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Review

The role of educational theory in the future development of paramedicine as a profession: An integrative review

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Abstract

Introduction

Paramedicine is at a critical juncture in its history as a healthcare profession. The evolution of paramedic practice in Australia over recent decades has culminated in its inclusion as a nationally registered, accredited, healthcare profession, while similar development is also occurring worldwide. Although paramedic education has developed over time, it is now the moment to determine whether existing educational approaches can adequately support its ongoing evolution as a profession. This article shares findings of a systematic, integrative review of characteristics of professions, allied health education and paramedic education literature.

Methods

Due to too little current research on approaches to paramedic education, the review aimed to distil essential requirements of professional education in general, and paramedic education in particular. This distillation served as an initial point of comparison with existing educational approaches in paramedicine. Literature was iteratively searched using PubMed, ScienceDirect and EBSCOhost megafile ultimate search engines, and was complemented with manual searches via professional networks, reference searches and Google Scholar.

Results

The literature review highlighted consistent themes relevant to paramedic education such as, the socio-political definition of a profession, methods for the identification of a profession, paramedicine as a distinct healthcare profession and the contemporary paramedic education framework.

Conclusion

Based on findings from this integrative review, we conclude that there is a potential misalignment between existing paramedic curricula and the educational scaffolding required to develop practicing paramedic professionals. We recommend further investigation of this potential misalignment as part of conceptualising an effective, quality, educational framework that is fit-for-purpose.

Keywords:

paramedicine; profession; education; pedagogy; curriculum; professionalism

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Introduction

Paramedicine, in Australia and internationally, has arrived at a crossroads. This important juncture is a consequence of its inevitable evolution as an occupation, from stretcher-bearer to ambulance driver, to ambulance officer and now to registered medical professionals known as paramedics (1-7). While still in various stages of its evolution, internationally, the question of whether or not paramedicine sees itself as a profession in Australia has been answered. In 2018, paramedicine was included in the Australian National Register of Professions and is monitored by the Australian Health Practitioner Regulation Agency under the National Registration and Accreditation Scheme (8).

To continue its evolution, next steps must focus on ensuring that paramedicine fulfils the required criteria to develop into a fully-fledged profession, not just in name, but also in practice. While there are several important aspects to the transition of any occupation into a profession, including legal governance and professional regulation (9), a key aspect is an emerging profession's ongoing educational evolution (2,6,8,10-13). The ongoing development of a profession requires continued revision of the structures and processes that govern its development, including the educational frameworks and underpinning theory on which curricula are constructed. These evolving frameworks and processes serve educators as a guide for the transition to professionalism, and are instrumental in the long-term success and development of a profession (10). Given the ongoing evolution of paramedicine, and by extension, its educational development, it is timely to enquire whether the current educational framework, including underpinning theory and structures, is sufficient to develop the level of education required of a 'true' profession (2,8).

The purpose of this integrative review is to investigate existing academic literature on perceptions of paramedic education and integrate this with a body of literature on the meaning and requirements of recognised professions. This article will use review findings to explore the historical development of paramedicine education, from its vocational roots to its contemporary position in higher education, and consider future developments required for its consolidation as a profession. In particular, it will provide a foundation from which to examine education's role in the evolution of paramedicine as a profession. Broader questions will be used as a focus for the integrative review to address the question of how the requirements of paramedicine as a profession align with perceptions about contemporary paramedicine education practices. These include:

- How is a profession defined?
- To what extent does paramedicine qualify for consideration as a profession?
- If paramedicine is a profession, then to what extent is the current paramedic educational paradigm delivering on the development of this emerging profession?

Methods

An integrative review summarises past empirical and theoretical literature. It utilises diverse methodologies to capture context and processes, synthesising the results in a systematic manner (14). This integrative review of the Australian paramedicine education paradigm was reported utilising the Preferred Reporting Items for Systematic Reviews and Meta-analysis Extension for Scoping Reviews (PRISMA-ScR) statement for review structures (15). The use of an integrated review method allows for diverse methodologies such as experimental and non-experimental research to be included in the same review (14). This study also applied guidelines from the 2020 PRISMA update, which clarified advances over the past decade in methods to identify, select, appraise and synthesise studies (16).

