



Evidence-based practice conversations with clinical supervisors during paramedic placements: An exploratory study of students' perceptions

Emma Bourke-Matas¹, Stephen Maloney², Megan Jepson¹, Kelly-Ann Bowles¹

¹Department of Paramedicine, School of Primary and Allied Health Care, Monash University, Frankston, Australia

²Department of Physiotherapy, School of Primary and Allied Health Care, Monash University, Frankston, Australia

ABSTRACT

Objective: Universities teach the latest evidence-based practice (EBP) when students attend academic classes. Clinical placements are an important aspect of paramedic training; however, may pose a potential area of conflict regarding approaches to practice. This study explored multiple facets of EBP conversations while on clinical placement.

Methods: A cross-sectional self-administered electronic questionnaire with paramedic students from an Australian university.

Results: Eighty-two percent of students understood what constitutes an EBP conversation, however less than a quarter of students reported learning about or practicing EBP conversations on their clinical placements. Gender of the supervisor and age of the student significantly affected the likelihood of learning about or practicing EBP conversations ($p = 0.029$ and $p = 0.049$, respectively). Positively, students did not feel that EBP questioning would have possible negative repercussions.

Conclusions: Paramedic students and clinical supervisors rarely engage in EBP conversations during clinical placement, with the effect of gender and age requiring further investigation.

ARTICLE HISTORY

Received December 19, 2019

Accepted May 15, 2020

Published May 29, 2020

KEYWORDS

Evidence-based practice; paramedic; education; student; communication

Introduction

Continuing advances in medicine reinforce the need to use an evidence-based approach to develop effective patient care [1]. Evidence-based practice (EBP) forms the foundation on which good medical practice is built and promotes the evaluation of “new evidence to validate existing practice or identify a gap in knowledge that may need additional research” [2]. Understanding how to reflect professionally on EBP and how to initiate conversations about practice is a vital component in the professional development of health students, as it enables the early development of a lifelong skill necessary throughout the rest of their professional careers [3].

One such health field which is undergoing significant transformation is that of paramedics. The pre-hospital medicine is a growing academic discipline with an increasing research base establishing

evidence for practice [4]. With registration commencing in Australia in 2018, paramedics now form a part of the Australia Health Practitioner Regulation Agency, and many ambulance services could face unprecedented challenges as a result of this [5,6]. These changes include education requirements for registration, with the vast majority of Australian ambulance services requiring a discipline-specific bachelor's degree [3,7]. Due to the recent professionalization of paramedicine, we will continue to see diversity in the workforce and education background of paramedics for the foreseeable future.

Similar to clinical placements within other health fields, a requirement of all Australian university-based paramedic programs is that students complete an on-road clinical component [3]. This involves paramedic students working closely with a clinical supervisor or an experienced clinician. A clinical supervisor is defined as someone who has

Contact Emma Bourke-Matas ✉ emma.bourkematas@monash.edu 📧 Department of Paramedicine, Monash University, Frankston, Australia.

undertaken an approved mentorship preparation program and is qualified to support and assess students in the practice setting [8]. Research has found that students prefer “friendly and non-threatening learning environments on clinical placements” and that if the “relationship between educator and student is not harmonized by a willingness to educate...effective and meaningful student learning is not likely to occur” [9 p. 7]. Despite these findings, there is currently no nationally recognized curriculum for preparing these paramedic clinical supervisors, therefore producing diversity in teaching approaches between ambulance services [10,11].

As a result of the diversity in academic qualifications and clinical supervision training within and between ambulance services, clinical placements can pose a potential area of conflict regarding approaches to practice as educational differences may result in paramedic students being exposed to practices that deviate from those learnt during their degree [12]. Tertiary institutions generally rely on up-to-date and well-informed EBP to guide clinical decision-making, whereas paramedics may more heavily rely on their clinical experience. Clinical placements present an opportunity for students to share the latest evidence with clinical supervisors through an EBP conversation, whereas at the same time learning to develop their clinical interpretation skills [13]. For this to occur successfully, it is vital for students to have the skills required to initiate and engage in professional EBP conversations with their clinical supervisors while on placement [10]. Although these conversations have the potential to be challenging [14], it is also important to note that these challenges are not likely unique to the paramedic field, with limited literature available across other health fields. There could be gender, age, educational, experiential, and even hierarchical differences among the two parties, intensifying the delicate nature of the relationship between students and clinical supervisors [11].

