



The Efficacy of Near-Peer Teaching in Paramedicine Education: a Literature Review

Steve Whitfield¹

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Abstract

The transition of paramedic practice to paramedicine benchmarked by higher education programs has identified practical skills acquisition difficulty. Pedagogical interventions for health-related education programs advocate for strategies such as near-peer teaching as a viable solution to address these challenges. However, there remains a paucity of published literature on paramedicine-specific near-peer programs. This systematic review aimed to identify research that described or documented paramedicine-specific near-peer teaching programs and categorize the outcomes to better understand the perceived benefit of NPT in paramedicine education.

Keywords Paramedicine education · Near-peer teaching · Clinical education · Emergency medicine

Introduction

Historically, paramedic education was structured around a basic life support training methodology that built essential clinical skills such as bandaging and splinting. However, paramedic practice has established itself as its own profession, paramedicine. A sophisticated, well-educated, and cultured health care profession with an ever-increasing scope of practice.

In the last decade in Australia, the benchmark for paramedicine practitioners has been developed through higher education programs due to the exponential growth in clinical ability, medical capability, and more importantly community expectancy [1]. Each year, over 2000 student paramedics graduate higher education programs in Australia. The ability and capacity of paramedic educators to teach the theoretical knowledge and practical clinical skills required to perform the paramedic role have formed an imbalance of curriculum time for academics [2]. While theoretical knowledge can be taught in large classrooms or online, the practical clinical skills required for student paramedic development cannot.

The individual clinical skills demonstrations by each student warrant both time and equipment usage, which impacts staffing, equipment usage, and time allocations. As a result, student paramedics are often not afforded adequate practical skills exposure that commensurate their student role [2, 3]. For this reason, paramedicine educators are under increasing pressure to maintain the practical learning outcomes with significant time and staffing pressures, while ensuring consistency among students' clinical ability [2, 3]. Novel approaches are indeed required to address this deficit and one such approach that has been identified in other health care programs is near-peer teaching (NPT). Internationally, NPT is utilized in higher education programs and it is acknowledged in health education as a valuable pedagogical approach [4].

It involves the use of more experienced students (often second and third year) in the classroom acting as teachers or mentors while supported by academic staff. The peer teachers pass knowledge and skills onto less experienced students which reinforces their knowledge and skills further, while developing the less experienced students [4, 5]. NPT supports the development of both mentee and mentor, clinically and professionally through student collaboration and academic support [6]. Often, these programs involve an application process for experienced students to apply, and then a training program to support them in their teacher roles. Although NPT is comparatively new to paramedicine education, it has been gaining impetus in paramedicine programs internationally. However, there

✉ Steve Whitfield
s.whitfield@griffith.edu.au

¹ Griffith University (paramedicine) - Gold Coast Campus, Southport, QLD, Australia

remains a paucity of published research investigating the outcomes of paramedicine NPT programs.

This literature review aimed to identify studies that involved paramedicine-specific NPT programs and examine the perceived educational benefit of NPT to the student's ongoing development.

Method

Study Design

This was a review of selected electronic databases to identify and examine literature that pertained to paramedicine-specific NPT programs.

Definitions/Nomenclature

Near-Peer Teaching Throughout this search, many forms of NPT were found; however, a lack of defined terminology created some complexity in identification. For the purpose of this research, NPT will also refer to near-peer mentoring (NPM), peer mentoring, peer-assisted teaching (PAT), near-peer tutoring (NPT), and peer tutoring.

Student Paramedic While many levels of paramedicine education exist globally, for the purpose of this search “student paramedic” was defined as a person enrolled in a higher education paramedicine degree program in a tertiary education institution.

Procedure

A review of both medical- and educational-specific electronic databases was performed between April 1 and 15, 2020, that included Medline, EMBASE, and ERIC.

Keywords used in this search were student paramedic, paramedic education, near peer, peer teaching, peer-to-peer teaching, peer-assisted learning, PAL, and NPT. Keywords were used in isolation or combined with additional keywords. The search strings such as “near peer” OR “near-peer” and “peer-to-peer” OR “peer to peer” were also used in this search. Search strings were also used to determine suitable articles.