While the use of an iterative process with clear search parameters improves the quality of the research, it should be noted that reporting of systematic reviews is still not infallible, with publication bias and author misinterpretation cited as two possible areas impacting on the integrity of the review (15,17).

Eligibility criteria

A priori eligibility criteria were designed by a group of three experienced investigators. Input from a specialist librarian was utilised in refining the eligibility criteria for the search. Literature gathered via the electronic databases PubMed, ScienceDirect and EBSCOhost megafile ultimate. Further searches were conducted using hand-searched literature including networking, reference searches, grey literature and Google Scholar. Initial search terms Paramed* AND (education OR pedagogy OR curriculum OR professionalism) were utilised because they were primarily relevant to Australian paramedicine context and related to the role of education in professional development. Results were then refined using AND (Australia OR Queensland OR Tasmania OR "New South Wales" OR Victoria OR "Northern Territory"). Where "Paramed*" was not allowable within the search engine, Paramedic AND (education OR pedagogy OR curriculum OR professionalism) AND Australia (emergency medical technicians [MeSH Major Topic]) were utilised instead.

Screening of sources and risk of bias

The literature retrieved was assessed for validity and applicability to the professional paramedicine context. Date of publication was not considered a barrier to eligibility, with some seminal publications, particularly those regarding the definition of a profession, being older than 10 years. Articles were screened through a two-stage process: 1) titles and abstracts were screened for potential relevance and, 2) from this list full-text versions were sourced and included if they met the eligibility criteria (Table 1). Throughout the screening process, uncertainties and disagreements over article eligibility were resolved through discussion between investigators. A risk of bias was addressed using a study level assessment of the articles being considered (15). This assessment was utilised

to determine reliability and validity of the data from each of the studies and those removed that indicated publication bias (18,19).

Synthesis of results

All citations were imported into referencing software EndNote X9 and duplicates removed. The PRISMA method (20) was utilised and qualitative synthesis was undertaken to analyse the findings and categorise them into emergent relevant themes (Figure 1).

Themes

Broad themes emerging from the integrative review of this literature included: socio-political definition of a profession; identification of a profession; paramedicine as a distinct healthcare profession; and contemporary paramedic education framework.

Socio-political definition of a profession

Literature within the first theme, socio-political definition of a profession, concerns itself with the situated nature of professions such as paramedicine, and the socially constructed meaning related to what it means to be a professional. Abbott and Meerabeau (42) argue that the ability for a profession

to differentiate itself from other occupations has led to the identification of a series of distinguishable traits that are intended to create an elevated space within a perceived hierarchy of superiority. However, Shulman (46) concludes that a critical aspect of this development rests not just on increased cognitive ability, but also on the capacity for moral and ethical consideration.

Definitions of professionalism provide a critical foundational for educational practice in professions such as paramedicine (2). Specifically, they shape the role of education in the professional formation process (41). The literature reviewed observed that definitions of professions and professionalism have been somewhat inconsistent and there is no universally accepted version (2,5,36). Nonetheless, there is a significant body of literature that examines links between professionalism, professions and education (3,8,12,42,47). The conversation about the definition of a profession has been described as a sterile exercise by some academics, who add that a definition is elusive. Nonetheless, Cruess et al (32) and Saks (29) argue that a definition is at the root of understanding 'what' a profession is and 'how' it, in turn, operates.

