

RESEARCH REPORTS

GLOBAL PARAMEDICINE AND EMS DOCTORATES: A REGISTRY-BASED ANALYSIS

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ABSTRACT

Background: Doctoral education is an indicator of research capacity and professional maturation. However, the global scope and characteristics of paramedicine/EMS doctorates have not previously been systematically described.

Methods: A global registry-based study of completed doctoral dissertations authored by paramedics, EMTs, or other health professionals working in the out-of-hospital setting was undertaken using systematic searches of dissertation databases, repositories, registry sources, and stakeholder verification.

Results: A total of 406 completed paramedicine/EMS doctoral dissertations were identified. Completions increased substantially after 2010, with most conferred in the USA, Australia, and the UK. PhDs accounted for the majority ($n=305$; 75.1%), while professional doctorates comprised 81 dissertations (20.0%) and were concentrated in the USA ($n=63$; 77.8% of professional doctorates).

Conclusion: Paramedicine/EMS doctoral output has grown substantially but remains clustered in a small number of countries and institutions. The registry offers a practical baseline for showing where doctoral activity is already established, identifying where supervision capacity remains limited, and where future doctoral pathways may need support.

INTRODUCTION

Paramedicine and emergency medical services (EMS) have progressively transitioned from a mainly vocational workforce to a university-based health profession with growing roles in education, research, and leadership (Polat & Köse, 2025). In health professions, doctoral education is commonly used as an indicator of disciplinary maturity and long-term research capacity (Eaton, 2019; Hill & Eaton, 2023). In established health professions such as nursing and physiotherapy, dissertation-based analyses have been used to benchmark doctoral activity and identify research priorities, with previous studies reporting on areas such as patient care, education, professional development, and movement-related scholarship. Comparable international benchmarking has been lacking for paramedicine/EMS despite

sustained growth in peer-reviewed scholarship (Beovich et al., 2021; Stolt et al., 2017; Wikström-Grotell et al., 2018).

This study developed a global registry of completed paramedicine/EMS doctorates. The aims of the study were to quantify doctoral output over time, describe its distribution by country and institution, compare doctorate types, and profile primary supervisor backgrounds and title-derived research themes. Recent work has reported on paramedicine doctorates through the voluntary, self-reported Paramedic PhD registry, which provides a useful but incomplete overview of doctoral activity because it relies on self-submission and variable updating (Whitley, 2025).

Voluntary self-reporting registries are vulnerable to incomplete capture, self-selection, and inconsistent follow-up, which can reduce coverage and affect the accuracy of population profiling (Gilbert et al., 2018; Harron et al., 2020). For this reason, a multi-source registry can move the discussion beyond who has self-submitted their details and towards a more defensible estimate of the field's doctoral activity. This study extends Whitley's (2025) overview by applying a structured, multi-source registry methodology to identify a more comprehensive global count of completed paramedicine/EMS doctorates.

METHODS

STUDY DESIGN AND REPORTING

A descriptive registry-based study was undertaken of completed doctoral dissertations authored by paramedics, EMTs, or other health professionals clearly evidenced as working in the out-of-hospital setting. Searches were conducted across ProQuest Dissertations & Theses Global, EBSCO OpenDissertations, Open Access Theses and Dissertations (OATD), Trove, NZResearch, CiNii Dissertations, and Figshare, supplemented by registry sources, selected institutional repositories, and targeted web searches. Search concepts combined paramedicine/EMS terms with doctoral dissertation terms and were adapted for each database. No date restrictions were applied to the search. Targeted engagement was undertaken via social media and direct email to international contacts and professional networks to identify additional eligible records not captured through database and repository searches. Given the registry-based design, a formal PRISMA review flow was not applied; however, registry sources, eligibility, verification process, missing data, and key reproducibility limits are reported.

ELIGIBILITY CRITERIA

Eligibility was determined based on explicit information within the dissertation record, including author credentials, professional affiliation, or evidence of an out-of-hospital clinical role. For this study, out-of-hospital was interpreted as paramedicine, EMT, ambulance, prehospital, emergency medical services, retrieval, transport, community paramedicine, or comparable field-facing clinical practice. Authors working in hospital roles were included only where the available record also showed a clear EMS or out-of-hospital professional background; hospital-only health professionals were excluded unless this link could be verified. Dissertations were included only where completion status could be verified through repository or catalogue records. Records were excluded if they were in progress, unpublished, or lacked sufficient evidence to confirm the author's professional background as a paramedic, EMT, or other out-of-hospital health professional. Dis-

sertations authored by individuals from other health professions without clear evidence of out-of-hospital clinical practice were also excluded.