Articles were included if they described a form of near-peer education in paramedicine programs. Articles were excluded if they were not written in English and were not relating to the tertiary education sector, editorials letters to the editor or opinion pieces

Articles were initially identified for inclusion based on a review of the title and abstract. If the article appeared to meet the inclusion criteria, then the full article was sourced and reviewed for suitability. The reference lists of retrieved articles

were reviewed to determine if there were relevant articles that were missed by the electronic search.

Results

The initial search identified 1501 articles, 261 from Medline, 1074 from EMBASE, and 166 from ERIC. However, 1487 articles failed to meet the inclusion criteria and were excluded along with 4 duplicates that were identified (see Fig. 1). There were 10 articles identified for review and analysis. Of the remaining 10 articles, 8 studies examined the satisfaction levels of NPT mentees and NPT mentors, and 2 articles examined the educational outcomes of students involved in NPT programs. The conclusions of the accepted original studies that met the inclusion criteria informed the end points for this review that are displayed in Table 1.

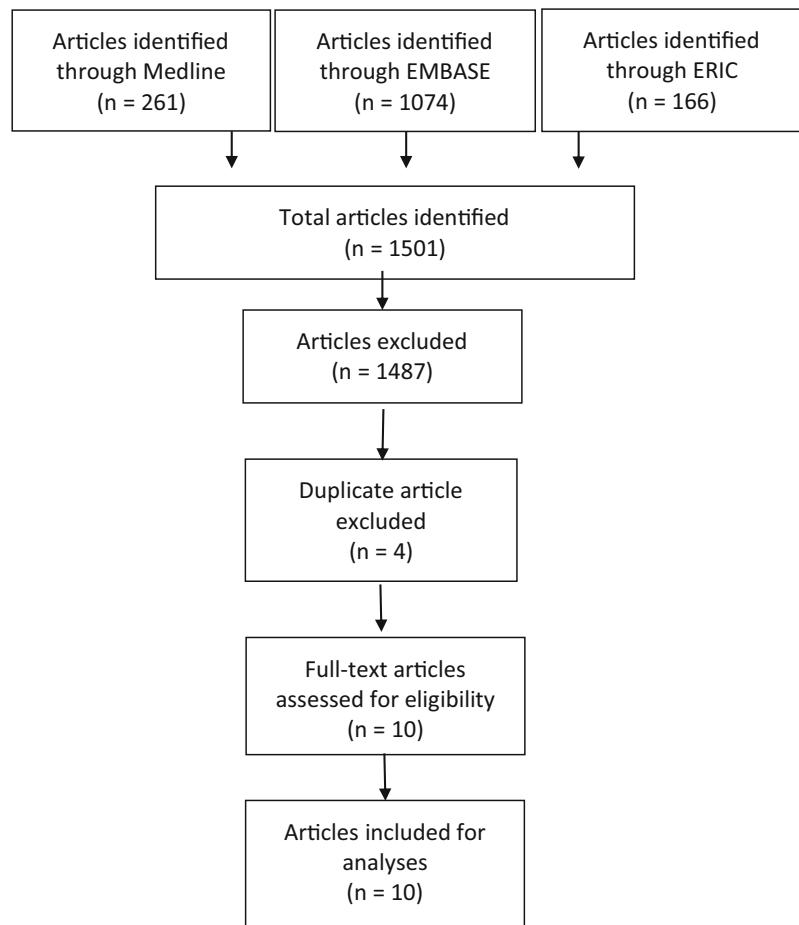
Appraisal of the Literature

By utilizing student groups who are more advanced in their studies as near-peer teachers to assist junior students, NPT encourages student engagement, dialogue, and collaboration in learning.

In their article, Fox et al. intended to explore both student mentee and student mentor's near-peer experience through a 5-point self-reporting Likert scale. The results of this study found that the majority of the paramedicine students who took part in NPT identified the NPT program as a positive and beneficial experience. This was consistent with the results from Hryciw et al. [8] evaluation of a peer-assisted study session (PASS) with paramedicine students. They found that the overall experience of both mentees and mentors involved was a positive experience and the study was also able to identify a notable difference in the academic performance of the first year students who participated in the sessions. Although PASS was distinguished as being somewhat different from NPT as a program, the article was identified to evaluate a version of peer-assisted learning in paramedicine where advanced students facilitated the learning program and was therefore included in this review.