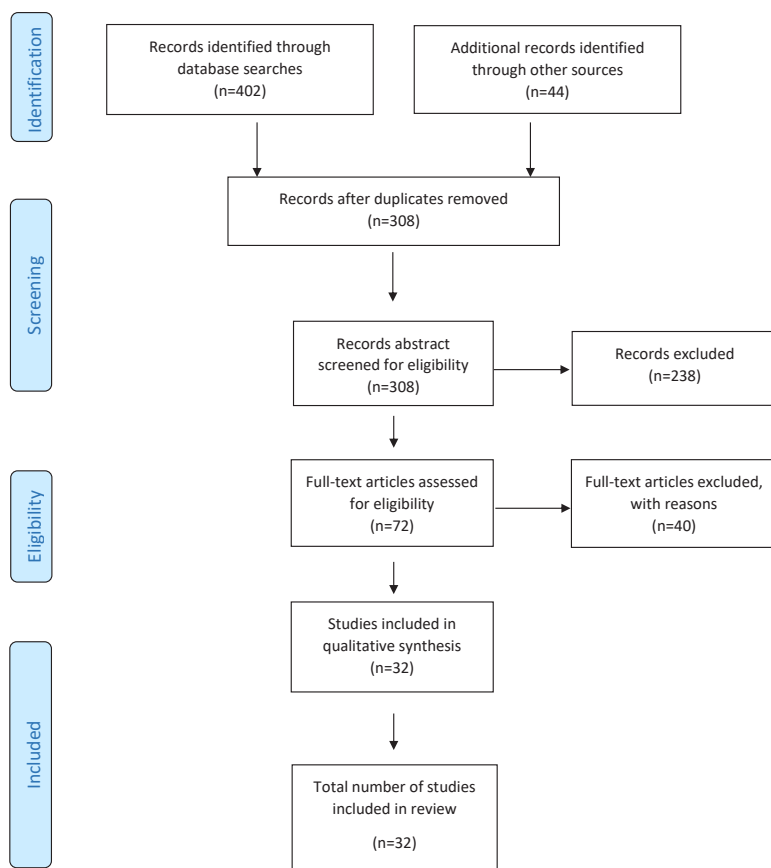


Figure 1. Prisma flow chart for selection of selected studies

Table 1. Summary of articles included in study

Author(s)	Research format/relevant theme	Results/findings/conclusion
(6)	Government report/education framework	Importance of developing quality paramedic academics Difficulties in integrating clinical placement in education Consideration of 'best fit' paramedic curriculum
(21)	Journal article/definition of a profession	Views of professionalism are varied and complex Three discourses identified: individual; interpersonal; societal-intuitional Professionalism is grown, not a discrete construct
(22)	Literature review/education framework	University paramedic programs should respond to population change and industry development
(23)	Literature review/qualification as a profession	Creating 'road ready' paramedics Highlights importance of developing a signature pedagogy
(24)	Journal article/qualification as a profession	Criticises lack of 'road readiness' Determines lack of signature pedagogy Highlights 'theory-practice gap' Signals lack of qualified paramedic academic educators
(25)	Literature review/education framework	Recognises shift in scope of practice, but highlights educational deficiencies Considers embedding of professional learning within formal paramedic curricula design
(26)	Journal article/qualification as a profession	Considers, what is a professional? Outlines professional characteristics lacking in paramedicine Professionalism vs profession Identification of higher education as key point of future development
(27)	Literature review/identification of a profession	Professions have recognisable common characteristics Professions are autonomous Professions reflect their cultural milieus Medical professionalism requires the clinician to operate within a highly evolved moral/ethical framework
(28)	Research article/education framework	Recognition of evolution required within paramedic education Identification of changing nature of workforce demographic
(29)	Comparative research/definition of a profession	Compares the taxonomic approach to other methods of defining a profession Considers neo-Weberianism
(30)	Working paper/definition of a profession	Attempts definition of professional academic disciplines The role of education in defining a professional academic discipline
(31)	Expert opinion/identification of a profession	Investigation of theories underpinning medical professionalism Implications for medical education curricula
(32)	Journal article/identification of a profession	Concluded that literature is inconclusive in defining the word 'profession' Provides a definition that includes mastery of skill, an ethical code and use for the public good
(33)	Literature review/definition of a profession	Provides a list of five attributes to create a taxonomic definition of a profession: systematic theory; authority; community sanctions; ethical codes; culture
(34)	Systematic review/identification of a profession	Medical students Addressed areas of assessment, ethics etc
(35)	Literature review/qualification as a profession	Highlights difficulties in defining professionalism in paramedicine Utilises a taxonomic approach Considered the journey near completion
(36)	Expert opinion/ education framework	Historical context of paramedic profession evolution Relationship to associated disciplines such as nursing Considers areas of importance such as funding and education