Little is known about what defines an EBP conversation, what contributes to these conversations, and how paramedic students and their clinical supervisors conceptualize them. Furthermore, insights are needed about how students view EBP conversations, the prevalence of these conversations, and the opportunities available for students to have them during clinical placements. Besides, there is a need to explore if demographic and educational-related factors may impact on students engaging in EBP conversations to ensure that these conversations can take place to the benefit of the student, clinical supervisor, and future patients.

Aims

The aim of this research is to:

1. Explore the conceptions and understandings that paramedic students have of EBP conversations during clinical placements;
2. Explore the prevalence of EBP conversations between supervisors and students during clinical placements;
3. Explore factors that may impact on paramedic students ability to engage in EBP conversations during their clinical practice;
4. Explore factors impacting on students practicing and learning about EBP conversations during clinical placements;
5. Identify whether paramedic students believe that their EBP communication skills could be improved.

Methods

An exploratory cross-sectional survey with 26 open- and closed-ended questions was distributed, resulting in primary data collection through the use of an on-line questionnaire [15,16]. The selection was through non-random convenience sampling and was on a voluntary basis. No incentive was provided for the completion of the survey. Paramedic students enrolled in the 2nd or 3rd year of their degree, along with final year students in a nursing and paramedic double degree at an Australian university, were invited to participate. These cohorts were specifically chosen due to their close proximity to entering the workforce and their previous experience with clinical placements.

The survey was designed by the research team, based on a thorough review of the literature and input from experienced clinical academics. It was then piloted with a focus group of students for readability to ensure the content validity. Modifications were then made to improve question clarity and flow. The survey was self-administered online through SurveyMonkey® with the survey open for a 6-week period and designed to take approximately 20 minutes in duration. Students were invited to participate with a link added to their academic unit web interface page. Survey questions mainly focused on student demographics, supervisor demographics, and student understanding and experience with EBP conversations while on clinical placements. An ethical clearance was obtained from the Monash

University Human Research Ethics Committee in July 2017 (reference number 8693).

Research Context

The study was conducted in Victoria, Australia, and surveyed paramedic students who were completing clinical placements with the government ambulance service. At the time of the research, students selected their own single-day clinical placements at metropolitan or rural locations with a two-person paramedic crew. Students were given a range of exposure to both metropolitan and rural locations. Besides this, the paramedic students were also given the opportunity to complete placements with other organizations such as at public hospitals and a non-emergency patient transport provider.

Data Analysis

The qualitative and quantitative aspects of the survey were analyzed separately. The quantitative data analysis was completed in Stata 14, most commonly presented with a descriptive analysis as percentages of the entire data set. The univariate analysis was completed to identify variables for the logistic regression model. Variables that had an association with the dependent variable with a $p < 0.10$ were included in the multivariate analysis. Logistic regression was completed to identify any variables that may affect students' ability to learn or practice EBP conversations while on clinical placements. A statistical significance was set at $p < 0.05$ [16].

For all qualitative questions, themes were developed independently and then confirmed via discussion. Two independent researchers completed a content analysis using a thematic model, including finding and contrasting representative examples from the data set [17]. NVivo software was utilized to assist with the content analysis. EBP "designates a process of clinical decision-making that integrates research evidence, clinical expertise, and patient preferences and characteristics" [18, p. 611]. The research team worked together to define the students' level of understanding when asked to provide an EBP definition. For students to be deemed to have a moderate level of understanding, they included only one of the words of research or communication (deemed necessary to identify patient preference and characteristics). If students included both research and communication, it was classified as a good level of understanding. A word cloud was also used as a method of exploratory

qualitative data analysis [19]. This feature provides an effective visual representation of the frequency of words used, where larger words are more common compared to those that are smaller [19].

Results

A total of 185 paramedic students responded to the survey (total enrolled students = 253). These students had completed a number of clinical placements and thus were considered to be a representative sample of the population. Of 185 responses, 17 did not progress past the demographic questions, and therefore, their information was not included in the data analysis. As a result, the total number of participants that answered all questions was 168. Table 1 shows the demographic breakdown and placement experience information of the participants. More than half of all participants (53%) were aged between 21 and 25 years and enrolled

Table 1. Participants' demographic and placement experience ($n = 168$).

