offered the researcher an opportunity to develop effective communication and rapport-building techniques. Establishing rapport was an essential aspect of conducting semi-structured interviews, as it helped participants feel comfortable and encouraged them to share their experiences openly (Creswell & Poth, 2018). The researcher's supervisor provided feedback after each practice interview, offering insights on how to improve follow-up questions, maintain neutrality, and encourage participants to expand on their answers.

The piloting phase also familiarized the researcher with the technical aspects of conducting interviews via Zoom. During the pilot interviews, technical difficulties including connectivity, voice clarity, and recording functionalities were assessed, enabling the researcher to foresee and address any challenges in the primary data collection phase. Archibald, Ambagtsheer, Casey, and Lawless, (2019) emphasized the importance of practicing with digital tools to ensure smooth data collection, particularly when using online platforms like Zoom.

The pilot interviews also allowed the researcher to practice note-taking and improve their active listening skills, which were critical for identifying when to probe deeper into participant responses during the actual interviews. This preparation ensured that the semi-structured interview format was flexible yet focused, and that the researcher could guide the conversation effectively while remaining responsive to the participants' input (Busetto, Wick, & Gumbinger, 2020).

By conducting a thorough piloting phase, the researcher was able to refine the data collection process, ensuring that the interviews were executed with confidence and precision. The feedback and insights gained from this preparatory stage ensured that the data collection method aligned closely with the research objectives. Data obtained through the pilot study were included as part of the final data collection process.

3.6.5 Data Collection Process

Following obtaining ethical approval from the University of Witwatersrand's Human Research Ethics Committee [refer to Annexure D] and authorization from the Research Operations Committee of the private institution [refer to Annexure E], the researcher commenced the data collection process. The list of potential participants, obtained from the faculty manager, included students who had completed the EMC I modules. This list was integral to the sampling strategy and ensured that the study captured a diverse range of experiences within the academic cohort.

3.6.6 The Interview Process

The interview process was conducted in a structured sequence to ensure consistency and reliability. The following steps outlined the interview process:

Step 1: Scheduling the Interviews

Once participants provided their availability through the Google Form, the researcher scheduled each interview via Zoom, a secure video conferencing platform. Zoom was chosen due to its ease of use and ability to record sessions for transcription (Archibald et al., 2019).

Step 2: Preparing Participants

Ahead of the scheduled interview, participants were emailed a reminder of the time and provided with instructions to ensure a distraction-free environment. Technical instructions were included to ensure that participants were comfortable using Zoom, minimizing the likelihood of technical difficulties during the session (Gray et al., 2021).

Step 3: Conducting the Interviews

At the outset of each interview, the researcher reassured participants about the confidentiality of the process, the voluntary aspect of their involvement, and reminded the participants that the session would be recorded with their permission. Interviews started with open-ended questions aimed at encouraging detailed responses regarding the participants' experiences in the EMC I modules (Creswell & Poth, 2018). The researcher used probing questions to probe deeper into specific areas based on participants' answers.

Step 4: Addressing Technical and Emotional Challenges

As interviews were conducted online, the researcher ensured that any technical difficulties (e.g., poor internet connectivity) were handled smoothly. Additionally, the researcher remained vigilant for signs of emotional discomfort and was prepared to stop the interview or refer the participant to the pre-arranged counselor, as per the distress protocol (Archibald et al., 2019).

Step 5: Post-Interview Procedures

Following the interview, the researcher made notes on the experience to ensure reflexivity and to minimize bias. The interview recordings were later transcribed for analysis, ensuring that participant identities were anonymized.

The duration of interviews ranged from 15 to 45 minutes with an average length of 25 minutes. According to Levitt, Bamberg, Creswell, Frost, Josselson, & Suárez-Orozco, (2018), specifying the range an average duration of interviews helps convey the extent of participant engagement and thoroughness of data collection. Table 2 below provided a summary of the duration of each individual interview:

Table 2: Interview Duration (Minutes)

Participant ID	Interview Duration (Minutes)
P1	21
P2	38
P3	42
P4	17
P5	45
P6	15
P7	28
P8	27
P9	21
P10	18
P11	28
P12	17
P13	17

3.7 Data Analysis

Data analysis was a crucial element of this research. The six-phase reflexive thematic analysis method established by Braun and Clarke (2006, 2019, 2022) was utilized as the primary method for analyzing the data, suited to the qualitative approach. This flexible and iterative process was well-suited for this study aimed at exploring participants' experiences, as it allowed the researcher to engage deeply with the data while maintaining flexibility throughout the analysis.

Reflexive thematic analysis emphasizes the researchers' active and reflective role in the identification, investigation, and reporting of patterns (themes) within data (Braun & Clarke, 2019). This methodology enabled the researcher to discern repeating themes that illuminate the elements affecting academic achievement. Themes were then generated based on recurring patterns in the data, with the researcher remaining mindful of the social constructivist framework guiding the study.

Braun and Clarke's (2006) reflexive thematic analysis comprises six essential steps: data familiarization, initial code generation, theme identification, theme review, theme definition and naming, and final report composition. The following subsection outlined how each of these steps was applied in this study.

Step 1: Familiarization with the Data

The process began with familiarization, an essential step in which the researcher immersed themselves in the data. Each interview was transcribed verbatim by the researcher, allowing for detailed engagement with the data. According to Braun and Clarke (2019), transcription was not merely a technical task but an important step in qualitative analysis because it enabled researchers to become deeply familiar with the nuances of the data, such as tone, pauses, and emphasis.

As the researcher conducted the interviews, this step also allowed for initial reflections on emerging patterns and ideas to begin surfacing. Following the transcription, the researcher read through each transcript numerous times to have a good understanding of the data in its entirety. This repeated reading phase aligned with the concept of 'dwelling with the data' (Nowell, Norris, White, & Moules, 2017), where the researcher actively engaged with the data without rushing into formal analysis.

During this phase, the researcher took preliminary notes, documenting early observations, which would later inform the coding process. The goal was not to generate themes at this point, but to immerse fully in the participants' experiences, beginning to grasp key ideas related to academic success and the challenges faced by EMC students.

Step 2: Generating Initial Codes

The next phase consisted of deriving initial codes from the data. Coding was the process of organizing the data into meaningful groups that reflected patterns or points of interest (Braun & Clarke, 2006). This coding process was conducted in a systematic way, with the researcher using MAXQDA (VERBI Software, 2022), a qualitative data analysis software that facilitated organized and structured coding. According to Saldaña (2016), software-assisted coding helped ensure that the coding process was efficient, systematic, and transparent, allowing researchers to engage deeply with large data sets.

In this study, the coding process was inductive, meaning that codes were derived directly from the data rather than being based on pre-existing theories or frameworks (Braun & Clarke, 2006). Transcripts were examined line by line, and interesting features of the data were assigned codes. These codes are short labels that captured key ideas, such as 'mentor support,' 'enablers for clinical work,' or 'motivation.' The coding was conducted manually within MAXQDA (VERBI Software, 2022), which was used to organize, manage and retrieve data efficiently throughout the analysis.

At this stage, coding was broad and inclusive, allowing the researcher to capture a wide range of data points that might later be grouped into more specific categories. The coding process was crucial because it began to break down the data into manageable chunks that could be analyzed in more detail (Miles, Huberman, & Saldaña, 2014).

Step 3: Searching for Themes

Once the coding process was complete, the researcher proceeded to search for themes manually within MAXQDA (VERBI Software, 2022). This phase involved grouping the initial codes into broader categories, or themes, that reflected significant patterns in the data. According to King and Brooks (2018), themes were not simply summaries of the data, but interpretive constructs that captured underlying meanings and relationships between different codes.

The researcher created thematic maps, visual representations of how different codes related to one another. These maps were an essential tool for conceptualizing the connections between various data points and understanding how they fit together to form

coherent themes. For example, codes such as 'time management,' 'study skills,' and 'internal motivation' were grouped under a broader theme of 'Personal factors'.

This stage required the researcher to engage in deep reflection and interpretation, as themes in reflexive thematic analysis were not fixed or pre-determined. Instead, they were flexible constructs that evolved as the researcher continued to analyze the data. As Braun and Clarke (2019) emphasized, the process of identifying themes was iterative, where the researcher repeatedly revisited both the data and the themes to ensure that the themes accurately represented the data.

Step 4: Reviewing Themes

After the initial themes were identified, the researcher entered the phase of reviewing themes. This involved refining the themes to ensure that they were coherent and clearly represented the data. Reviewing themes was a two-step process (Braun & Clarke, 2006):

Internal coherence: Each theme was internally consistent, meaning that the data within the theme meaningfully related to one another. The researcher revisited the data to verify that the quotes and examples grouped within each theme were sufficiently similar, to form a cohesive theme.

External distinction: Themes were also distinct from one another, representing different aspects of the data. In this phase, the researcher refined themes to ensure that there was no overlap between them and that each theme captured a separate and unique aspect of the participants' experiences.

During this phase, some themes were combined, split, or discarded. For example, an initial theme related to 'academic support systems' was later divided into two distinct themes: 'Peer Support' and 'Institutional Support.' This refinement process was crucial for ensuring that the final thematic structure was both comprehensive and clear.

Step 5: Defining and Naming Themes

The next phase entailed defining and naming the themes. This phase required the researcher to articulate the essence of each theme and explain how it contributed to the overall research question. Each theme was accompanied by a detailed narrative that

explained what the theme represented, how it was supported by the data, and why it was significant.