(37)	Systematic review/definition of a profession	No universally agreed definition of 'profession' Dynamic nature of medicine makes definition difficult
(2)	Journal article/qualification as a profession	Utilises taxonomic trait theory: exclusive body of knowledge; self-regulation; registration Places significant emphasis on importance of an 'educated' workforce on professional development
(8)	Scoping review/education framework	Discusses education as a key factor in professionalism Encourages further work and research in this area
(38)	Journal article interview and thematic analysis/qualification as a profession	Paramedic academics are underqualified and underprepared Community of practice needs to be established and developed
(39)	Review of course/education framework	Current paramedic curricula still focus on emergency medicine Emergence of specialised programs to service expanding professional scope of practice
(6)	Government report/education framework	Collaboration between nine contributing universities Provides extensive report on development of paramedic undergraduate education Highlights importance of education in ongoing paramedicine development Indicates need for a signature pedagogy
(4)	Quantitative analysis of cohort data/qualification as a profession	Statistically significant differences between universities, year levels and gender concerning perception of professionalism Concluded that professional change should be driven by students
(5)	Scoping review/qualification as a profession	International study Paramedic curricula emphasise three domains: cognitive; psychomotor; affective Concludes paramedic stakeholders believe in an increased focus on professional attributes Nominates two possible/available scales for measuring professional attributes
(13)	Expert opinion/identification as a profession	Introduces ideas and practices relating to education, curriculum, practice and pedagogy Focus on preparing students for professional practice
(40)	Expert opinion/qualification as a profession	Key issues for emerging professions; industry and professional expectations; theory and practice tensions; future challenges and actions In the context of emerging professional paramedic practice
(41)	Meta-analysis/identification of a profession	Academic development research continues to be largely experiential, under-theorised and fragmentary
(42)	Expert opinion/definition of a profession	Provides taxonomic guidelines for definition of a 'caring' profession Steps for the professionalisation of an occupation
(43)	Expert opinion/identification of a profession	Investigates practice-based education) in relation to the ideas and practices of education, curriculum, practice and pedagogy
(44)	Delphi study/education framework	List of desired paramedic attributes Identified lack of desired attributes being taught in current curricula Suggested curriculum development and change
(45)	Principal component analysis	11 factors identified Psychometric properties of professionalism

Identifying a profession

The second theme identified within the literature focussed on different methods and frameworks utilised to define a profession. These include taxonomies, which contain characteristics and definitions, attributes and traits, as well as dynamic educational processes that result in such attributes and traits. Some authors in the literature reviewed apply taxonomies to identify desirable professional attributes such as knowledge, expertise, education, ethical considerations and autonomous self-regulation (8,29,42). A proponent of this taxonomic approach, Saks (29) contends that a profession will contain defining characteristics and that these in turn, can be utilised to develop an 'ideal' set of desirable skills, knowledge and expertise. The taxonomic system is utilised by various authors (27,32-34,48) and involves the construction of lists of desired or required attributes displayed by a profession. Donaghy (47) criticises this approach as being too inflexible. However, First and colleagues (2) argue that the taxonomic approach to defining a profession is still seen as both appropriate and applicable to the world of paramedicine. Evidence of this taxonomic approach was detected in the limited number of paramedic-specific studies reviewed. These studies have attempted to crystallise paramedicine's professional characteristics, thus far. Yet, none of the studies made paramedic education methodology a focus of their investigation (3-5,35,47).