Similarly, McKenna and Williams [9] surveyed NPT experiences; however, they examined student mentee engagement beyond clinical skills acquisition. The findings of this study identified that the mentees were better prepared for the course and better prepared for clinical placements, and developed a higher ability to manage difficult situations. The majority of students involved in the study detailed that they could better identify with their peers rather than academic staff, and the student NPT mentors described the experience being advantageous to improving their professional communication and development.

Fig. 1 Paramedicine near-peer literature review PRISMA diagram



In a novel cross-professional PAL program, McLelland et al. [10] examined the benefits of PAL (NPT), while exploring the ability of final year midwifery student's instructing in obstetric-related workshops for second year undergraduate paramedicine students. Majority of the students involved in this study, irrespective of the discipline, identified participation as a benefit to their academic progress and skills development, and an enjoyable collaborative program to partake in.

Williams et al. [11] evaluated the efficacy of a PAL program specific to paramedicine in order to equate a relationship between academic grades of those involved in PAL program over a 2-year period (2011–2012) to those who were not. The results demonstrated an obvious distinction in academic results between the students who participated in PAL and those who did not. Those who participated in PAL attained higher clinical marks than their non-PAL counterparts. Furthermore, the majority of the peer teachers attributed their participation in NPT as a benefit to their graduate roles, and that the experience was mostly positive. Similarly, many of the student's mentees identified the NPT experience as benefiting clinical skills and knowledge consolidation. Comparable to this study, Williams and Fowler [12] examined if a definable connection could be demonstrated between NPT programs and improved

clinical scores of NPT mentors. Through a comparative research design over a 3-year period from 2011 to 2013, the result overwhelmingly demonstrated students involved in NPT achieving higher marks overall.

Utilizing a cross-sectional study of first year paramedicine NPT mentees, Williams et al. [13] sought to ascertain student perceptions of an NPT program over a 3-year period. The results demonstrated that students involved in NPT perceived the experience as a valuable teaching method. Generally, the mentee students identified being more comfortable approaching a near-peer mentor than an academic mentor. The overall conclusions from this study were similar to those of Williams et al. [5] who used a self-reporting questionnaire for second and third year NPT paramedicine participant experiences. In line with the previous studies, the findings largely supported NPT as a valuable experience for students. The results suggested again that a high level of satisfaction by a majority of the NPT participants was experienced during the program.

Collectively, these studies identified in this review, although limited in quantity, determined an overwhelmingly positive notion of NPT student experiences. The results consistently proved that the student perception of NPT programs