At this stage, the researcher also began to develop sub-themes. Sub-themes were useful for capturing nuances within broader themes. For example, within the theme of 'Personal factors,' the researcher identified three sub-themes: 'Stress management', 'Study Skills' and 'Motivation, maturity & age'.

Naming themes was also an important part of this process. The researcher selected clear, concise labels for each theme that accurately reflected its content. As Braun and Clarke (2022) emphasized, the names of themes should have been accessible and intuitive, helping to convey the core idea of the theme to the reader.

Step 6: Writing this Report

The final phase of the analysis involved authoring this dissertation as the vehicle for reporting the findings. This phase involved the researcher presenting the themes in a clear and coherent narrative, supported by direct quotes from the participants. According to Creswell and Poth (2018), writing the report was an essential part of qualitative analysis because it allowed the researcher to demonstrate how the themes are linked to the research questions and help answer them.

In the report, each theme was discussed in detail, with supporting evidence from the data. The researcher also reflected on how the findings related to existing literature, situating the study within the broader field of health sciences education. According to Yin (2015), linking the findings to previous research helped to enhance the credibility and relevance of the study's conclusions.

Throughout the report, the researcher remained mindful of the need to balance data interpretation with participant voice. The use of direct quotes from participants ensured that their experiences were central to the analysis, while the interpretive framework provided by thematic analysis allowed the researcher to make sense of the data in relation to the research questions.

Data saturation is a crucial concept in qualitative research, referring to the stage at which no new themes or insights are revealed from the data (Braun & Clarke, 2019). In this study, saturation was achieved after all 13 interviews were completed and analyzed, as no new themes emerged, and existing themes were well-developed and richly supported by the data collected.

Saturation was not predetermined by a set number of interviews but was rather judged based on the quality of data and the depth of themes uncovered after the coding process was completed. As emphasized by Fusch and Ness (2015), saturation was about the richness of the data rather than quantity. In reflexive thematic analysis, the researcher remained actively involved in determining when data saturation was achieved based on the depth of insights and the ability to fully explore key themes.

3.8 Trustworthiness of the Study

This qualitative research study assessed trustworthiness by Guba's fourfold criteria—credibility, transferability, dependability, and confirmability—deemed 'naturalistic equivalents' of validity and reliability (Guba & Lincoln,1985; Creswell & Poth, 2018). These criteria corresponded effectively with the qualitative research paradigm, as observed by Merriam (1995).

Member checking was conducted, giving participants the opportunity to review their interview transcripts and verify the accuracy of the recorded data. This step enhanced the credibility of the study by ensuring that the participants' voices were accurately captured (Creswell & Poth, 2018).

An audit trail was maintained to provide transparency throughout the research process, ensuring dependability and confirmability (Guba & Lincoln, 1985). By documenting each step of the research, from data collection to analysis, the researcher ensured that the study was conducted with rigor and that the findings were rooted in the participants' experiences.

Each criterion was discussed in detail below, highlighting measures taken by the researcher to ensure rigor and trustworthiness.

3.8.1 Credibility

Credibility, comparable to internal validity, was a fundamental aspect of trustworthiness in qualitative research (Shenton, 2004; Kakar and Akhter, 2023). It addressed how accurately the findings represented participants' realities, focusing on how well the researcher interpreted and presented participants' perspectives (Merriam, 1995; Shenton, 2004; Kakar and Akhter, 2023). The following measures were adopted to guarantee the credibility of this study:

Methodological rigor: The reflexive thematic analysis approach, widely used in qualitative studies, provided a robust method for analyzing participants' experiences (Braun & Clarke, 2022).

Participant credibility: The population described earlier was credible, and participants provided rich insights. They participated voluntarily and were allowed to withdraw at any time without penalty. No compensation was offered, further supporting ethical transparency.

Researcher positionality: As described in Chapter 1.7, the researcher's relationship with participants and positionality were disclosed, ensuring transparency regarding potential biases (Shenton, 2004).

Supervisory guidance and peer feedback: Regular supervisory meetings enriched the research process by providing guidance, identifying biases, and helping align the raw data with the final findings (Shenton, 2004). Peer review, as well as consultations with academics and colleagues, played a critical role in refining the study and ensuring credibility.

Researcher reflexivity: Reflexivity was an essential element of credibility. The researcher maintained a reflective journal throughout the research process, capturing thoughts and impressions that could help mitigate biases (Braun & Clarke, 2022). This reflexive approach was particularly important during the analysis phase, allowing the researcher to remain aware of personal interpretations influencing the findings.

Member checking: Member checking was one of the most crucial tools for establishing credibility (Guba & Lincoln, 1985). The researcher sent the transcribed interviews back to participants for their verification, allowing them to confirm or correct the transcripts. This process ensured that the data accurately reflected participants' experiences, and additional insights were gained through follow-up feedback.

The study also referred to the congruence between its findings and past research, particularly Van Zyl et al. (2019), which examined academic performance factors in South African first-year students. Findings from this study were consistent with earlier research, further reinforcing the credibility of the results (Shenton, 2004).

3.8.3 Transferability

Transferability referred to the degree to which the findings of this study could be applied to different contexts or situations, like external validity in quantitative research (Merriam, 1995). Shenton (2004) emphasized that transferability involves providing sufficient detail about the research setting and participants enabling readers to evaluate the relevance of the findings in their own contexts.

In this study, thick descriptions were provided, as outlined in Chapters 1 and 3, detailing the educational context of Emergency Medical Care (EMC) students. The study explored their academic experiences, balancing clinical work with academic expectations. By providing rich contextual descriptions, including participant characteristics, the study allowed readers to evaluate how relevant the findings might have been to other settings.

While qualitative studies were often conducted with smaller sample sizes, the depth of description enabled readers to assess whether the findings might have applied to similar educational environments. For instance, the findings might have been useful for other tertiary institutions seeking to improve academic support for EMC students.

3.8.4 Dependability

Dependability, comparable to reliability, concerned whether the findings of the study were consistent with the data collected (Shenton, 2004). A study was dependable if it could be replicated and its findings verified. In this study, dependability was achieved by maintaining a clear and thorough audit trail (Guba & Lincoln, 1985). This audit trail

included detailed records of each stage of the research process, including data collection, analysis, and interpretation.

Along with the audit trail, Chapter 3 provided a detailed account of the methodology. By offering a step-by-step guide to the research process, the researcher ensured that others could replicate the study and verify the results. Peer review also contributed to dependability, as colleagues provided feedback on the methodology and research process (Shenton, 2004).

3.8.5 Confirmability

Confirmability ensured that the findings were rooted in the data and accurately reflected participants' opinions rather than the biases of the researcher (Guba & Lincoln, 1985). Confirmability in qualitative research parallels objectivity in quantitative research. This study employed many ways to ensure confirmability.

Audit trail: The audit trail maintained throughout the study allowed transparency, as all decisions made during data collection, coding, and analysis were documented (Creswell & Poth, 2018).

Reflexivity: The researcher kept a reflective journal throughout the process, documenting potential biases and the evolution of thoughts as themes emerged. This reflexivity helped ensure that findings were not influenced by personal assumptions but were instead grounded in the data provided by participants (Braun & Clarke, 2022).

3.8.5.1 Findings Grounded in the Data

To establish confirmability, it was crucial to demonstrate that findings were grounded in the data, ensuring that they reflected participants' experiences. This was achieved by maintaining a detailed audit trail, allowing others to trace the research process (Guba & Lincoln, 1985). The audit trail included all notes, coding decisions, data syntheses, and interpretations, ensuring that the final findings could be linked back to the original raw data (Creswell & Poth, 2018).

The researcher incorporated direct quotes provided by participants throughout the data analysis to support the findings. These quotes provided a clear link between the themes

and participants' actual words, ensuring that the data grounded the final analysis (Shenton, 2004).

3.8.5.2 Researcher Reflexivity and Bias

As part of ensuring confirmability, the researcher engaged in reflexive practices throughout the study to minimize biases. Reflexivity was critical in qualitative research, as it allowed researchers to be aware of how their own perspectives might have influenced the interpretation of data (Braun & Clarke, 2022).

The researcher's positionality statement was included in Chapter 1.7, where the researcher reflected on potential biases and personal experiences that could have shaped the study. A reflective journal was kept throughout data collection and analysis, capturing thoughts on emerging themes, potential biases, and insights from the data to ensure that findings were as close as possible to the participants' true experiences.

3.9 Ethical Considerations

Ethical considerations were fundamental to ensuring that qualitative research was conducted with respect for participants' rights, dignity, and well-being. Braun and Clarke (2022) emphasized the importance of adhering to best practices in ethical research, particularly when working with human participants. Researchers were urged to ensure that studies were inclusive, culturally sensitive, and ethically sound. In this study, several measures were taken to ensure ethical compliance, and these were outlined below.

Ethical Approval

The Human Research Ethics Committee (non-medical) of the University of the Witwatersrand gave ethical approval. Additionally, approval was obtained from the private Higher Education Institution where the research was conducted. These approvals ensured that the study adhered to established ethical guidelines, particularly concerning the treatment of participants, data collection, and data management.

Ethical approval was critical for ensuring that the study complied with both institutional and professional ethical standards. As noted by Creswell & Poth (2018), seeking ethical approval at the outset of a study was an important step in demonstrating a commitment to conducting research that was respectful and responsible.