While the detail regarding the methods and frameworks considered by the various authors differs, there is general agreement that professionalism is a process of developing particular qualities, behaviours and traits (21). Bledsoe et al (48) propose components of professional paramedic practice, which contain qualities and conduct that are essential for any healthcare practitioner who is laying claim to the title of professional. The identification of these characteristics, qualities and the framework within which they are applied have been considered and eleven factors identified in the measurement of psychometric properties of professionalism in paramedicine (45). These include professional attitude and behaviour, professional identity, professional development, appearance and flexibility, communication with others, organisational support, pride in occupation, comparable professional status, adherence to the rules, responsibility in the workforce, and appropriate use of resources (45). Reynolds' (35) work, in contrast, utilises Greenwood's (33) five characteristics of a profession:

- a systematic body of knowledge
- authority to practice
- community lead sanctions
- ethical codes of practice, and
- a uniquely recognisable culture.

These characteristics highlight the uniqueness of norms, theories and ideas, as well as the particularity of context for their application (35). Krishnan (30) argues that the greater the number of professional characteristics a discipline can exhibit, the greater its recognition as a profession. Krishnan's own

framework proposes the following requirements for professions:

- a body of accumulated specialist knowledge, which is specific to them and not generally shared with another discipline
- theories and concepts that can organise the accumulated specialist knowledge effectively
- specifically developed research methods
- an institutional manifestation in the form of subjects taught at universities, respective academic departments and professional associations.

Many researchers (46,49-52) recognise that a profession is the result of a dynamic set of processes that includes the acquisition of specialised education, knowledge and training but, most importantly, that these skills should be utilised to the benefit of society. Reed et al (8) contend that professionalisation is a process of occupational evolution, which exists on a developmental continuum rather than as a single fixed point or 'end goal'. Colby and Sullivan's work extends this idea, describing professions as occupations produced via a process of tertiary education, applied contextual training and experience (53). Reynolds (35) proposes the idea of a profession and of professionals attaining an elevated, sheltered position in the social landscape, most often achieved via completion of higher education qualifications. Professions perceived to fit these developmental and educational criteria are those such as medicine, law, nursing and teaching (54). The roles these professions play are seen as central to societal interests and the common good, and provide services considered essential to defining and preserving societal knowledge, values and ethical principles (45,46).

Paramedicine as a distinct healthcare profession

The third theme identified in the literature explores whether paramedicine qualifies as a distinct healthcare profession in its own right. Within this theme, critics focus on the alignment of current paramedic education frameworks with desired professional outcomes. For example, existing research focusses on the unique operating environment of paramedicine, often discussed within the boundaries of the profession itself. There are also prior studies that have focussed on whether current education frameworks deliver a 'road-ready' paramedic (23,55). Researchers contend that the previous 'gold standard' of a so-called 'road-ready' paramedic was limiting in nature and not sustainable within the grounds of contemporary professional paramedicine (23,39,55). However, Reynolds and O'Donnell (36) argue that there is little research or evidence to support the claim that paramedicine be differentiated from other healthcare professions. They and others (8,36) suggest that even though its evolution as a profession mirrors that of nursing and medicine, researchers have as yet failed to make the case that paramedicine requires the development of distinct professional attributes. This is despite the fact that the professional paradigm for paramedicine is evolving and there is a specific need to address the increasing scope of clinical practice for operational paramedics (8,22). Some researchers (39,45,55) are still working

to define the attributes required of a professional paramedic, particularly outside of the historically accepted 'technical skills' prescription. Yet, others note that the speed of the profession's evolutionary development is not mirrored as closely by evidence-based higher education practice (2).

Indeed, the reviewed articles suggest that paramedicine, its definition subject to debate from within the profession, is currently incapable of conclusively addressing these points to a satisfactory level (6,8). They accept that paramedicine has significantly evolved, particularly in the areas of clinical scope of practice, level of practitioner knowledge and applied clinical skills. However, they conclude that aspects of paramedicine professional evolution such as the underpinning educational methodology are not yet at a level that would dictate elevation to the position of a profession. The literature concludes this has not been a focus of the earlier incarnations of paramedic curricular in a pre-professional era (8,39,45,46).

