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ORIGINAL RESEARCH REPORTS

Structural Conditions Influencing Postgraduate Education Uptake By South African Emergency Care Practitioners

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Abstract

Background: **The prehospital field of Emergency Medical Care urgently requires a generation of practitioners capable of engaging in research and advancing the profession through evidence-based practice. The paucity of prehospital-specific research necessitates a deeper understanding of the factors that influence agency in Emergency Care Practitioners (ECPs) to pursue or eschew postgraduate education, as this impacts the development of the prehospital emergency medical care field in South Africa.**

Objective: **To identify the structural conditions that influence Emergency Care Practitioners to pursue or eschew postgraduate education.**

Methods: **This study employed a mixed-method exploratory sequential research design, integrating a qualitative phase framed by social realism to explore the reasons behind Emergency Care Practitioners' motivations to pursue or eschew postgraduate education. This phase included six focus group discussions and two individual semi-structured interviews with 49 and two (2) participants respectively. The data obtained informed a broader subsequent quantitative phase. Thematic analysis was employed to analyse the qualitative data.**

Results: **Three themes were identified from the data. Socio-economic conditions, a poor fit of academic identity in the EMS profession, and the interaction between academic and operational structures motivated Emergency Care Practitioners to eschew postgraduate education.**

Conclusion: **Structural conditions owing to the socio-economic circumstances, the nature of the EMS profession and the academic world experienced within the South African prehospital milieu collectively motivated Emergency Care Practitioners to eschew postgraduate education. These findings give the EMS profession insight into the structural conditions that need to be addressed to improve the postgraduate-seeking behaviour of ECPs.**

Keywords: Emergency medical services, Prehospital, Postgraduate education, Social realism, Emergency care practitioners

1. Introduction

Globally, healthcare systems strive to deliver high-quality care, necessitating practices consistent with current best evidence [1]. However, the majority of healthcare-related research originates from high-income countries (HICs), focusing on their specific patient populations. This raises challenges regarding the applicability and transferability of such research to low- and middle-income countries (LMICs), including South Africa [2,3]. The paucity of research originating from LMICs, particularly in the field of emergency care, demands that those in the health care system go on to make meaningful contributions to the knowledge economy of LMICs by advancing practice through research-related activities aimed to improve health outcomes and patient care [4,5].

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Accordingly, there is a pressing need within South Africa for a new generation of Emergency Care Practitioners (ECPs) who can engage in research and promote evidence-based practice. These practitioners have completed a four-year Bachelor's degree or three-year Diploma followed by a two-year part-time degree. The undergraduate program does not provide sufficient research training, and those ECPs who want to add research to their professional skillset must pursue postgraduate education. Engaging with research necessitates that ECPs pursue postgraduate education to acquire essential research skills and generate local evidence-based prehospital guidance to address the significant burden of injury and illness in South Africa.

Despite this, many South African learners avoid postgraduate study for various reasons, including financial constraints, academic demands, time management challenges, and social obstacles [6–9]. Furthermore, South African postgraduate students are more likely to abandon their studies early due to poor academic supervision, personal issues, and financial constraints [10]. While these studies are conducted in other disciplines, such as nursing, it is likely that ECPs face similar issues given the same higher education setting. It is important to identify the factors that influence ECPs' postgraduate education choices given the shortage of ECPs in South Africa, the lack of prehospital-specific research, and the huge number of paramedics who work and study abroad. These decisions have implications for the paramedic workforce and the development of the prehospital profession in South Africa.

We employed Archer's social realism theory as an analytical framework to explore these factors to synthesise and explain ECPs' opinions regarding postgraduate education [11–14]. The study explored why ECPs eschew postgraduate education.

2. Methods

The study followed a mixed-method exploratory approach using Archer's social realism in the qualitative arm of the study to investigate why ECPs choose to pursue or eschew postgraduate education. According to Archer, 'parts' refer to pre-existing structural and cultural conditions that influence 'people' [13,15]. The agency of ECPs can be described as the actions or motivations arising from their internal conversations. We propose that these internal conversations are shaped by the structural and cultural conditions experienced by ECPs, influencing their decisions to pursue or eschew postgraduate education. This manuscript reports on the qualitative findings related to the influence of structural conditions on the agency of ECPs to eschew postgraduate education.

2.1. Participants and recruitment

At the time of data collection, 851 ECPs were registered with the Professional Board for Emergency Care of the Health Professions Council of South Africa [16]. The sample included ECPs practising their profession abroad and within South Africa, as we aimed to explore the structural conditions across the diverse landscape of South Africa. Emergency Care providers not on the ECP register were excluded as they cannot pursue postgraduate studies in emergency medical care.