Informed Consent

Participants were given a detailed information sheet that outlined the purpose of the research, the methods used, and what would be required of them if they chose to participate. In accordance with ethical research practices, informed consent was obtained prior to data collection (Braun & Clarke, 2022).

Participants were asked to provide written consent to take part in the interviews and to be video recorded. It was clearly communicated that their involvement was voluntary and that they could withdraw from the study at any time without any negative repercussions. Additionally, it was made clear that participation would not affect their academic performance or grades. These steps ensured that participants were fully aware of the nature of their involvement in the research and could make an informed decision about participating (Shenton, 2004).

Data Anonymity and Confidentiality

Protecting participants' privacy and ensuring the confidentiality of their data were key ethical concerns in this study. All transcribed data were anonymized by removing participants' names and assigning code numbers instead. The names and corresponding code numbers were stored in a password-protected document, accessible only to the researcher and supervisor.

The anonymization of data was critical in qualitative research, as it protected participants from potential harm or embarrassment (Hammersley & Traianou, 2012). In addition, the Health Professions Council of South Africa (HPCSA) guidelines were followed, which required that data be stored securely for two years after publication or six years in the absence of publication (HPCSA, 2016). Data were stored on a password-protected hard drive, ensuring that unauthorized individuals could not access it.

Voluntary Participation and Right to Withdraw

Participation in the study was entirely voluntary, and participants were fully informed of their right to withdraw from the research at any time. This right was emphasized both at the start of the study and during the consent process. Participants were assured that their

withdrawal would not affect their academic standing or future interactions with the institution.

In qualitative research, it was essential to ensure that participants did not feel coerced or pressured into participating. As Creswell & Poth (2018) noted, providing clear and accessible information about withdrawal rights was a key element of ethical research practice.

Reporting and Data Storage

The results of this research will be communicated to participants and stakeholders at the private higher education institution. This reporting guaranteed that both participants and the university derived advantages from the research outcomes. Participants were notified that the study findings would be disclosed to them, and this transparency promoted the trust between the researcher and the participants. Data were stored following HPCSA guidelines, with all research data kept securely on a password-protected hard drive. As per ethical guidelines, the data would be retained for two years post-publication or six years if no publication occurred (HPCSA, 2016). These measures ensured that the study complied with professional standards for data storage and management.

By following these ethical guidelines, the researcher ensured that the study was conducted with the utmost respect for participants' rights and well-being. Following best practices for informed consent, data confidentiality, and voluntary participation helped safeguard participants' dignity while ensuring that the research findings were ethically sound and transparent.

3.10 Summary

An overview of the research methodology was provided in Chapter 3. The methodology was employed to explore EMC students' academic experiences, employing a qualitative approach with reflexive thematic analysis to collect and analyze data via semi-structured interviews. Ethical considerations, trustworthiness, and a diverse sample ensured rigorous data collection and analysis.

The next chapter, Chapter 4, will present the findings derived from the thematic analysis, detailing the factors that enabled or constrained the academic success of first-year DEMC students.

CHAPTER 4: RESEARCH FINDINGS & DISCUSSION

4.1 Introduction

This chapter presents the findings of the study, which explored the factors influencing academic success among first-year students in the Diploma in Emergency Medical Care (DEMC) program, specifically within the EMC I modules. Through a thematic analysis of the data, three prominent themes emerged, each highlighting key aspects of the students' experiences and the factors that either enabled or constrained their academic performance.

The first theme, *Learning Environments*, examines the impact of both clinical practice and simulated learning settings on students' academic success. These environments provide essential hands-on experiences but also present unique challenges that students must navigate.

The second theme, *Personal Factors*, encompasses individual traits and circumstances that affect students' academic outcomes. These factors include time management, motivation, stress management, and resilience, all of which play a critical role in students' ability to succeed in the demanding DEMC program.

The third theme, *Support Structures*, represents the participants' views on the formal and informal support systems available to students, including mentorship, peer support, and academic resources. This theme underscores the importance of a supportive environment in helping students overcome obstacles and reach their academic goals. This chapter presents each theme in detail, providing insights into how participants see these factors as collectively impacting the academic journey of first-year DEMC students.

4.2.1 Demographic and Biographical Data of Study Participants

Biographical data, including age, gender, along with data related to participants' prior qualifications and experiences in Emergency Medical Services (EMS), were gathered to provide context for the study's findings. There were 13 participants in total. These data points help characterize the study sample and offer insight into the participants' backgrounds, which may influence their academic success in the DEMC program. The

figures below present a summary of the participants' demographic characteristics and professional backgrounds.

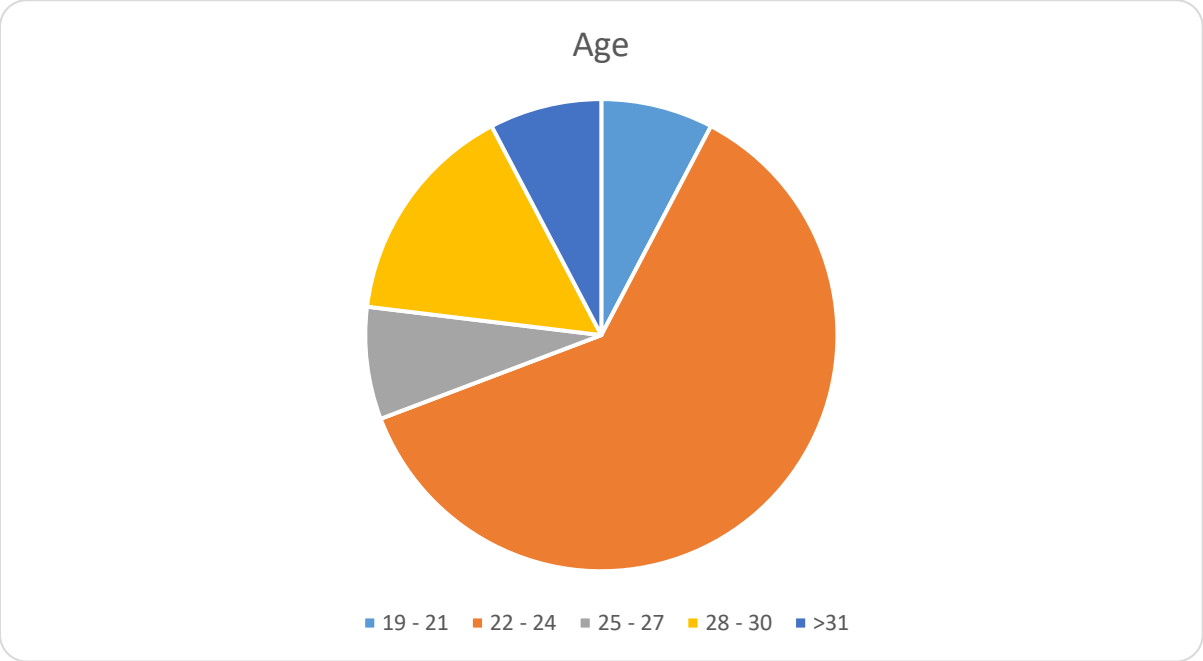

Figure 3: Age Groups of Participants

The figure above shows the age range of the 13 participants. The majority (62%) of participants fell within the 22-24 age group, indicating that most participants were in their early twenties. The remaining participants were distributed across the following age ranges: 19-21 (10%) 25-27 (8%) 28-30 (5%) >31 (15%) The participants ranged in age from 21 to 42, with an average age of 25. This distribution reflects a diverse age group, with most participants clustered in the early adulthood stage, while a smaller percentage of older participants contributed additional insights based on their varied experiences.

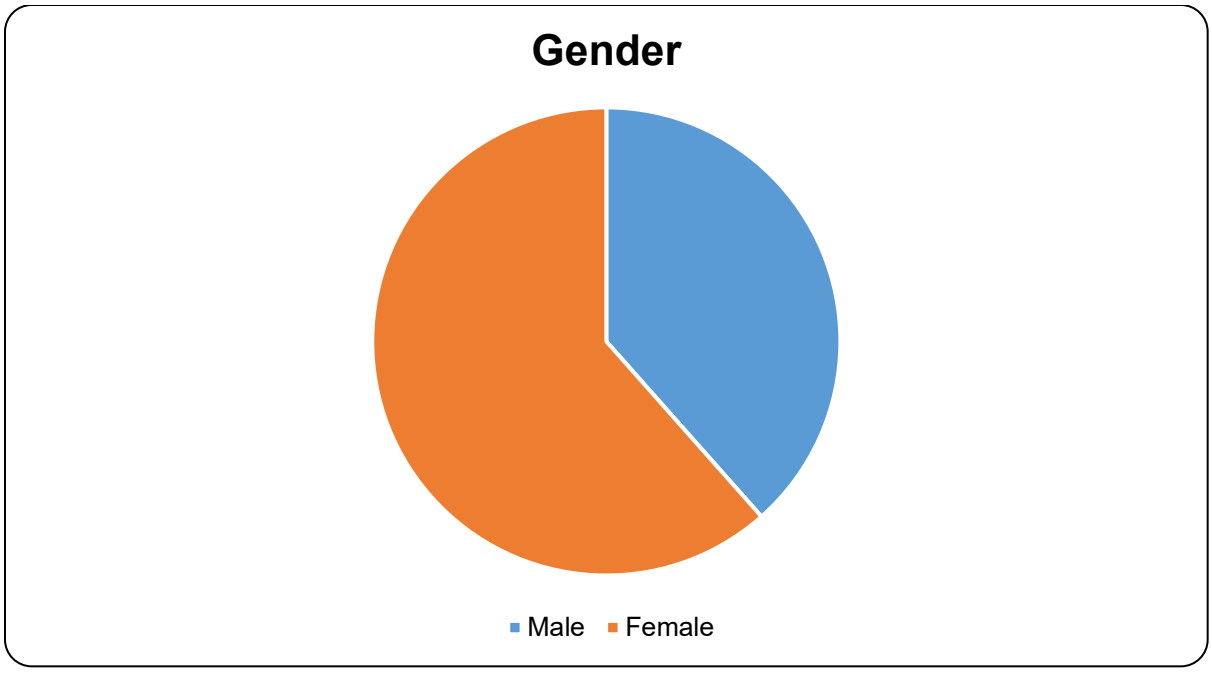

Figure 4: Gender of the Participants

The figure above shows the gender distribution of the 13 participants. Five participants were male, and eight participants were female. Notably, most of the female participants (75%) were also part of the largest age group, 22-24, indicating that young female participants represented the dominant demographic in terms of both age and gender within the study.