SCREENING AND DATA EXTRACTION

Records were screened against predefined eligibility criteria and manually confirmed where required. Potential duplicates were checked using author name, dissertation title, institution, completion year, and source record, with manual review used where records appeared under different repository or catalogue formats. Suggested records from stakeholder contact were retained only when they could be checked against a public repository, catalogue, institutional profile, or dissertation record. Screening and classification were undertaken by the author; therefore, formal inter-reviewer agreement statistics were not calculated. Extracted variables included author, doctorate title, university, country, completion year, doctorate type, supervisor profession, and source. Provisional registry outputs were circulated to international stakeholders so missing records could be verified against repository or catalogue evidence. Analyses were descriptive. Available dissertation titles were reviewed descriptively and grouped inductively into broad themes. Title-derived themes were generated by the author through iterative review and refinement of dissertation titles. The final registry was maintained in a version-controlled spreadsheet, and descriptive summaries were produced for year of completion, country, doctorate type, awarding institution, supervisor profession, and title-derived themes.

RESULTS

The registry identified 406 unique completed paramedicine/EMS doctoral dissertations between 1983 and 2025, with a median completion year of 2018 (Figure 1). Where year data were available ($n=387$), growth accelerated after 2010, with 179 dissertations completed in 2010–2019 and 167 in 2020–2025. This indicates that most doctoral production has occurred within a relatively recent period of professional development and transition to university-based education.

Doctorates were awarded across 20 countries (country recorded for $n=385$). The USA contributed 132, Australia 82, and the UK 47, together accounting for almost two-thirds of identified output (Table 1). Missing data were retained in the registry rather than imputed; country and institution were unavailable or unverified for 21 records, completion year for 19 records, supervisor profession for 19 records, and title data for 54 records.

PhDs accounted for 305 dissertations (75.1%) and professional doctorates for 81 (20.0%), with professional doctorates concentrated in the USA (Table 2). Specific PhD program labels, such as public health, education, rehabilitation science, or interdisciplinary studies, were not consistently reported in repository records and were too heterogeneous for reliable categorization. For this reason, the analysis was limited to doctorate type rather than named PhD program stream.

Decadal distribution is summarized in Table 3, highlighting the concentration of completions in the 2010s and 2020–2025 period among records with year data available. The decade categories refer to completion year ranges: 1980=1980–1989, 1990=1990–1999, 2000=2000–2009, 2010=2010–2019, and 2020=2020–2025.