Purposive and snowball sampling methods were used to recruit participants from three categories within the prehospital milieu: operational, academic, and managerial. The participants were knowledgeable and shared characteristics relevant to the phenomena being studied. Operational ECPs worked within EMS operations managing patients; academic participants were undergraduate and postgraduate course conveners, while managerial participants were managers within their respective Emergency Medical Services in South Africa. Practitioners not on the ECP register were excluded from this study.

2.2. Study setting

Registration with the HPCSA is a prerequisite for any Health Care Professional treating patients in South Africa. ECPs who have completed a four-year degree in emergency medical care or a three-year diploma followed by a two-year part-time degree, account for 2.1% of those registered with the professional Board for Emergency Care. They are the highest qualified emergency care personnel in the South African prehospital setting, possessing skills such as rapid sequence intubation and thrombolysis [17]. Based on the South African national qualification framework, ECPs are the only prehospital providers eligible for postgraduate education to enhance their knowledge and research capacity in Emergency Medical Care.

2.3. Data collection

The semi-structured interviews and focus group discussion guides were created based on the study's objectives, and a comprehensive literature review. The guides were developed with the input from all authors and piloted on South African Emergency Care Technician (ECT) graduates who had elected

to seek or forego their ECP qualification. ECTs are prehospital care practitioners with a two-year National Certificate in Emergency Care and a mid-level emergency medical care education certificate. No amendments were made following the pilot study. The first author conducted all interviews in English.

Research advertisements were distributed via prehospital-specific social media sites, EMS-specific training institutions, emergency medicine and related postgraduate support platforms and organisations. These endpoints and individuals were encouraged to share the research advertisement with known ECPs. Of the 71 individuals who expressed interest, 51 were recruited for the study. Due to the COVID-19 pandemic and geographic diversity, an online medium was used for engagement. Participants received a study information letter and expression of interest form before sessions, facilitating categorisation into operational, academic, and managerial groups. Thereafter, participants were asked to consent to participate in the study and audio recording.

Semi-structured interviews (n = 2) and focus group discussions (n = 6) were conducted with ECPs (n = 33), facilitators in undergraduate and postgraduate programmes (n = 15), and different key players in the EMS profession (n = 3). Semi-structured interviews were conducted with ECPs in senior management roles, as not to disturb the natural flow and dynamic nature of the focus group discussions. All participants gave informed written consent. All interviews and focus groups were audio-recorded. The interviews and focus group discussions lasted for 60–80 min. These recordings were transcribed verbatim, with all participants' identities deleted before analysis.

2.4. Data analysis

The transcribed verbatim interview and focus group discussions were validated through member checking. NVivo (version 12.6.1) software and Braun and Clarke's six-step thematic analysis guide were used in data analysis to organise the data [18,19]. Initial coding involved grouping similar views, concepts, and ideas that emerged while reading the transcripts, followed by identifying differences and similarities to develop comprehensive codes.

The study was underpinned by Archer's social realist theory, which operationalises analytical dualism as a mode of analysis. Archer argues that the social world emerges from the interplay of structure, culture, and agency [20]. While the emergent properties of structure and culture culminate to condition, but do not determine the actions of people, analytical dualism enables a disentanglement of structure or culture from agency and that of structure from culture for the purpose of analytic assessment [20]. In the case of this study, it was imperative to analyse the data separately within each coded event to identify the structural conditions that were at play, specifically as they were related to the agential conditions that influence ECPs to pursue or eschew postgraduate education.

2.5. Trustworthiness of the study

Guba's criteria for establishing trustworthiness directed the study's academic rigour [19]. Credibility was enhanced by including ECPs who operated locally and internationally, reducing location-specific biases. Focus group discussions and interviews were conducted to foster rapport and promote honesty and candour among participants during the discussions. Member verification was employed for credibility, and detailed descriptions of the research background, participants, and findings were provided to promote transferability. An audit trail and peer review ensured dependability, while reflexivity and consideration of contradictory data enhanced confirmability.

2.6. Reflexivity

The first author, an active ECP in the United Arab Emirates during data collection, provided an authentic perspective on the research problem, which was seen as a strength. The other two authors supervised the data collection and analysis processes.

2.7. Ethical considerations

Participants' anonymity was protected through de-identifying data during analysis and reporting. Informed consent was obtained from all participants, and confidentiality in focus group discussions was encouraged. Furthermore, all participants were informed of their ability to freely consent to participation in the study, with no retributive consequences for withdrawing at any stage (autonomous individuals). While confidentiality in focus group discussions cannot be assured, members were encouraged to avoid discussing conversations with other parties after the session. All study data were stored on a password-protected device.