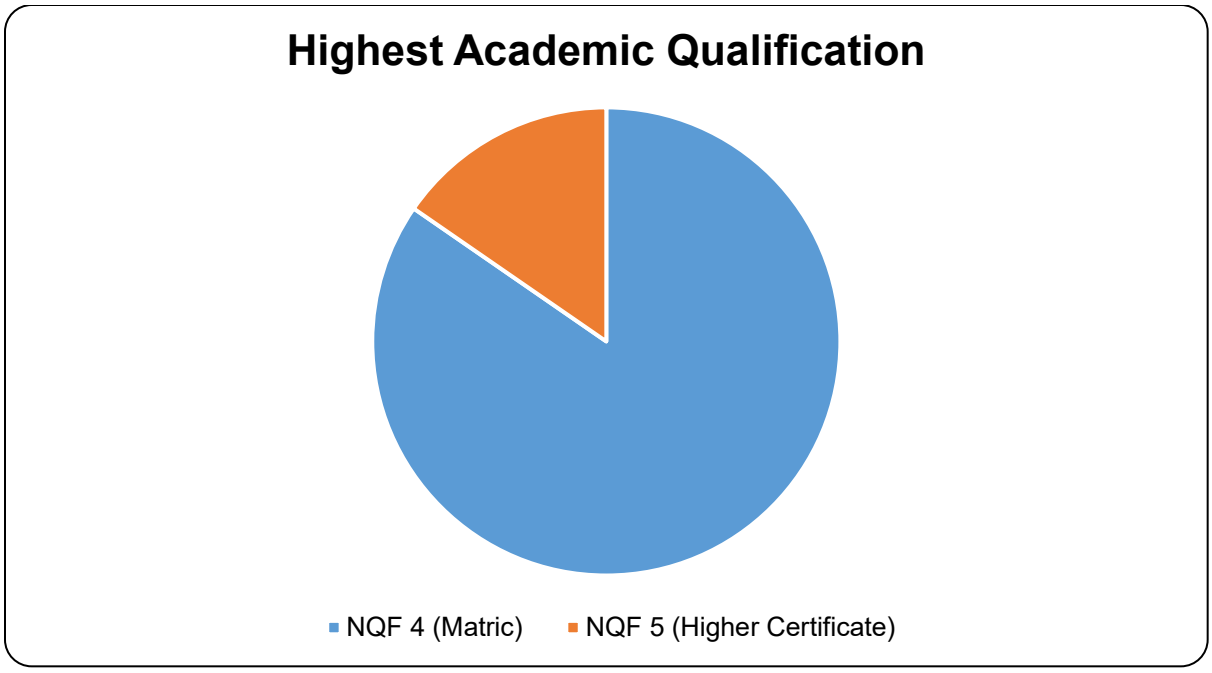

Figure 5: Academic Qualifications of Participants

The figure illustrates the highest academic qualifications obtained by the 13 participants before enrolling in the DEMC program. The majority (85%) of participants were school leavers who had completed matric (NQF Level 4). Two participants (15%) had obtained a higher certificate in Emergency Medical Care (NQF Level 5) before enrolling in the DEMC program.

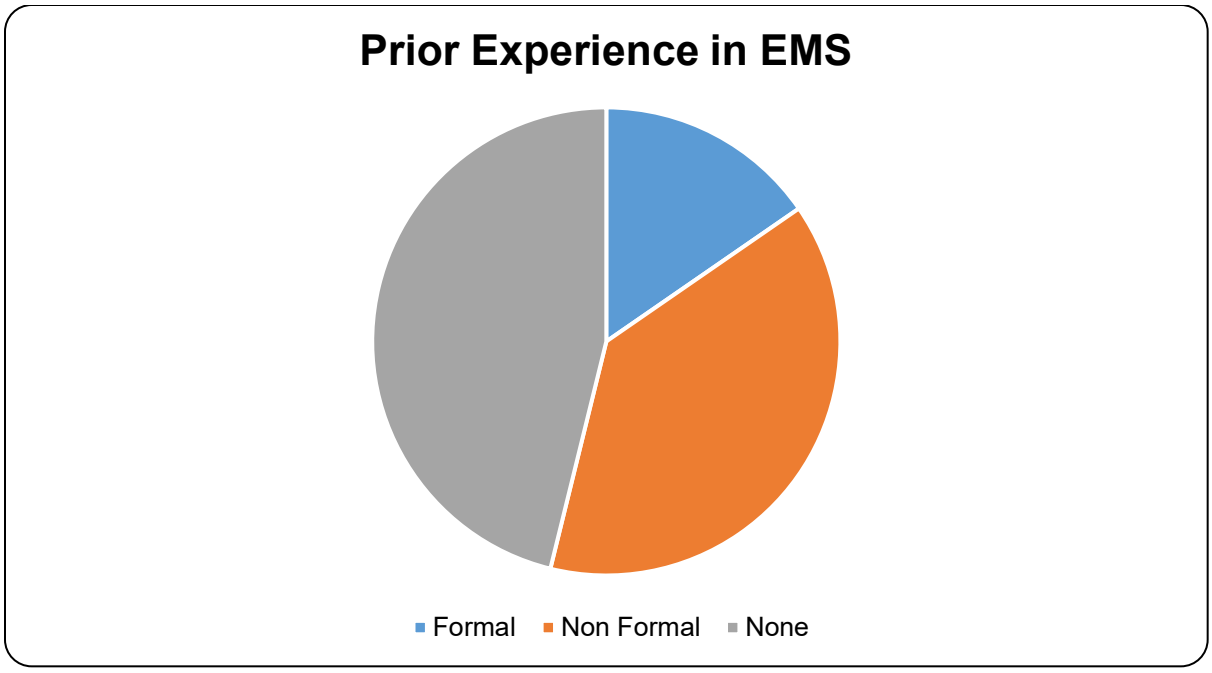

Figure 6: Prior Experience in EMS

The figure reflects the prior experience of the 13 participants in Emergency Medical Services (EMS) before enrolling in the DEMC program. The data indicate that 84% of participants had no formal experience in EMS before registration, of which 45% gained informal experience through volunteering at ambulance services or hospitals, though they were not registered with the HPCSA (Health Professions Council of South Africa) or employed full-time by recognized EMS organizations prior to registering. Only two participants (15%) had formal experience, meaning they had worked for an EMS and were registered with the HPCSA for at least one year before starting the DEMC program.

4.2 Findings

The data analysis revealed three significant themes, each demonstrating critical aspects affecting student success. These themes, presented in Table 4.1 below, encapsulate both enabling and hindering factors for learning.

Table 3: Themes and Sub-themes

Themes	Subthemes
Theme 1: Learning Environments	Clinical Practice Learning Environment Simulated Clinical Practice Learning Environment Campus Learning Environment
Theme 2: Personal Factors	Stress management
	Motivation, Maturity & Experience
	Study Skills
Theme 3: Support structures	Mentor Support
	Institutional Support
	Family Support

Theme one centers around the Learning Environments, including clinical practice and simulated learning, which play a crucial role in preparing students for real-world medical situations. This theme consists of three sub-themes which are Clinical Practice Learning Environment, Simulated Clinical Practice Learning Environment, and Campus Learning Environment respectively.

The second theme, Personal Factors, explores individual characteristics and behaviors affecting academic performance. It consists of three sub-themes namely stress Management, Motivation, Maturity and experience, and Study Skills. Finally, Theme three, Support Structures, highlights the importance of various forms of support, encompassing three sub-themes, which are Mentor Support, Institutional Support, and Family Support.

4.3 Theme 1: Learning Environments

The learning environments emerged as a critical theme in the study, referring to the various educational spaces students engage with during their studies, both on and off campus. Two learning environments were particularly prominent in shaping the students' experiences: the clinical practice learning environment, which provides real-world exposure under the guidance of experienced preceptors, and the simulated clinical learning environment on campus, which offers a safe space for skill development. This theme elaborates on participants' perceptions of these environments, focusing on factors that contribute to their success and the challenges they face.