Table 1 Location and end points of paramedicine-specific NPT studies

Article	Research type	Objective	Location	Nomenclature	Findings/end points
Fox et al. (2015) [7]	Original re-search	This project aims to explore (i) third-year students' experiences of teaching and assessing junior students, and (ii) first-year students' experiences of being taught and assessed by senior students.	Victoria, Australia	Peer-assisted teaching (PAT)	<ul style="list-style-type: none"> Majority of the first-year students felt strongly that teaching was an important role for paramedics. Majority of the students agreed that being taught by peers increased their collaboration with other students compared with their teachers
Hryciw, Tangalakis, Supple, and Best (2012) [8]	Original re-search	The purpose of this study was to evaluate the effectiveness of a peer-assisted study session (PASS) program for a large class of Bachelor of Health Science (Paramedic) students.	Victoria, Australia	Peer-assisted study session (PASS)	<ul style="list-style-type: none"> Students believed the program helped gain knowledge Students believed that the program helped them develop different ways of approaching their studies. Student believed that the program made them feel positive about their studies Students believed the program was a positive experience
McKenna and Williams (2017) [9]	Original re-search	The aim of this study was to examine near-peer learner and teacher experiences of participating in near-peer learning and to explore students' engagement beyond the skill being learned.	Victoria, Australia	Near-peer learning, near-peer teaching (NPT)	<ul style="list-style-type: none"> Learners sought to identify with their near-peer teachers. It provided opportunities for junior students to learn more about the course, its requirements, and what to expect as the course progressed. The NPT session provided an opportunity to get information about placements and allay some fears. Provided opportunity for junior students to learn about how they might cope with confronting situations such as road trauma or patients with mental illnesses.
McLelland, McKenna, and French (2013) [10]	Original re-search	To investigate the benefits of an interprofessional PAL for both midwifery and paramedic students.	Victoria, Australia	Peer assisted learning (PAL)	<ul style="list-style-type: none"> Both midwifery and paramedic students had a newfound respect and understanding for each other's disciplines.
Williams, Fellow, Eastwood, and Wallis (2014) [11]	Original re-search	The objective of this study was to examine the perceptions of first year paramedic peer learners being taught by peer teachers over a 3-year period.	Victoria, Australia	Peer teaching	<ul style="list-style-type: none"> Item 1 "Teaching is an important role for paramedics" reflected the highest mean score of the eleven items while item 2 "I feel freer to approach my instructor for help than I do my peers" reflected the lowest mean score
Williams and Fowler (2014) [12]	Original re-search	The aims of this study were (i) to evaluate the effectiveness of the pilot PAL program, and (ii) to compare academic grades between peer teachers and those not involved in the PAL program over a 2-year period (2011–2012).	Victoria, Australia	Peer assisted learning (PAL)	<ul style="list-style-type: none"> Students strongly agreed with the importance of teaching in the role of paramedics Students also agreed that their peer teaching experience increased their knowledge and skills and was of direct benefit to their graduate paramedic role
Williams, Wallis, and McKenna (2014) [13]	Original re-search	The objective of this study was to examine the perceptions and satisfaction levels of students participating in NPT over a 3-year period at a large Australian university.	Victoria, Australia	Near-peer teaching (NPT)	<ul style="list-style-type: none"> Results from the 3-year study have shown that the NPT program has been effective in the education of the paramedic students who participated, developing teaching, mentoring, and learning skills to adopt during their graduate year and future career in the paramedic discipline.
Williams and Nguyen (2017) [14]	Original re-search	The objective of this study was to examine satisfaction levels of NPT over one academic semester among undergraduate paramedic students.	Victoria, Australia	Near-peer teaching (NPT)	<ul style="list-style-type: none"> Being taught by my peers increases my interaction and collaboration with other students more than when being taught by my instructor Also, that the feedback students receive was from their peers (from a student's

Table 1 (continued)

Article	Research type	Objective	Location	Nomenclature	Findings/end points
Williams, Olausson, and Peterson (2015) [15]	Original re-search	The objective of this study was to examine the effects of an educational interventional on students' PAL experiences as peer t Majority of the first-year students felt strongly that teaching was an important role for paramedics teachers.	Victoria, Australia	Peer-assisted learning (PAL)	viewpoint), therefore more honest, realistic, helpful than that from my instructor ○ PAL is a direct response to contemporary health care education requirements ○ Improved cognitive development and academic performance
Williams, Hardy, and McKenna (2015) [5]	Original re-search	The objective of this study was to examine the perceptions and satisfaction levels of students participating in NPT over a 3-year period	Victoria, Australia	Near-peer teaching (NPT)	○ Overall, results were positive with the majority of items reflecting high levels of satisfaction

in paramedicine was positive, provided academic benefit, and assisted clinical skills development. While several studies examined in this review showed academic development was linked to NPT participation, there were other studies in health (non-paramedicine specific therefore excluded) that demonstrate inconclusive learning outcomes [16]. However, there is adequate literature highlighting the value of NPT programs among nursing students [17].

Limitations

Research relating to NPT in paramedicine was scarce. All articles that fit the inclusion criteria for this review originated in Victoria, Australia, consequently limiting any international or geographical representation. Potentially narrowing the results further, only articles available in English were included in this review.

Conclusion

Although there is an obvious paucity in paramedicine-specific NPT studies, the results of this review identify the NPT experience for paramedicine participants as a mostly positive experience with proven benefit to clinical skills development. However, NPT is not without its deficiencies. The effectiveness of the program delivery would be weakened if a predisposed discordance between students' personalities existed, or if any inconsistencies existed in the student mentor's knowledge or attitude.

Although NPT is widely published by other health professions, in the context of paramedicine education, NPT remains largely undocumented and understudied. Although paramedicine near-peer programs are currently facilitated in

other universities, there is a lack of published research into the efficiency or benefit of the programs that warrants further research.

Compliance with Ethical Standards

Conflict of Interest The author declares that he has no conflict of interest.

Ethical Approval NA

Informed Consent NA

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