The study received approval from the Durban University of Technology Institutional Research Ethics Committee (IREC 089/21).

3. Results

A total of fifty-one (51) participants (Table 1) were enrolled in this study. Six focus group discussions were conducted with 49 participants and two individual semi-structured interviews, lasting between 60 and 80 min.

Table 2 depicts the three themes that motivate ECPs to eschew postgraduate education. We found structural conditions emerging from the socio-economic conditions, Academic identity fits poorly into the EMS Profession, and the interplay between the academic and operational structures influence ECPs to eschew postgraduate education. Although analysed separately in terms of logical and sociological frameworks, these elements likely exhibit synergistic interactions [21]. Pseudonyms were used to ensure confidentiality.

Table 2. Conditions that motivated ECPs to eschew postgraduate education.

Themes related to	Sub-themes
Socio-economic conditions	Financial incentives Financial support Social supportive structures
Poor fit of academic identify in the EMS profession	Support for postgraduate education Capacity for postgraduate qualification holders Industrial relevance of postgraduate education
Interplay between the academic and operational structures	Relationship between academia and profession Academic challenges

3.1. Theme 1: Socio-economic conditions

Financial incentives, financial support, and social support structures were key structural conditions influencing ECPs to eschew postgraduate education. Participants highlighted the absence of financial incentives and career progression pathways to substantially influence their agency in becoming a postgraduate qualification holder within the pre-hospital milieu:

> *"… there is no financial remuneration beyond the degree holder within EMS. … (and) there is no career progression plan affiliated with (a) master's or PhD studies for them; why should they then do it?" (Fagri)*

Discourse shared during the focus group discussions suggested that operational ECPs had poor access to financial support measures and eschewed such pursuits:

> *"Some people have access to bursaries, where most of us within operations do not." (John)*

> *"There are no (postgraduate) bursaries for operation(al) staff." (Pam)*

> *"But I have access to financial support, almost everyone in academia has access. I am not sure why the rest of you (operations) do not" (George)*

While finances are an important consideration in pursuing postgraduate education, Dave shared the importance of social support structures in this cause:

> *"I have a family, I have kids, I need to support them. I can't deal without the 8-hour allowance. I can't live without this job. I need time to look after my kids and do for them. If I can't be afforded time off work to study, like those people in the college, then how will I be able to study and survive? We are living from month to month. I can't progress at the expense of my family".*

Maria noted systemic barriers:

> *"The (education) system is there to sort of exclude us. I will use a simple example: I am the first black one to graduate from university in my family, and then you register for a master's. They (the university) say you must look for your own supervisor. (Others have) like uncles, aunties, sisters-in-law, brothers-in-law and all those in-laws who have their master's and whatever. He just has to pick up the phone and choose one. So, for me, who doesn't have an auntie or uncle (relatives)? I must go and look at strangers … Now what about those who follow in my footsteps? This causes*

Table 1. Distribution of study participants across EMS sectors.

Category	Current place of work		Number of participants
	South Africa	Abroad	
Operational ECPs	17	10	27
Academic ECPs	11	4	15
Managerial ECPs	4	2	6
Stakeholders in the EMS profession	2	1	3
Total	**34**	**17**	**51**

them to be excluded from going through this successfully.

3.2. Theme 2: Poor fit of academic identity in the EMS profession

The term profession refers to the operational setting of EMS, the specific workforce components primarily responsible for rendering emergency medical care in the prehospital milieu. The key findings suggested that the prevailing conditions within the EMS profession motivated ECPs to eschew postgraduate education. These findings related to the support for postgraduate education, capacity for postgraduate qualification holders, and the industrial relevance of postgraduate education.

ECPs shared their realities and perceptions that condition their internal conversations:

"… the idea of postgraduate education is not actually supported for us on the road (operations). … Practically nothing changes, so people go like, why should I go and study again while I will continue doing the very same thing?" (Frank)

"EMS will support everyone beneath an ECP. All non-NQF or short course holders will be supported. The ECP qualification is the ceiling in the operational field, and there is no room or allocated place for anything above an ECP. Our service and the HPCSA have not made provision for that, and our EMS will not. So, what is the use?" (Albert)

Participants highlighted the lack of infrastructure, academic presence, and the associated feelings of loneliness within the EMS profession to further influence their internal conversations in this regard:

"I have first-hand experience with this. I am a master's student, and I sit on shift alone in a corner and work on my assignments. There is no safe working space that allows for these activities, and I need to sit in a communal noisy space or in the ambulance to get work done. When I need help or guidance, there is no person within my workplace that can aid me." (Dave)