4.3.1 Clinical Practice Learning Environment

The clinical practice learning environment featured most prominently in the participants' responses. Students are required to engage in clinical practice as part of the EMC Clinical Practice I module, where they work in both pre-hospital (emergency care services) and in-hospital settings under the supervision of preceptors. They are responsible for completing a portfolio of evidence, which includes specified hours, skills, case studies, and reflections. Students work 12-hour shifts, both day and night, as scheduled by clinical facilitators from the DEMC program.

Most participants expressed a strong preference for the EMC clinical practice module, with many describing it as their favorite module. For example, Participant 3 said, *"I felt like I flourished in that environment,*" and Participant 13 stated, *"I really enjoyed clinical, probably the most."* Participant 6 added, "*the clinical component I think I enjoyed the most...I like bringing a little bit of order to chaos."* These responses suggest that the clinical environment enables success by providing a sense of achievement and purpose.

However, some participants also noted the stressful nature of the clinical environment. Participant 1 described it as "*a very stressful environment*," and Participant 2 shared, "*I'm too scared to treat patients because what happens if I do something wrong.*" Participant 11 added that the pressure to perform well was high: "*it was difficult, the pressure was quite high*." The way participants described the clinical environment as "stressful," "difficult," and "traumatic" suggests they viewed it as constraining success. Participant

11's explanation of high pressure and Participant 3's note on trauma frequency supports this constraint.

Another challenge participants identified was exposure to traumatic events. Participant 3 explained, "*No person is born to see the type of stuff you see and at the frequency that you see it*," while Participant 11 stated, "*it's very traumatic for you*." Some participants also highlighted the emotional suppression expected in the EMS profession, with Participant 5 noting, "*you tell yourself that paramedics don't cry...you know you got to be strong.*" These challenges indicate constraints to academic success due to emotional and psychological demands.

Despite these challenges, participants described factors that helped them manage the stress of the clinical environment. Many emphasized the important role of preceptors, with Participant 8 stating, "*there were some phenomenal practitioners who made it really comfortable to work with them.*" Participant 2 highlighted the value of debriefing and constructive feedback, saying, "*that feedback is definitely something that students thrive off*." The presence of supportive preceptors provided much-needed guidance and reassurance during clinical placements.

Additionally, participants noted the importance of a positive attitude and preparation in building relationships with preceptors. Participant 1 shared, "*I show up early for shift...like they see that you're motivated*," and Participant 10 emphasized the importance of humility and competence: "*just be humble and know your stuff before you go to the emergency department*."

4.3.2 Simulated Clinical Learning Environment

The simulated clinical learning environment also played a significant role in students' academic success. Participants acknowledged that the EMC Practical I module serves as a bridge between theory and real-life application. Participant 2 expressed enthusiasm for the simulated learning environment, saying, "*for your SIMS and OSCEs...Absolutely loved that part*," while Participant 3 added, "*the practical, the OSCEs I really enjoyed*." However, some participants also found the simulated clinical learning environment stressful, with Participant 10 stating, "*to do a simulation will always be the most stressful*

part.” Despite this, the simulated environment was seen as a safe learning space, where students could develop their clinical skills without the risk of harming patients. Participant 2 explained, “*if you mess up, it's okay...you can go back and try again*.”

Most participants emphasized that the simulated clinical environment helped to conceptualize theory, making abstract knowledge more tangible and easier to understand. Participant 4 stated, “*it takes very long for me to understand my theory, but when I blend it in with my practical, then it starts making sense*,” and Participant 11 echoed this sentiment: “*I think once we integrated it with the physical aspect of it, which was the theory and the practical’s, it became a bit easier to sort of solidify that theoretical knowledge.*”

4.3.3 Campus Learning Environment

Although less commonly discussed, social interaction with classmates on campus was also identified as a factor influencing the learning environment. The campus learning environment plays a role in fostering social interaction among students, which impacts the overall educational experience. This is often overlooked but is vital for creating a supportive and collaborative atmosphere. As Participant 3 noted, "*having a class dynamic where everyone wants everybody else to succeed makes the biggest difference*," highlighting how positive social interactions on campus can enhance the learning environment by promoting mutual support and collective success.

4.4 Theme 2: Personal Factors

This theme elaborates on personal factors that significantly impact academic success, including stress management, internal motivation, maturity and experience, and study skills. Participants identified these personal traits as vital to their success, noting that the absence of these factors can hinder academic progress and negatively affect overall achievement. This section will explore each sub-theme in detail.

4.4.1 Sub-theme: Stress Management

Several participants mentioned stress management as an essential factor contributing to their academic success. While participants described their initial reaction to the program as exciting, it was clear that the program also induced stress and was overwhelming.

Participant 1 expressed this by saying, "*it was a great experience, a bit of stress, very stressful environment*," and Participant 2 similarly noted, "*it was very overwhelming...it is this constant state of being stressed…and you can see that it, it does start to affect you*."

Participants discussed various strategies to cope with stress and build resilience, such as self-care and exercise. Participant 3 highlighted the importance of fitness in maintaining mental health, stating, "*the fitness played a big like a big deal in what we were doing… because your mental state plays such a big role*." Participant 9 echoed this sentiment, saying, "*whenever you have free time, go gym, you're helping yourself*." Participant 13 elaborated on the importance of taking breaks, exercising, and engaging in hobbies to reduce stress, emphasizing the need for balance: "*The fitness actually helped with the mental health… I still try to do some of my own hobbies in between… just get your mind off everything*."

The importance of emotional regulation also emerged as a key theme. Participant 3 reflected on the EMS field's tendency to suppress emotions, explaining, "*as paramedics, we get this block...emotions are for afterward we'll deal with that later*." Participants emphasized that acknowledging and addressing mental health was crucial to academic success. Participant 3 mentioned, "*if you are in a bad space mentally, no matter how many hours you sit in front of that book, nothing is going to be retained*."

4.4.2 Sub-theme: Motivation, Age, Maturity, and Experience

Internal motivation—driven by passion, commitment, perseverance, and determination—was identified as a key factor in achieving academic success. Several participants emphasized the role of intrinsic motivation in persisting through the program. For instance, Participant 2 described the importance of maintaining passion: "*Don't forget the passion that you came here with... There's going to be good days, but there's also going to be days…you feel so overwhelmed...but don't forget why you started*." Other participants shared similar views, highlighting how internal drive helped them overcome challenges.

Participants also recognized the significance of maturity and life experience. Participant 6 stated, "*I think what helped me is that I'm a little bit older. I've had life experience. I have*

people's experience…things aren't as overwhelming." Several participants with prior EMS exposure noted that this experience was reported as giving them a distinct advantage. Participant 8 remarked, "*having some previous knowledge did help greatly*," indicating that prior experience made the transition into the program less overwhelming.

For younger participants, the transition from high school directly into the DEMC program was particularly challenging. Participant 3 shared, "*I came straight from matric...so I was very young and still kind of trying to grasp my time management issues*."

4.4.3 Sub-theme: Study Skills

Participants highlighted the importance of study skills in coping with the workload and fast pace of the DEMC program. Most participants noted that preparing for assessments in advance and employing various study techniques were critical to their success. Participant 1 stated, "*start like 4 weeks before exam...start summarizing, start learning*." Participant 12 said, "*I found reading medical journals really helped me understand better*."

The use of study groups also emerged as a beneficial strategy, with Participant 10 saying, "*getting somebody else with me that's also studying with me...helped me with notetaking and making summaries.*" However, some participants acknowledged that a lack of study skills hindered their progress. Participant 3 admitted, "*I struggled to retain information...all my answers were really surface level*."

4.5 Theme 3: Support Structures

Support structures emerged as crucial in enabling students' academic success, specifically through mentor support, institutional support, and family support. This section explores each sub-theme, with emphasis on the role these support systems play in students' learning and development.

4.5.1 Sub-theme: Mentor Support

Mentor support played a pivotal role in facilitating students' academic success and personal growth. Many participants highlighted that they sought support from peers, recent graduates, and EMS practitioners to guide their learning and address challenges.

Most participants emphasized the importance of peer support for practical guidance. Participant 1 noted, "*We usually help each other with the experienced guy and, the non-experienced person assisting each other*. *I was very fortunate; I had mentors that had graduated a year before, they sat me down beforehand. They kind of sat me down beforehand… It's a lot of hard work, there are long hours, there's a lot you need to prepare yourself for*."

The support provided by EMS practitioners allowed participants to bridge theoretical learning with real-world application. Participant 2 mentioned, "*Becoming quite good friends with a couple of the practitioners...I'm struggling with this concept if you could help.*"

4.5.2 Sub-theme: Institutional Support

Institutional support was multifaceted, addressing curriculum delivery, mental health resources, and community-building. These supports were fundamental in shaping students' experiences and success in the program.

Participants noted the structured nature of the program as a major advantage. Participant 8 shared, "*It was very organized*," and Participant 6 observed, "*heavy workload in the beginning, but… you kind of get to grips with everything*."

The institution's flexibility was also valued. For instance, participants in the extended year option found that it offered them additional time to adapt to academic demands and manage the workload. Participant 7 mentioned, "It is a really good option...just lighten that load slightly in your first year."

The availability of mental health and wellness resources was another aspect of institutional support that students found valuable. Participant 9 emphasized the importance of debriefing sessions on campus, noting that "*healthy ways of coping with stress*" were essential.