Characteristics	<i>n</i>	%
Age (years)		
≤ 20	54	32
21–25	89	53
26–30	18	11
31–35	5	3
≥36	2	1
Gender		
Male	73	44
Female	93	55
Prefer not to answer	2	1
Year level		
2 nd year	100	60
3 rd year	52	31
Final year dual degree	16	9
Primary language spoken at home		
English	161	97
Other	7	3
Number of placements		
5–9	62	37
≥10	105	63
Number of supervisors		
1–5	17	10
6–10	18	11
11–15	38	23
Lost count	95	56

in the 2nd year of their paramedic degree (60%). About 56% ($n = 95$) of respondents stated to have lost count of the number of clinical supervisors that they had, having greater than 15 supervisors. About 70% of the participants also said that they have had a fairly even mix of female and male clinical supervisors, whereas 15% of respondents mainly had male supervisors and 10% mainly had female clinical supervisors.

Overall, when students were asked “*what does an EBP conversation mean to you? and how do you define it?*” (with a free text response), they were considered to have a good understanding of EBP conversations. The analysis of the nodes established that 43% of students had a good understanding of an EBP conversation, whereas 39% of them had a moderate understanding, in contrast with 18% being identified as using definitions that were unsure or off-track. Key words such as “practice” and “research” were among the most heavily used to articulate their definitions. “Practice” was used in the context of describing the conversation, not simply reiterating EBP. The word “evidence” was frequently mentioned, in some cases described as “scientific”, and the concept was described by a few students as impacting on ethical practice, as well as being helpful to teach and educate students. Furthermore, actions of “discussing” and “communicating with other health practitioners... to enhance own practice” were utilized by participants. Acknowledging practical skills and the use of established guidelines were also considered important by the students.

Figure 1 shows a word cloud interpretation of the key words identified in the students’ responses when defining what they understood to be an EBP conversation during clinical placements. This technique helped to visually document the frequency of the words used in the students’ definitions. As shown in Figure 1, “practice” was the most commonly repeated word, followed by “discussing,” “evidence,” “research,” and “conversation.”

The student definitions of EBP conversations were articulated around issues of conducting conversations about paramedic practice or practice supported by current, significant, relevant, and successful research from a variety of studies. For example, one student’s definition was:

“Turning well researched principles into action and ensuring the reasons for these changes are well communicated” (S15).



Figure 1. Word cloud of EBP definitions provided by participants ($n = 155$).

The idea of challenging outdated practice was also raised in some of the student definitions. One of the participants described an EBP conversation as:

“A discussion around why we do what we do, what is the best practice based on evidence and what that evidence supports, not just ‘because this is how we have always done it’ ” (S162).

On the contrary, a small number of students ($n = 13$) confessed not knowing what an EBP conversation was or chose not to answer the question.

The opportunities are available to engage in EBP conversations, whereas on clinical placement were also explored. Only 23% ($n = 37$) of respondents reported to have learned about EBP conversations during their clinical placements, and 18% ($n = 29$) reported to have practiced EBP conversations during their clinical placements. Furthermore, the degree of student participation in EBP conversations during placements was found to be low, with almost one-third of participants ($n = 52$) stating that their mentors never initiated them.

When assessing relationships between learning about and/or practicing an EBP conversation on placement and the student or supervisor demographics, the only related variables were the gender of the supervisor and the age of the student, respectively. Using simple logistic regression, it was found

that there is an association between the gender of the supervisor and learning about EBP conversations on placement [$p = 0.029$, 95% confidence interval (CI) (1.069–3.212)]. Although there was no difference between the individual genders, the student was more likely to have learned about an EBP conversation on placement if they had a fairly even mix of supervisor genders compared to either mainly female supervisors [OR 0.21, $p = 0.011$, 95% CI (0.062–0.696)] or mainly male supervisors [OR 0.18, $p = 0.032$, 95% CI (0.037–0.893)]. Although the gender of the student was not associated with having learned about EBP conversation on placement, the effect of the supervisors' gender significantly affected the student's ability to have learned about EBP conversations on placement if the student was female ($p = 0.012$) but was not affected if the student was male ($p = 0.486$).

Although the age of the student was not associated with practicing EBP conversations while on placement, students aged between 21 and 25 years were significantly less likely (OR = 0.4, $p = 0.049$, 95% CI [0.161–0.995]) to practice EBP conversations during clinical placements when compared to students of 20 years of age and younger. Both age groups reported that over 90% of the supervisors were mostly older than them, and there was no difference in the distribution of the supervisor's gender ($p = 0.258$).

With regard to EBP conversations, some of the reasons that students gave for not initiating them included that they had "never heard of it" (S9) or it "never [came] up in conversation" (S11). It was also mentioned that they did not feel qualified to initiate those conversations (S4). Some students expressed their unwillingness to challenge the clinical practice guidelines (CPGs) culture through comments such as:

"The term 'evidence based practice' is used and the AV practice guidelines are considered to be EBP and that is where the conversations ends" (S12).