Contemporary paramedic education framework

The final theme identified focussed on the approaches of historical and contemporary paramedicine education frameworks. Paramedicine researchers note that previously designed paramedic curricula leaned heavily towards technical, psychomotor skills or competencies (2,44). Bowen et al (5) contend that this previous bias towards technical skills and competencies appears to have led to a disparity between curricula, industry standards and the expectations of an emerging profession. According to O'Brien (15), the historical hierarchical model of paramedic education placed a significant level of importance on the development and assessment of competency-based clinical skills and they argue that this focus has led to a stunting of its evolutionary growth (25). Marshall (23) contends that a focus on competency-based models of learning is a direct result of the organisational methodology utilised to construct early incarnations of paramedic services. Others (6,54) argue that Australian paramedic programs have historically partitioned the supporting sciences of biology, anatomy, pharmacology and physiology into separate areas of study. This can lead to a disconnect with applied paramedic practice, particularly in the industry setting. Jackson (24) also identified this disconnection in associated emerging health professions such as nursing, and labelled the phenomenon 'the theory-practice gap'.

Historically, paramedic curricula were most commonly constructed utilising a competency-based learning and teaching model, with content and assessment mostly concerned with producing a 'road-ready' paramedic graduate (23). Kilner (44) contends that the 'road-ready' competency-based model has served its purpose in bringing paramedicine from its early incarnations as a mobile first aid and transport service to a contemporary position as an emerging medical profession. However, Kilner concludes that limitations of the model may, in fact, be the very thing preventing the next stage of paramedic evolution. Some examples of problem-based learning and

case-based learning curriculum models have been developed and utilised, however, research into their effectiveness in the paramedic context is sparse (56,57). Literature reviewed also points to a lack of evidence related to the reliability and validity of 'clinical placement' in the educational development of a paramedic student's professionalism (58,59).

Williams et al (3) contend that higher education is valuable for the development of a specific body of knowledge and its application; however, the quality of the curriculum and methodologies are instrumental in allowing a profession to establish systems of self-regulation and autonomy of practice. Furthermore, an absence of sustained and cohesive discourse on key elements of pedagogy is detrimental (43). Moreover, Willis et al (6) contend that a lack of research into paramedic educational methodologies makes it difficult to adequately advocate the use of these methodologies in the paramedic environment.

The existing literature reviewed here affirms that much of the current paramedic curricula has been appropriated from related clinical professions, such as nursing and medicine, guided by significant industry input (8,55). Evidence provided in this review also acknowledges that the novice status of paramedic academics in the higher education setting was a significant factor in the development of early incarnations of curricula (24,38). Nonetheless, it is concluded that the dearth of research into the paramedic education paradigm is a result of pressures facing those working and developing the higher education paramedicine frameworks (38). First, there has been a need to focus their energies on what works best in an applied setting. Second, the inevitable industry demand for evidence-based clinical practice has given very little priority to underpinning theory (6,11,24). Wider literature recounts similar experiences of underprepared, health-based, practice-orientated, academics in professions such as nursing. Their early focus was limited to areas such as cognitive development and knowledge acquisition (7,54,60,61). This pattern of development and attendant issues appear to have been replicated in the construction of early incarnations of higher education paramedic curricula (6).

Discussion

This literature reviewed highlights a range of educational practices in paramedicine that have yet to be substantially assessed as fit-for-purpose. These include competency-based assessment, quality of clinical education, the purpose of work integrated learning, and road-readiness. If we accept paramedicine's inclusion as a healthcare profession then the literature reviewed on the definition and characteristics of a profession has highlighted possible gaps and opportunities for professional development.