One of the participants provided insight into their reality and alluded to the perceived relevance of postgraduate education to the EMS profession:

"I completed my master's almost four years ago now, and what has changed since then? I was able to help with policies and some projects because of my ability to produce quality documents, (and) nothing more. I am still just an ambulance driver. The operations component of EMS needs to have specific positions where they can use me effectively. I do not want to go to the college or the university to lecture." (Jerry)

Participants emphasised the lack of defined roles for postgraduate qualification holders:

"I studied and put in countless hours to complete my (undergraduate) degree, became a competent clinician; this allowed me to enter into EMS and have a purpose. This purpose is transparent, and all ECPs know this. From the start, it is clear how our training will help us fulfil this role. What are the roles of postgrad(uate) qualification holders in EMS? What is their purpose? These are not really well defined" (Siya)

3.3. Theme 3: Interplay between academic and operational structures

Emergent structural conditions borne from within the academic world motivated ECPs within the prehospital milieu to eschew postgraduate education and, conversely, those within the academic world to pursue such education. These findings relate to the conditions owing to the relationship between the academic world and the profession, and the academic challenges experienced by ECPs.

ECPs in the rural regions of South Africa noted the disparity between academic and operational advancements:

" …. the universities, (and) the colleges they have all improved, they have rapidly developed by changing from the short courses and started professionalising things. They have moved forward nicely; we are no longer seen as a product of vocational training; we are products of professional training. The operations (industry) has really not changed at all; they have been more on the receiving end and are more caught up in trying to keep afloat. The entire concept of EMS in SA is flawed. It is not (a) single unit moving forward together. It's more like a bar graph, one's development is radical, and the other is moving at the pace of a snail." (Peter)

ECPs highlighted the absence of academic presence within the EMS profession:

"I sometimes feel that (the) absence of academic people or even academic voice in the field (industry) makes us feel excluded from going to do this. If you look at how many operational staff are really studying further, then you will see it's those who have the social networks or have some form of academic interaction in their personal lives and not here at work." (Jack)

The finding suggests that the articulation gap has manifested at the postgraduate level and may

influence the postgraduate-seeking behaviours of those who have completed their undergraduate degrees.

> *"Well, today, I still feel ill-prepared for the postgraduate journey. I feel my BTech (undergraduate degree) did not prepare me like I am continuously building education to deal with the tasks in front of me. That transition from the didactic method used in our vocational education (undergraduate training) to what we experience during postgrad(uate education) is chalk and cheese." (Siya)*

Another argument was advanced that to ensure more ECPs embark on postgraduate journeys, EMS higher education should respond comprehensively to ensure ECPs are appropriately prepared for the demands of postgraduate education.

> *"… We are in an ambulance all day, interacting with members of the public, people who access EMS, (the) majority of whom do not have a formal education – these condition us to engage at a certain level. Those of you who are lecturers (academic setting) have something that makes this transition easier: you are exposed to formal documents every day and setting up lessons and engaging with research. Your context prepares you for that setting, where ours (operational setting) actually handicaps us.*

4. Discussion

This qualitative study aimed to identify the powers and properties of structural conditions that influence ECPs' agency to eschew postgraduate education. To our knowledge, this is the first study to describe these influences within the context of emergency care personnel in Africa. Structural conditions, as defined by participants, extend beyond tangible or material resources, recurring patterns of social behaviour, or interaction between different elements of EMS society to that which were deemed more EMS-specific by participants – the overall conditions arising from the presence or absence of these structures within the prehospital milieu [20,22]. These conditions are modifiable, unlike cultural conditions, which are deeply ingrained and harder to change. As the findings demonstrate, structural conditions related to socio-economic conditions, poor alignment of academic identity within the EMS Profession, and the interplay between academic and operational structures motivated ECPs to eschew postgraduate education.

Socio-economic factors impact postgraduate-seeking behaviour in Africa [23,24]. Our study findings underscore the necessity for financial incentives to align with pursuing a postgraduate qualification within the prehospital milieu. This finding is contrary to Bailey et al.'s findings that financial incentives were less important in pursuing postgraduate education among medical doctors [25]. We found that the lack of financial remuneration and clear career progression pathways discourage South African ECPs from pursuing postgraduate education. This is consistent with Xu et al., who state that better job eligibility is a primary motivator for healthcare students' postgraduate plans [26]. In South Africa, a country grappling with unemployment, poverty, issues of social inequality and social injustice, postgraduate education offers a potential escape from these conditions [6,27–30]. However, it appears that postgraduate education does not equate to better jobs or financial improvement within the prehospital milieu.