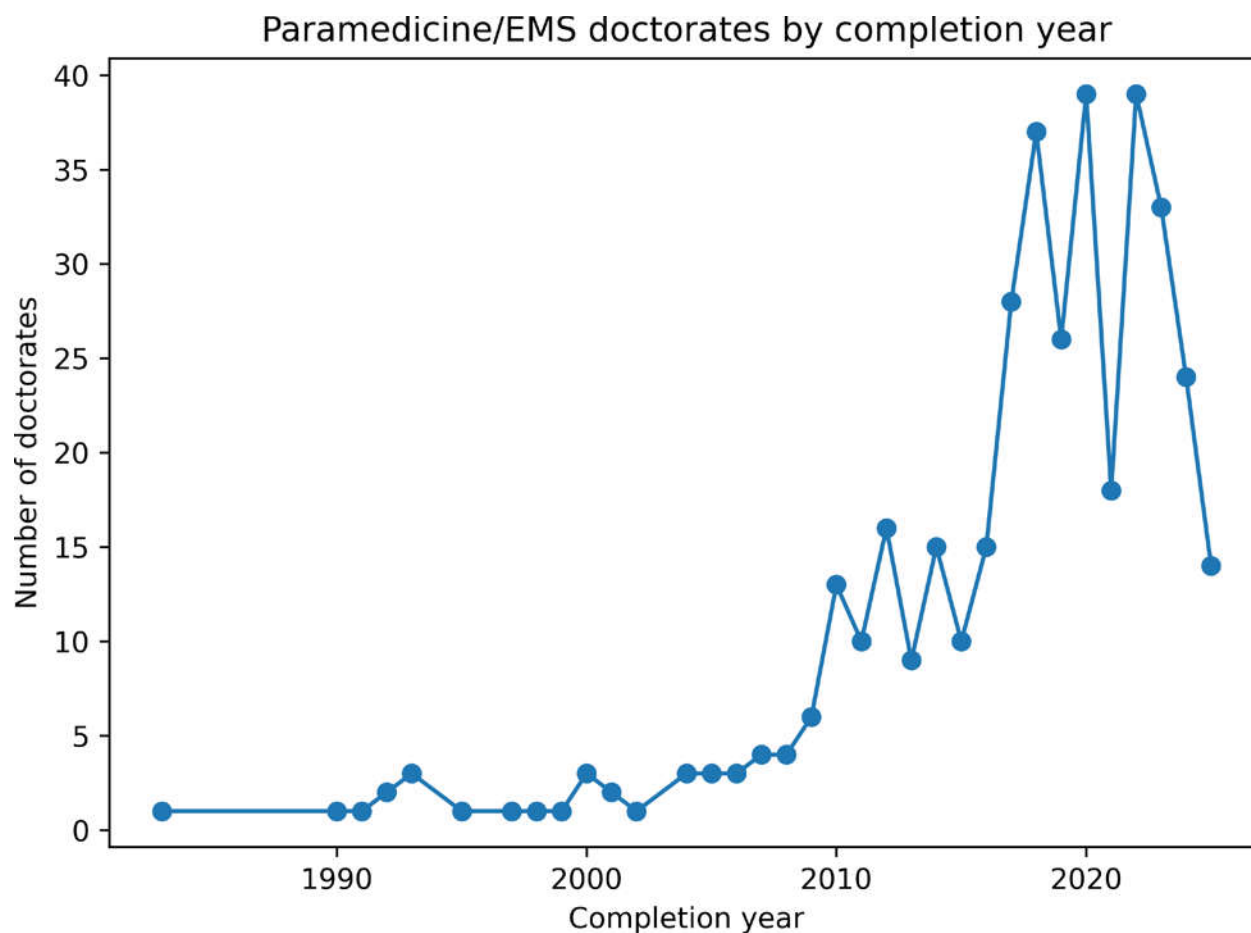


Figure 1. Time series of doctorates by completion year.

Country	n	%
USA	132	32.5
Australia	82	20.2
UK	47	11.6
Saudi Arabia	24	5.9
Canada	22	5.4
South Africa	21	5.2
Japan	17	4.2
NZ	8	2.0
Thailand	6	1.5
Jordan	6	1.5
Ireland	5	1.2
Germany	3	0.7
Poland	3	0.7
Hungary	2	0.5
Finland	2	0.5
Israel	1	0.2
Italy	1	0.2
Austria	1	0.2
Denmark	1	0.2
Taiwan	1	0.2

Table 1. Doctorates by country (n=406).

Country	PhD	Professional Doctorate
Australia	78	4
USA	69	63
UK	41	6
Saudi Arabia	24	0
South Africa	21	0
Japan	17	0
Canada	16	6
NZ	8	0
Jordan	6	0
Thailand	6	0
Ireland	4	1
Germany	3	0
Poland	3	0
Hungary	2	0
Austria	1	0
Denmark	1	0
Finland	1	0
Israel	1	0
Taiwan	1	0
Italy	0	1

Table 2. Degree type by country (PhD vs professional doctorate).

Decade (Completion Year Range)	n	%
1980 (1980–1989)	1	0.2
1990 (1990–1999)	11	2.7
2000 (2000–2009)	29	7.1
2010 (2010–2019)	179	44.1
2020 (2020–2025)	167	41.1

Table 3. Doctorates by decade.

The most frequent awarding institutions were Monash University (Australia), Capella University (USA), and Kokushikan University (Japan). Institution data were available for 385 records; Table 4 excludes 21 records with missing or unverified institution data.

PRIMARY SUPERVISOR PROFESSION PROFILE

Among records with supervisor information (n=387), the most common primary supervisor professions were medicine (n=165; 42.6%), education (n=70; 18.1%), psychology (n=34; 8.8%), paramedicine (n=28; 7.2%), and nursing (n=23; 5.9%). The pattern indicates that doctoral supervision in paramedicine continues to rely heavily on cognate disciplines, although paramedicine-trained supervisors are becoming more common.

TITLE-DERIVED THEMATIC PROFILE

Available dissertation titles (n=352) were reviewed and grouped into five broad title-derived themes: time-critical clinical care; education, training, and simulation; workforce and professional issues; systems, service delivery, and governance; and patient safety and quality-focused practice. Together, these themes indicate that paramedicine doctoral research spans clinical priorities as well as professional development, system design, and service quality.

DISCUSSION

This study provides the first systematically derived multi-source profile of completed doctorates and shows rapid increase in doctoral activity over the last 15 years. At the same time, doctoral output remains clustered in a limited number of countries and universities. This pattern is encouraging, but it also shows that doctoral development in paramedicine/EMS has not advanced evenly across countries (Beovich et al., 2021).

The post-2010 rise in doctoral completions likely reflects the continued professionalization of paramedicine, the expansion of university-based education, and increasing expectations for research-qualified leaders in both academic and clinical settings (Meadley et al., 2022). It may also reflect stronger institutional acceptance of paramedicine as a legitimate health profession, with more candidates able to pursue doctoral study within, or closely aligned to, their professional discipline (Maruši, 2013; Meadley et al., 2022).