Faculty support was noted as a cornerstone of the institutional experience. Participants appreciated the faculty's approachability, as highlighted by Participant 6, "*The lecturers were all very accommodating*," and Participant 12, "*The lecturers are amazing…they're willing to help*."

Finally, the institution fostered community and collaboration by encouraging social interaction among students. Participant 3 noted, "*We've seen an increase in the number of social events... creating a comfortable, safe space*."

4.5.3 Sub-theme: Family Support

Support from family emerged as another essential factor impacting students' academic success and personal well-being. Most participants noted that a strong family support system helped them navigate academic challenges and maintain balance. Participant 7 shared, "*I have a great support system from family and friends*," and Participant 13 expressed similar sentiments: "*My family was very supportive*." e.g., 70% of participants believed family support was crucial, whereas 30% noted challenges. Some participants, however, mentioned a lack of understanding from family regarding the course's unique demands. Participant 3 stated, "*But I don't think our families are quite ready for what is demanded of us… long shifts, heavy fitness sessions*."

4.6 Discussion of Findings

4.6.1 Learning Environments

The clinical practice learning environment, simulated clinical practice environment, and social interactions emerged as three influential settings impacting students' academic success factors. These environments complement each other, offering unique contributions to students' development. Participant 4's comment, "*when I blend it in with my practical, then it starts making sense*," supports this complementarity.

Many participants expressed a strong affinity for the EMC clinical practice I module, highlighting it as their favorite part of the DEMC program due to its motivational and educational benefits. 60% of participants (e.g., Participants 3, 13) expressed this affinity. Working directly in clinical settings allowed students to apply theoretical knowledge, according to participants' preferences.

However, participants noted significant challenges within clinical practice, including the stress associated with patient safety, fear of failure, performance pressure, and exposure to traumatic events. These findings suggest a need for trauma support programs. Warren-James, Hanson, Flanagan, Katsikitis, & Lord (2021) documented similar findings,

reporting that paramedic students experience heightened stress during ambulance placements, especially from witnessing death and fearing clinical mistakes. Fjeldheim, Nöthling, Pretorius, Basson, Ganasen, Heneke, Cloete & Seedat, (2014) also identified high levels of anxiety and PTSD among paramedic students due to such trauma exposure. Jennings (2017) further noted how paramedic students downplay their emotions to meet professional expectations, echoing Participant 5's statement: "*paramedics don't cry*." This highlights the need for emotional resilience training, strengthening the study's implications for practice.

To succeed in the clinical environment, participants emphasized the critical role of preceptors, describing supportive and approachable mentors as invaluable. Therefore, preceptor training should prioritize approachability. Constructive feedback and debriefing sessions were also noted as essential for growth. Newton, Cross, White, and Gushta, (2017) corroborate this, finding that positive student-preceptor relationships create a supportive learning environment essential for achieving learning outcomes. Some participants, however, felt that not all preceptors were approachable, which added to the stress of their placements. So, addressing preceptor variability could enhance learning outcomes.

Participants expressed enthusiasm for the simulated learning environment, especially the EMC Practical I core module. This has implications for training emergency healthcare workers by expanding simulation use. Williams et al. (2016) found similar results, noting high satisfaction with simulation-based training among paramedic students and supporting its role as a valuable complement to clinical placements. Many participants mentioned that simulations provide context and solidify theoretical knowledge, allowing them to apply concepts in a controlled environment. Sandy et al. (2021) also found that simulation training bridges the gap between theory and practice, improves clinical competencies, and enhances self-confidence without risking patient safety. Jeffries' Simulation Theory (2015) emphasizes the value of simulation-based learning in clinical education.

Social interactions among classmates also influenced the classroom environment, enhancing the overall educational experience.

In conclusion, both clinical practice and simulated environments are vital for student development, integrating theory with practical application. While they offer unique benefits, such as real-world experience and safe practice, they also present challenges that can impact student well-being and performance.

4.6.2 Personal Factors

Personal factors, including stress management, motivation, maturity, experience, and study skills, significantly impacted students' academic success and ability to thrive within the demanding DEMC program. Lazarus and Folkman's Stress and Coping Theory (1984) can help explain how students appraise and cope with stressful academic demands. Craft (2005) shows that exercise can improve mental well-being and act as a buffer against stress. Hochschild's Emotional Labor Theory (1983) posits that in high-stress, service-oriented professions like EMS, individuals often regulate their emotions to meet job expectations. Yerkes-Dodson's Law (1908) describes how moderate levels of stress may enhance performance, but excessive stress leads to a decrease in performance.

Participants described their experience as both exciting and overwhelming due to high levels of stress. Fjeldheim et al. (2014) identified common stressors in paramedic training such as trauma exposure, peer relationships, preceptor expectations, and rigorous coursework. This aligns with the current study's findings, which show that high stress levels during clinical placements and on-campus training affect well-being and academic achievement. Steyn and Sibanda (2016) also found that burnout among South African first-year students negatively impacts academic performance, underscoring the need for effective psychological support pathways. Acknowledging and managing stress was reported as critical for academic success, with participants emphasizing self-care, exercise, and breaks to reduce stress. Anderson (2017) highlighted similar coping mechanisms in paramedic training, noting that active self-care strategies promote resilience and well-being.

Lee, Choi, & Kim (2019) also found that resilience programs enhancing coping skills, self-efficacy, and burnout prevention benefit paramedic students, contributing to academic

success. Therefore, resilience programs should be integrated. Therefore, self-care training is recommended.

Motivation, Maturity, and Experience were also crucial for academic success. Deci and Ryan's self-determination theory (2000) underscores the role of intrinsic motivation in sustaining engagement through challenging tasks, which aligns with participants' descriptions of motivation as an inner force. Vallerand, Pelletier, Blais, Brière, Sénécal, and Vallières (1993) highlights that intrinsic motivation—fueled by personal interest and passion—drives individuals to succeed even in the face of obstacles. Evans, Ward, and Smith (2010) suggest that older students often have enhanced emotional regulation and better problem-solving skills due to their life experiences. Jerez (2024) found that maturity is positively associated with academic performance, outperforming their younger peers due to higher self-efficacy and intrinsic motivation. Kolb's Experiential Learning Theory (1984) posits that prior experience enhances learning by allowing individuals to apply new knowledge in familiar contexts. Tinto's Student Integration Model (1975) suggests that younger students often struggle with adjusting to the academic and social demands of higher education due to limited prior exposure to such environments. Maturity and prior EMS experience were reported as giving some students a distinct advantage. Whyte, Madigan, and Drinkwater (2011) found that mature entry predicts academic success in nursing and paramedic programs, suggesting that mature students bring intrinsic motivation and skills suited for student-centered learning. Whyte et al., (2011) similarly found that previous EMS experience enhances intrinsic motivation and deeper learning, reflecting the findings of this study on the impact of maturity and experience on academic achievement. This suggests targeted support for younger students.

Study Skills were reported as crucial for managing the workload and fast pace of the DEMC program. Gettinger and Seibert (2002) and Crede and Kuncel (2008) argue that strong study skills, such as time management and effective notetaking, are correlated with higher academic performance. Khan, Dawar, Yasin, Abid, Hussain, Balqias, & Hussain et al. (2021) highlights that study habits, including time management, goal setting, and creating optimal learning environments, strongly correlate with academic

success in medical students. Abdulrahman et al. (2021) confirm this correlation, finding that effective study habits enhance performance. Self-regulated learning emerged as essential, with some participants acknowledging struggles in mastering time management and workload. This indicates a need for time management workshops. Vygotsky's Social Constructivist Theory (1978) explains that peer collaboration fosters deeper learning, as individuals can assist each other in achieving better understanding through shared knowledge and dialogue. Craik and Lockhart's Depth of Processing Model (1972) suggests that deeper levels of cognitive processing led to better information retention, emphasizing the importance of moving beyond surface learning. Zimmerman and Schunk (2012) highlight the importance of self-regulation in managing academic workloads.

4.6.3 Support Structures

Support structures, including peer collaboration, mentorship, institutional resources, and family support, were viewed as pivotal for students' academic success and personal development. Maputle and Sehularo (2016) found similar results in South African nursing students, highlighting that resilience is closely linked to peer, mentor, lecturer, and family support, as well as self-determination. Lee et al. (2019) found that peer support enhances learner satisfaction, reducing stress and promoting positive feelings McSharry et al. (2021) also observed that peer practice in clinical settings improves skills and reduces stress compared to practicing solely with instructors, supporting this study's finding on peer support mitigating simulation practice stress in the EMC Clinical Practice I module. Van Ryzin and Roseth (2019) emphasize the importance of peer interactions and cooperative learning structures, which foster a safe and motivating classroom environment where students feel connected and engaged.

Mentorship, especially from recent graduates and EMS professionals, was invaluable. Participants valued these mentors' insights and guidance, which facilitated the connection between theory and practice. Crisp and Cruz (2009) show that this type of mentorship enhances both confidence and motivation, as individuals with shared experiences provide valuable insights and emotional support. Dale (2013) noted that structured mentorship in clinical placements enhances learning outcomes, mirroring participants' experiences in

this study. Kolb's Experiential Learning Theory (1984) posits that learning is enriched when students connect theoretical knowledge with practical experience.