The survey invited participants to provide suggestions on how they believe their participation in EBP conversations during clinical placements could improve. It was found that 83% ($n = 134$) of participants believed that there was room for improvement. Some of the suggestions included gaining a better understanding of what EBP conversations are and how they work. Moreover, students wanted to be given more opportunities to practice EBP conversations before clinical placements in order to

gain the knowledge, skills, and confidence needed to use them effectively.

Finally, the study found that 67% ($n = 108$) of participants felt that there would not be negative repercussions on them as a result of engaging in EBP conversations with their clinical supervisors. However, a small number of them ($n = 6$) mentioned that those repercussions would depend on the clinical supervisor they were with.

Discussion

Understanding how to reflect professionally on EBP and how to initiate conversations about practice is a vital component in the professional development of health students [3]. This is an important lifelong learning communication skill and is commonly seen in other professions, such as education [20]. A content analysis of students' responses to defining EBP conversations was closely aligned with definitions provided in the literature [18,21–23]. The results demonstrated how the participants linked EBP theory to their clinical practice. Responses demonstrated that practice supported by current, significant, relevant, and successful research from a variety of studies was important to many participants. The majority of students (82%) articulated a moderate-to-good understanding of an EBP conversation, as well as the elements contributing to it. There was a limited mention of engaging in "an open discussion," with no participants describing it as a collaborative or reflective process. The idea of challenging outdated practice was also raised in some of the students' definitions, which is echoed in the literature [24,25]. This is a positive finding as it indicates that students can recognize outdated EBP.

As for their placement experiences, the paramedic students surveyed attended single allocated placement days instead of completing blocks, which could potentially account for the large variance in clinical supervisor numbers. This could also be a barrier to engaging in EBP conversations. A number of studies have found that a positive relationship between the clinical supervisor and student is the most important factor when determining the success of clinical placements [26,27]. Due to the lack of continuity in supervision, the students may find it difficult to build such a relationship in this short period of time.

Furthermore, it was found that female students whose supervisors were an even mix of gender were more likely to learn about EBP conversations

during their placement compared to those who had supervisors from mainly one gender. Although it is not understood why this occurs, there could be a number of different explanations for this finding. For example, Larsson et al. found that “the nature and quality of the mentoring relationship are significant for girls...girls prefer relationships more characterized by intimate connections” [28 p. 20]. This could explain the increased likelihood of female students learning about EBP conversations during clinical placements. Although the literature expresses various theories as to this gender difference for both supervisors and students, the exact reasoning remains unclear. In this research, we have found a definite interaction effect between the gender of the student and the gender of the supervisors when it comes to learning of EBP conversations during clinical placement. Thus, these concepts should be further explored in well-designed qualitative research projects to ensure that all students can learn about EBP conversations during clinical placements, regardless of their or their supervisor’s gender,

Besides, students aged between 21 and 25 years were less likely to initiate EBP conversations during their clinical placements compared to those 20 years of age or younger. In this study, the majority (75%) of students aged 20 years or younger were in their 2nd year of the degree, and this was their first exposure to emergency ambulance placements. While the older age group is more likely to have completed more placements and be further into their degree compared to those 20 years and below, 2nd-year paramedic students take on a heavy observational role with minimal clinical input. Therefore, it is likely that the expectations on them are less due to not having completed all of their subjects at university, thus having less exposure to CPGs. In comparison, 3rd-year paramedic students potentially perceive that they will be met with higher expectations from supervisors due to their close proximity to entering the workforce. However, on the contrary, it could also be a result of supervisors, assuming that these older students are already well informed, and thus, they are not challenged to demonstrate their understanding. The reasoning behind this finding is currently speculative, and as aforementioned, further qualitative research is much needed to come to a conclusive explanation.

Fortunately, the majority of students (67%) did not believe that there would be repercussions as a result of engaging in EBP conversations. This seems

to indicate that fear of repercussions is not a factor that contributes negatively to their engagement in these EBP conversations. This is a positive finding as it provides a link between the academic and clinical placement environment. It demonstrates on-road placements to be an environment that supports clinical inquiry. As a result, students have the potential to improve clinical learning and enhance the role that they play in discussing the latest evidence with experienced clinicians.

Further Research

While these initial findings are helping us to understand some aspects of paramedic student EBP communication during clinical placements, further research should be conducted to provide a greater insight into the student experience. In turn, this will ensure that there is a direct link between learning in both the academic and clinical environment. This is an emerging area of research with very limited studies currently available. As for future research, it would be beneficial to investigate how clinical supervisors view and experience EBP conversations with paramedic students. Besides, larger, longitudinal studies using a mixed-method approach with greater student populations from different states and countries should also be conducted to explore EBP communication between students and mentors in clinical placements.