The geographic concentration of doctorates in the USA, Australia, and the UK suggests that doctoral capacity develops where higher education pathways, supervision expertise, and research infrastructure are already established. Emerging output from other regions indicates widening international engagement, but capacity remains uneven (Beovich et al., 2021). For countries seeking to build their own doctoral ecosystems, the findings

University	Country	n	%
Monash University	Australia	33	8.1
Capella University	USA	16	3.9
Kokushikan University	Japan	15	3.7
University of Cape Town	South Africa	8	2.0
Queensland University of Technology	Australia	6	1.5
Texas A&M University	USA	6	1.5
Auckland University of Technology	NZ	5	1.2
Flinders University	Australia	5	1.2
University of Maryland	USA	5	1.2
Walden University	USA	5	1.2

Table 4. Top 10 awarding universities.

Note: excluding missing data.

highlight the importance of aligned workforce planning, academic career structures, and institutional commitment (Ross et al., 2023; Simpson et al., 2023).

This concentration has applied implications. Countries with only a small number of doctorates may struggle to build local supervision capacity, develop paramedicine-led research groups, or offer clear academic career pathways for clinicians who want to move into doctoral study. For universities and EMS systems, the findings suggest that doctoral growth is unlikely to occur through individual motivation alone; it will also require scholarships, protected research time, formal supervision development, and stronger links between ambulance services and higher education institutions.

PhDs were the dominant pathway, suggesting that doctoral development in paramedicine/EMS remains primarily research oriented. Professional doctorates appear to serve a more applied role and were heavily concentrated in one national context, indicating important international differences in doctoral structures (Dennis et al., 2024). These differences are important because they may shape the kinds of leadership and scholarship produced by doctoral graduates (Kim et al., 2022; Maruši, 2013).

A relatively small number of universities appear to function as key doctoral hubs. These universities appear to be places where candidates can find the supervision, research culture, and institutional familiarity needed to complete doctoral work in this field. For newer programs, an important lesson may be how these universities build supervisory teams, support early-career academics, and connect paramedicine candidates with experienced researchers from related disciplines (Simpson et al., 2023; Stolt et al., 2017).

For paramedicine to supervise more of its own doctoral work, the profession will need more doctoral-qualified paramedics who are supported to take on primary supervision roles. This includes expanding the pool of PhD-qualified paramedicine academics, embedding co-supervision and mentorship, and providing protected time, workload recognition, and targeted funding for paramedicine-led research programs (Ross et al., 2023). Such developments are likely to be important to the next stage of professional maturation (Meadley et al., 2022).

LIMITATIONS

Limitations include variable repository coverage, incomplete indexing, and the possibility that some doctorates were missed or lacked sufficient metadata for classification. In some cases, supervisor profession, year, country, or institution details were unavailable or uncertain. Because the registry was developed iteratively from multiple dissertation databases, repositories, registries, institutional searches, and stakeholder-identified records, exact source-level retrieval and exclusion counts were not available. This limits the ability to quantify how many records were excluded for each eligibility reason. The eligibility criteria were restricted to formally completed and publicly available dissertations authored by paramedics, EMTs, or other health professionals clearly evidenced as working in the out-of-hospital setting; however, classification remained dependent on the completeness and clarity of available repository metadata and may have resulted in the exclusion of records where professional background could not be definitively established. In addition, reliance on publicly available records may have limited the identification of dissertations not indexed or accessible through searchable repositories or networks. As screening and thematic grouping were undertaken by the author, the

study also did not calculate inter-reviewer agreement; this should be considered when interpreting the classification of supervisor background and title-derived themes.

Further research should look more closely at the practical barriers that potential doctoral candidates face, particularly access to supervisors, funding, protected time, and visible academic career pathways. For universities, this may include creating co-supervision arrangements that pair emerging paramedicine academics with experienced supervisors from cognate disciplines. For professional organizations, it may include maintaining doctoral registries, profiling doctoral graduates, and advocating for funded doctoral pathways. For EMS systems, it may include recognizing doctoral training as part of workforce planning rather than as an individual career activity undertaken outside normal service priorities. Research is also needed on how doctoral training influences academic leadership, workforce development, and service improvement. Ongoing maintenance of the registry would allow longitudinal benchmarking of growth, international spread, and shifts in doctoral themes over time.

CONCLUSION

Global paramedicine/EMS doctoral output has grown rapidly over the past 15 years, reflecting increasing research capacity and disciplinary development. The next challenge is to ensure that this growth is not confined to a small group of countries but is supported through stronger supervision pipelines and more visible paramedicine-led research infrastructure. A practical next step is for universities, professional bodies, and EMS employers to treat doctoral training as part of long-term workforce and research strategy, rather than as a small number of isolated individual achievements. A maintained global registry provides a basis for tracking that progress.

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