Institutional support, including curriculum delivery and wellness resources, further bolstered academic success. Participant 8's comment, "*It was very organized*," supports this. Participants in the extended year option, e.g., Participant 7, reported flexibility and reduced stress. Bernstein's (2000) Classification and Framing Theory suggests that structured knowledge and well-communicated objectives facilitate students' understanding and engagement, reflected in participants' positive experiences with clear program guidelines. Ramaila and Reddy (2015) found that extended curricula address transition challenges in health sciences, supporting these findings. Tinto's Student Integration Model (1975) emphasizes that organized, structured learning environments facilitate smoother transitions and better academic integration for students. Astin's Theory of Involvement (1999) asserts that flexibility within academic programs enhances student commitment by allowing them to engage at their own pace. Stallman (2010) and Sabir (2022) suggest that wellness support contributes significantly to students' overall academic performance and well-being.

Faculty Support was highly valued, with participants describing lecturers as approachable and accommodating, particularly assisting at-risk students. Bulan, Cabatan, and Espiritu, (2025) and Schreiber (2016) show that positive faculty-student interactions enhance student engagement and success, underscoring this study's findings. The institution's provision of counseling and wellness services was crucial for managing stress and trauma, aligning with Elof (2020) and Steyn and Sibanda (2016), who emphasize mental health resources as essential in supporting student well-being.

Family Support was essential for emotional stability and resilience. Although many participants reported strong family backing, some faced challenges due to family members' limited understanding of EMS program demands. Data on first-generation students is limited; further participant input is needed. Naicker and Van der Merwe et al. (2020) found that first-generation students often lack adequate family support due to a lack of awareness about higher education demands, echoing participants' experiences in this study. Cutrona and Russell (1990) note that family support can act as a buffer against

academic stress, helping students manage their workload and maintain well-being. Roksa and Kinsley (2019) found that family emotional support promotes physiological well-being and improves student engagement thus beneficial for academic outcomes. The study's unique South African context requires further exploration. Findings may reflect global trends due to limited contextual data.

Collectively, these support structures provide comprehensive assistance, reinforcing the need for holistic support systems that address social, emotional, and academic needs, contributing to students' success and well-being.

4.7 Summary

This chapter presented findings on factors influencing academic success among first-year DEMC students in EMC I modules, identifying three themes: Learning Environments, Personal Factors, and Support Structures. Learning Environments, including clinical and simulated settings, enable success through hands-on experience but pose challenges like stress and trauma, necessitating preceptor support and simulation expansion. Personal Factors, such as stress management, motivation, and study skills, are critical, with implications for resilience training and admissions criteria based on maturity. Support Structures, including peer, mentor, institutional, and family support, bolster success, though data on first-generation students and contextual uniqueness require further investigation. Limitations include potential global alignment and data gaps, suggesting future research into local factors and student subgroups.

CHAPTER 5: CONCLUSION

5.1 Introduction

This research study has explored the multifaceted landscape of academic success for first-year Diploma in Emergency Care (DEMC) students, with a particular focus on the critical Emergency Medical Care I (EMC I) modules. By delving into the experiences of these students, this study has sought to identify challenges and support that shape their academic performance. Now, in this concluding chapter, the researcher will synthesize these findings to offer actionable recommendations.

5.2 Summary of Key Findings

The findings indicated an intricate relationship between internal and external factors significantly influencing the DEMC program's academic success. This addresses the research question and meets the objectives to explore enabling and constraining factors.

Internal Factors: Preparedness, intrinsic motivation, resilience, and effective stress management all play important roles in students' success, aligning with Theme 2 (Personal Factors) and sub-themes such as Stress Management, Motivation, Maturity & Experience, and Study Skills from Chapter 4. Students with a strong background and foundational knowledge in mathematics and science reported much higher confidence in navigating the curriculum, as noted in the findings. Students who lacked this foundational knowledge struggled a lot more, especially with the theoretical components of the EMC I modules, which was also reflected in Chapter 4's discussion.

External Factors: Structured mentorship, accessible academic resources, and simulation-based learning in all institutional support systems are critical to students' success, corresponding to Theme 3 (Support Structures) and sub-themes Mentor Support, Institutional Support, and aspects of Learning Environments from Chapter 4. Participants in this research frequently highlighted how mentorship from experienced practitioners greatly assisted in helping to connect theoretical knowledge with clinical practice, as presented in the findings of Chapter 4.

Key Challenges: The demands of academic coursework, clinical placements, and high-stress levels create significant barriers for students. They often complain about being able

to manage their time effectively and maintain their resilience under pressure. The lack of, or rather absence of, structured resilience training worsens these challenges, making some students overwhelmed during critical stages in the program.

5.3 Significance of the Study

Several significant contributions to the field of emergency medical education are made by this research, especially in a South African context, building on the background provided in Chapter 1. These are supported by the research findings:

The study addresses a critical and underexplored population within the emergency medical care education system, as noted in Chapter 3's population discussion, shedding light on this population's unique challenges in navigating higher education in a very demanding field.

The research findings provide actionable recommendations for educators and administrators in the South African context, as detailed in Section 5.4, including designing programs and support systems that better meet the needs of first-year students, such as integrating simulation-based training and mentorship programs to help improve preparedness and reduce students' stress.

The study also finds how relevant theories such as Self-Determination Theory and Kolb's Experiential Learning are in understanding and ultimately improving student academic outcomes, as discussed in Chapter 2's literature review and Chapter 4's discussion.

The research offers insights specific to the South African context, including how socioeconomic and educational inequalities influence student experiences, as explored in the literature review (Chapter 2) and discussion (Chapter 4), with broader implications for addressing challenges in other resource-constrained settings.

5.4 Recommendations

Building on the findings, the following recommendations are proposed to enhance academic success in the DEMC program:

Recommendations for Practice:

Strengthen Preparatory Programs: Introduce pre-enrollment workshops or bridging courses to improve students' foundational knowledge in mathematics, sciences, and study skills, based on findings of students' confidence levels. Consideration of feasibility and integration into the curriculum, including the physical component of the program, is recommended.

Implement Resilience Training: The development and integration of structured resilience training programs are recommended, based on findings of stress challenges. These programs should focus on equipping students with evidence-based stress management techniques, emotional regulation strategies, and effective time management skills. Such programs may encompass workshops, facilitated peer support groups, and facilitated access to mental health services, contributing to enhanced student well-being.

Enhance Mentorship Opportunities: Expand mentorship programs by pairing first-year students with experienced practitioners who can guide academic and clinical challenges, based on findings of mentorship's role in bridging theory and practice. This approach could help students build confidence and navigate the program's demands more effectively.

Increase Simulation-Based Learning: Incorporate more simulation exercises into the curriculum, based on findings of their role in building confidence, allowing students to practice and refine their skills in a low-risk, controlled environment to reduce anxiety and improve readiness for real-world scenarios.

Recommendations for Education:

Ensure that academic support services, such as tutoring and counselling, are readily available and tailored to the specific needs of emergency medical care students, based on findings of support structure importance.

Recommendations for Research:

Four areas can be identified for future research to build on this study namely, broader comparative studies, quantitative validation, longitudinal studies and a focus on socioeconomic and cultural factors.

With broader comparative studies, it is recommended that future research initiatives undertake cross-institutional studies to investigate whether similar challenges and support mechanisms are present in emergency medical care programs both within South Africa and internationally, aligning with this study's focus on identifying challenges and supports. Such comparative analyses could yield valuable insights into the commonalities and differences across diverse educational contexts.

Delving into Quantitative Validation, future researchers can use surveys or other quantitative methods to validate the findings on a larger scale and identify statistically significant trends, building on this study's qualitative insights.

A third way is to examine Longitudinal Studies by exploring the long-term impact of interventions, such as mentorship and resilience training, on student outcomes and retention rates, extending this study's findings.

Finally, researchers could focus on Socioeconomic and Cultural Factors by investigating how socioeconomic disparities, cultural backgrounds, and linguistic differences shape student experiences and success in emergency medical education, further contextualizing this study's insights.

5.5 Limitations

While the study offers valuable insights, it is not without limitations:

Single Institution Focus: The study was carried out at a single institution in Gauteng, which may not fully represent the range of experiences across different programs or regions in South Africa. The regional difference, such as compared to KZN, might influence experiences, and including both campuses could have provided varied insights due to differing profiles.

Additional challenges in the research process include:

Access to Participants: Relying on campus managers to engage with students might have impacted on their willingness to participate, especially if researchers were in a different country.

Using the Online Environment: Conducting interviews via Zoom introduced challenges such as students' competence with internet access and issues like load shedding, which are particularly prevalent to the South African setting and may have limited the depth of data collected.

5.7 Conclusion

This study has clarified the dynamic and multifaceted nature of academic success within emergency medical education. By exploring the experiences of first-year Diploma in Emergency Medical Care (DEMC) students, this study underscores the critical importance of creating supportive and adaptive learning environments that address academic and emotional challenges. The findings presented herein hold implications for policy development, curriculum design, and the provision of tailored student support services. Ultimately, these insights contribute to the development of highly competent and resilient emergency care professionals, equipped to meet the demands of a challenging and vital profession.

The recommendations arising from this research – including the need for strengthened preparatory programs, integrated resilience training, expanded mentorship opportunities, intensified simulation-based learning, and holistic support systems – offer a roadmap for enhancing academic success within the DEMC program. Moreover, the proposed avenues for future research—namely, broader comparative studies, quantitative validation, longitudinal analyses, examinations of socioeconomic, cultural, and linguistic factors, and exploration of faculty training—provide a framework for continued inquiry and improvement in emergency medical education.