Brouwer et al. assert that social capital derived from relationships and support from peers and/or family, positively influences learning outcomes and student success [31]. Similarly, we found that being a first-generation postgraduate learner with limited social capital motivated ECPs to eschew postgraduate education. The challenge with equity within South African higher education, as noted by Chetty and Pather [32], and the legacy of apartheid, as discussed by Saidi [33], further complicate this issue. Postgraduate learners from underprivileged backgrounds often lack basic research skills needed for their studies [34]. Whitehead argues that family, race and social standing, which contribute to learners' social capital, are among the strongest predictors of success among South African postgraduate learners [42]. The predominant form of pedagogy in postgraduate education is supervision. It becomes understandable that ECPs will be motivated to eschew postgraduate education when turning to a complete stranger owing to the lack of social and societal capacity for this support [35]. Based on these findings, we postulate that South Africa's history of institutional discrimination, segregation and inferior schooling systems based on race and social standing have influenced the lack of supportive structures available to ECPs [27,33,36,37].

The study also found that support for postgraduate education within the EMS profession extends beyond what Crawford argued to be EMS systems' omissions for postgraduate qualification holders: a lack of professional progression, pathways and improvement in clinical ability [38]. Unlike the medical profession, where postgraduate education improves job eligibility [26], the EMS profession lacks infrastructure, academic presence, and peer support, leading to feelings of isolation

among ECPs. This finding is consistent with McLaughlin and Sillence [39], who noted the benefits of specialised support from academic peers, and Fergie et al., who advocated for dedicated spaces to develop postgraduate academic identity [40].

While remaining relevant by being adaptable within the context of one's field is a theme closely linked to the desired innovative practices of postgraduate qualification holders [41], we did not find this to be the case for operational ECPs. Participants perceived current postgraduate education options as unsuitable, given the lack of specific roles or positions for graduates within the EMS profession. This perception echoes Crawford's argument that the profession and its associated governing structures (HPCSA) had failed to capacitate the EMS profession with the necessary registrations and roles that would utilise postgraduate qualifications effectively. Internationally and, more recently, locally, the emergency care nursing profession has harmonised postgraduate programs with speciality practice, ensuring relevance and employability. However, postgraduate-qualified ECPs remain "just ambulance drivers" in South Africa.

The disproportionate relationship between academia and operations was identified, exacerbating the paucity of prehospital-specific research within Africa. Ahmed et al. highlighted the benefits of a collaborative relationship between academia and industry for knowledge dissemination [42], but this was not observed in this study. The discord between academic and operational structures limits the development of relevant new knowledge and contributes to the isolation of ECPs pursuing postgraduate education [43]. This gap, and systemic omissions in the South African context foster a sense of inferiority and imposter syndrome among ECPs [44].

Our study highlights the influence of structural conditions on the postgraduate education-seeking behaviour of ECPs. The participants, who occupy leadership roles, are at the forefront of prehospital clinical training, rendering emergency care, and hold strategic managerial positions. While qualitative studies are not generalisable, including ECPs from diverse roles enriched the trustworthiness of our findings by providing a comprehensive understanding of the phenomena. This study alludes to the unique nature of ECPs within the South African prehospital milieu, thus challenging the transferability of these findings to other prehospital care providers. Future research should consider these contextual differences when applying these findings to different populations.

5. Conclusion

This study reveals the influence of structural conditions on the postgraduate seeking behaviour of ECPs. Socio-economic factors, the poor fit of academic identity in the EMS profession, and the gap between academic and operational structures all contribute to the decision to eschew further education. Addressing these structural conditions-such as providing financial incentives, establishing clear career pathways, and fostering better integration between academic and operational settings may improve the postgraduate-seeking behaviour of ECPs. Future research should explore the development of a prehospital-specific academic identity to motivate postgraduate education and enhance the EMS knowledge economy.

Other disclosure

None.

Declarations

This study was approved by the Institutional Research Ethics Committee of Durban University of Technology (IREC 089/21). Informed consent was obtained from all participants included in this study.

Conflict of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of data

The datasets used and analysed during the current study are available from the corresponding author upon reasonable request.

Ethical approval

Ethics approval was granted from the Durban University of Technology Institutional Research Ethics Committee (IREC 089/21).

Abbreviations

ECT	Emergency Care Technicians
ECP	Emergency Care Providers
EMC	Emergency Medical Care
EMS	Emergency Medical Services
FGDs	Focus group discussions
HICs	High income countries
LMICs	Low- and-middle -income countries

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