Based on these findings, paramedicine education requires a purposefully developed, profession-specific curriculum

scaffolding (43,61). Although paramedicine has managed numerous iterations of its own curricula for some time, involving both industry and higher education, many of the methods currently in use have been appropriated from associated areas of clinical education such as nursing, medicine or public health (36,39,44). Although paramedicine education's historical legacy merits recognition and respect, it is important to acknowledge its non-specificity. Nonetheless, the development of the profession of paramedicine and its associated educational processes has been well handled when placed within the context of its developmental evolution (3). Indeed, it could be argued that previous incarnations of paramedic curricula are important steps in the evolution of the profession (2).

For this reason, the development of a new curriculum should not be undertaken separately from preceding curricula, as the impact and moderating effect of a previous learning environment has repercussions for any new theoretical development. Tyler (62) concludes that curricula are interactive processes that must exist in a specific context to give value to the ideas, people and materials involved. In particular, the study of any curriculum in a clinical setting must consider the learning environment, educational methodology, organisational structures and policies before any judgement can be made on the quality of the outcomes produced (63). If paramedicine is to evolve as a profession, lessons learnt from previous incarnations of curricula should include valid, reliable, reproducible educational methodologies and structures. Therefore, the institutional context, community needs and clinical setting must also be factored into the development of high quality curricula.

Why should paramedicine be concerned with evolving its educational practices and its relationship to the development of paramedicine as a profession? Evidence suggests that professional clinical education sits at the nexus between institutions, as well as within communities that emphasise clinician-patient relationships and form the purpose of healthcare professions. This should be seen as an area of particular interest to an emerging profession such as paramedicine (64,65). The importance of these social connections indicates a need for the profession to develop and employ theoretical engagement to further improve credibility and respect (41).

When investigating the development of the paramedic education framework the need for paramedicine to develop a deeper tradition of higher education research and learning and teaching scholarship should be considered (66). This is essential to determine where paramedicine has come from and where it is heading. Yet, Brooks et al (67) found that there were no reviews specifically enquiring into the development of university level paramedic education programs. This lack of depth in the volume of academic paramedic inquiry is not surprising and the immature nature of paramedicine as an academic discipline has been previously recognised (1,8,24). The lack of research into the practice of educating paramedics is also recognised, particularly at the higher education level, and in the development

of an underpinning body of research, which is essential to the development of the profession. Recognition and construction of a signature pedagogy has also been acknowledged as a critical factor (6,11).

Industry demand for evidence-based clinical practice has given very little priority to underpinning theory (11,24,68). Therefore, any new development in paramedic curricula should reflect contemporary evidence-based thinking on how students learn (41). Early patterns of development appear to have been somewhat replicated in the construction of early incarnations of higher education paramedic curricula (6), and have aligned these early curricula within the classic positivist theoretical position preferred by 'science based' occupations (69). Previously designed paramedic curricula have also leaned heavily towards technical, psychomotor skills or competencies (2,44) and this has led to a disparity between curricula, industry standards and the expectations of an emerging profession (5). Future curriculum development should look to address educational theory gaps recognised in the literature.

Conclusion

Understanding what defines a healthcare profession and its intended outcomes should inform the design of its education curricula. Further evaluation of paramedic education models should remain a priority for paramedicine, particularly in light of the recent transition to professional registration in a number of countries and the professions ongoing development globally. The current transition is an opportunity to learn from other professions and lessons taken from those professions' previous educational evolution. Of particular importance is the recognition of the interdependence between learning, assessment, contextual practice and professional development in the applied setting. Ensuring a profession is served by an educational curriculum that guides future development is critical and that the inherent pedagogies in place are suited to prepare graduates for professional practice. The alternative is that without a culture of discourse, progress and growth within both individuals and organisations the progression of an emerging profession such as paramedicine is restricted, as it is through continual critique of methodology and process that evolution occurs. A reliable, valid and reproducible educational scaffolding should be a priority to ensure paramedicine continues its evolution into profession, not just in name but also in practice.

Competing interests

The authors of this paper declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest paper.

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