As South Africa continues to grapple with the complex challenges of addressing disparities in education and healthcare, this research contributes a valuable perspective for improving outcomes in a critical field. By fostering a more adaptive and equitable educational landscape, we enhance not only the journey of the emergency care professional, thereby strengthening the nation's capacity to provide timely and effective medical care to all its citizens. The journey towards academic success for DEMC students is ongoing, and this study serves as a crucial step in that important endeavor.

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APPENDIX A : PARTICIPANT INFORMATION SHEET

Annexure C: Participant Information sheet

Good day

My name is Anneke Jackson. I am a Masters student in Health Science Education with the University of the Witwatersrand, Johannesburg. My supervisors are Mrs. Shirra Moch, Dr. Constance Khupe, Dr. Lizelle Crous. I am conducting a research study to explore Diploma in Emergency Medical Care students' perceptions of the subject, Emergency Medical Care I. The study title is Factors that affect academic success: The perspective of First Year Emergency Medical Care students in a private institution in South Africa.

.

I am inviting you to take part in an interview using the zoom videoconferencing application. If you decide to take part, your participation in this research study will last about 20 minutes. The online interview will be scheduled convenient to your availability.

With your permission, I would like to have the interview recorded (video and audio). The original files will be deleted once the audio has been extracted. Only the audio recording will be used in data transcription and the transcription will be used for analysis. The anonymized transcribed data will be stored for secondary analysis in a password protected hard drive at the facility for 2 years post publication or 6 years in the absence of publication and will be deleted after 2 years post publication or after 6 years in the absence of a publication. Only the researcher will have access to the data.

During the research activity, I will need to ask for some personal information about you, including gender, age, previous experience in the Emergency Medical Services field and prior qualifications.

The interview will be confidential. When I share the results of the research study, I will not include your name or anything else that could identify you. With your permission, other researchers may use the data collected from this research study, but your name and any personal information will not be used or passed on.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. By taking part in the study will not affect your academic performance in any way. No feedback will be provided to course coordinators. You will not get any direct benefits if you choose to join the research study. You will not lose any services; benefits or rights you would normally have if you decide not to join. Taking part in the research study will not cost you anything. You will not be paid for being in this research study. Your data costs to participate in the interview will be reimbursed to a maximum of R150.

The risks for this research study are no more than what happens in everyday life / some of the questions asked may make you feel sad or upset. If this happens, I will stop the interview and continue another time. If you need some support or counselling services following the interview, these are available free of charge at Netcare Akeso. The name of the counsellor is Megan Hosking and the contact details for the counsellor is megan.h@akeso.co.za.

This research study will be written up as a full dissertation. If you would like to receive a summary of this dissertation, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Researcher:

Annexure C: Participant Information sheet

Anneke Jackson, E-mail: annekejackson@icloud.com

Supervisors:

Mrs. Shirra Moch, E-mail: Shirra.moch@wits.ac.za

Dr. Constance Khupe, E-mail: constance.khupe@wits.ac.za

Dr. Lizelle Crous, E-mail: Lizelle.crous@wits.ac.za

APPENDIX B: CONSENT FORM (GOOGLE FORM TEMPLATE)

Participation in Masters Study of Anneke Jackson

The purpose of this form is for you to volunteer to participate in my research study.

* Indicates required question

Topic: Factors that affect academic success: The perspective of First Year Emergency Medical Care students in a private institution in South Africa.
Purpose of study: To explore the lived experiences of the participants that were registered, full time, on the Diploma Emergency Medical Care (DEMC) course for Emergency Medical Care (EMC) I.
Confidentiality and Anonymity: I will not include your name or anything else that could identify you. If you decide to take part in the research study, it should be because you want to volunteer. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. By taking part in the study will not affect your academic performance in any way.

Your participation is highly appreciated.

Best regards

Anneke Jackson

Agreement to participate in research study

1. Do you agree to participate? *

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to section 7 (Declined participation)*

Consent Form

I agree to the following:

2. I understand what this study is about. *

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to section 7 (Declined participation)*

3. I understand that I can volunteer to take part in the study.

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to section 7 (Declined participation)*

4. I agree that the interview may be video recorded.

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to section 7 (Declined participation)*

5. I agree that the interview may be audio recorded.

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to section 7 (Declined participation)*

6. I agree that direct quotations from my interview may be used by the researcher in their research report.

Mark only one oval.

- ◯ Yes
- ◯ No *Skip to section 7 (Declined participation)*

7. I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report).

   Mark only one oval.

   - ◯ Yes
   - ◯ No *Skip to section 7 (Declined participation)*

8. I agree that other researchers may use the information I provide in my interview (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on.

   Mark only one oval.

   - ◯ Yes
   - ◯ No

Skip to question 9

Demographic Details

Please provide answers to the following demographic details as accurate as possible:

9. Age

_____

10. Gender

_____

11. Prior qualifications

_____

_____

_____

_____

_____

12. Previous experience in EMS field

Preferred method of contact to schedule interview.

13. Please enter the Cellphone number or E-mail address in the space below: *

Preferred time and date to schedule interview

14. *

Example: 7 January 2019

15. *

Example: 8.30 a.m.

Declined participation

You have elected not to participate, you can click the submit or simply close the browser

APPENDIX C: SEMI-STRUCTURED INTERVIEW GUIDE

Annexure F: Semi-structured Interview guide

The information in the table below will be elicited in the google form.

Biographical Information	
Gender	
Age	
Previous experience in EMS field	
Prior qualifications	

These questions will be used in the interview:

1. Describe the components of the EMC I subject/module?

2. Tell me about your experience of the EMC I subject/module?

   Probing questions:

   - The EMC I subject consists of the three modules as you have mentioned. Tell me about your experience with each one of these modules.
   - Can you give more detail, about which component of the subject/module you found the easiest and which component the most difficult and why?
   - What would you say made you successful in passing EMC I and/or which factors made it difficult to pass EMC I?

3. What strategies did you incorporate to deal with the challenges mentioned?

4. What support do you feel is needed to achieve academic success?

1

APPENDIX D: ETHICAL APPROVAL LETTER FROM THE UNIVERSITY OF THE WITWATERSRAND

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Jackson

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H22/11/18**
PROJECT TITLE	Factors that affect academic success: The perspective of First Year Emergency Medical Care students in a private institution in South Africa
INVESTIGATOR(S)	Mrs A Jackson
SCHOOL/DEPARTMENT	Health Sciences/
DATE CONSIDERED	18 November 2022
DECISION OF THE COMMITTEE	Approved Risk Level: Low
EXPIRY DATE	02 March 2026

DATE 03 March 2023 **CHAIRPERSON** _____
(Professor J Watermeyer)

cc: Supervisor : Prof S Moch

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **A SIGNED COPY** returned to the Secretary electronically. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. I/**we agree to completion of a regular progress report. For Minimal and Low Risk studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.**

Jackson
Signature

6/3/2023
Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

APPENDIX E: APPROVAL LETTER FROM THE PRIVATE INSTITUTION'S RESEARCH OPERATIONS COMMITTEE

RESEARCH OPERATIONS COMMITTEE FINAL APPROVAL OF RESEARCH

Approval number: UNIV-2023-0014

Ms Anneke Jackson

E mail: ajackson@hct.ac.ae; annekejackson@icloud.com

Dear Ms Anneke Jackson

RE: FACTORS THAT AFFECT ACADEMIC SUCCESS: THE PERSPECTIVE OF FIRST YEAR EMERGENCY MEDICAL CARE STUDENTS IN A PRIVATE INSTITUTION IN SOUTH AFRICA

The above-mentioned research was reviewed by the Research Operations Committee's delegated members and it is with pleasure that we inform you that your application to conduct this research at Private Education Institution, has been approved, subject to the following:

i) Research may now commence with this FINAL APPROVAL from the Committee.

ii) All information regarding the Company will be treated as legally privileged and confidential.

iii) The Company's name will not be mentioned without written consent from the Committee.

iv) All legal requirements with regards to participants' rights and confidentiality will be complied with.

v) All data extracted may only be used in an anonymised, aggregated format and for the purposes of this specific study as specified in the proposal. The data may under no circumstances be used for any other purpose whatsoever.

vi) The Company must be furnished with a STATUS REPORT on the progress of the study at least annually on 30th September irrespective of the date of approval from the Committee as well as a FINAL REPORT with reference to intention to publish and probable journals for publication, on completion of the study.

vii) A copy of the research report will be provided to the Committee once it is finally approved by the relevant primary party or tertiary institution, or once complete or if discontinued for any reason whatsoever prior to the expected completion date..

viii) The Company has the right to implement any recommendations from the research.

ix) The Company reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects/ Company or should the researcher not comply with the conditions of approval.

x) APPROVAL IS VALID FOR A PERIOD OF 36 MONTHS FROM DATE OF THIS LETTER OR COMPLETION OR DISCONTINUATION OF THE STUDY, WHICHEVER IS THE FIRST.

We wish you success in your research.

Yours faithfully

1/4/23

Prof Dion du Plessis
Full member: Research Operations Committee & Medical Practitioner evaluating research applications as per Management and Governance Policy

Dr Shannon Nell
Chairperson: Research Operations Committee
Date: 11/4/2023

This letter has been anonymised to ensure confidentiality in the research report. The original letter is available with author of research