Limitations

It needs to be acknowledged that the exploratory nature, convenient sampling, and potential for selection bias are limitations of the study. The addition of other research techniques (e.g., interviews) could add to the further exploration of identified ideas and findings [15]. Besides, the cross-sectional design only demonstrates a snapshot in time and could result in recall bias among participants [16].

Conclusion

This is the first research study to explore the prevalence and nature of EBP conversations while paramedic students are engaging in clinical placements. The students demonstrated an awareness of the elements contributing to a good EBP conversation in the clinical placement setting. However, the study found that paramedic students and clinical supervisors do not regularly engage in EBP conversations.

Female students whose supervisors were an even mix of gender were more likely to learn about EBP

conversations during their placement compared to those who had supervisors from mainly one gender. Besides, students were significantly more likely to practice EBP conversations if they were younger. On a positive note, the majority of students felt that there would not be negative repercussions on them if they were to engage in EBP conversations.

Ethical Standards

All procedures performed in this study were in accordance with the ethical standards of the Monash University Human Research Ethics Committee. Ethical clearance was obtained in July 2017 (reference number 8693), and all persons gave their informed consent before their inclusion in the study. Therefore, it has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

Conflict of Interest

The authors declare that they have no conflict of interest.

Funding

Nil.

References

- [1] Wolfe G, Greenhouse, P. Blueprint for design: creating models that direct change. *J Nurs Adm* 2007; 37(9):381–7.
- [2] Poe S, White K. John's Hopkins nursing evidence-based practice: implementation and translation. Sigma Theta Tau, Indianapolis, IN, 2010.
- [3] Lord B. The development of a degree qualification for paramedics at Charles Sturt University. *J Prim Emerg Health Care* 2003; 1(1–2):5.
- [4] Joyce C, Wainer J, Piterman L, Wyatt A, Archer F. Trends in the paramedic workforce: a profession in transition. *Aust Health Rev* 2009; 33(4):533–40.
- [5] Williams B, Onsman A, Brown T. Is the Australian paramedic discipline a profession? A national perspective. *Int Paramed Pract* 2012; 1(5):161–8.
- [6] Williams B, Onsman A, Brown T. From stretcher-bearer to paramedic: the Australian paramedics' move towards professionalisation. *J Emerg Prim Health Care* 2009; 7(4). <http://dx.doi.org/10.33151/ajp.7.4.191>
- [7] O'Brien K, Moore A, Dawson D, Hartley P. An Australian story: Paramedic education and practice in transition. *Australas J Paramedicine* 2014; 11(3). <http://dx.doi.org/10.33151/ajp.11.3.14>
- [8] Anderson L. A learning resource for developing effective mentorship in practice. *Nurs Stand* 2011; 25(51):48–56.
- [9] Waxman A, Williams B. Paramedic pre-employment education and the concerns of our future: what are our expectations? *J Emerg Prim Health Care* 2006; 4(4):1–10.
- [10] Kilner, T. Educating the ambulance technician, paramedic, and clinical supervisor: using factor analysis to inform the curriculum. *Emerg Med J* 2004; 21(3):379.
- [11] Furness S, Pascal J. Mentoring experiences in paramedicine. *Focus Health Prof Educ Multidiscipl J* 2013; 15(2):30–40.
- [12] Andrews G, Brodie D, Andrews J, Hillan E, Thomas B, Wong J, et al. Professional roles and communications in clinical placements: a qualitative study of nursing students' perceptions and some models for practice. *Int J Nurs Stud* 2006; 43:861–74.
- [13] Ross L, Bennett R, Perera C. Clinical placements: putting theory into practice for paramedic students. *J Contemp Med Edu* 2015; 3(1):2–5 doi:10.5455/jcme.20141122082819
- [14] Trede F, Smith M. Teaching reflective practice in practice settings: students' perceptions of their clinical educators. *Teach High Educ* 2012; 17(5):615–27.
- [15] Mann C. Observational research methods. Research design II: cohort, cross sectional, and case-control studies. *Emerg Med J* 2003; 20:54–60.
- [16] Gosall N, Gosall G. The doctor's guide to critical appraisal. PasTest, Cheshire, UK, 2013.
- [17] Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006; 3(2):77–101.
- [18] Spring, B. Evidence-based practice in clinical psychology: what it is, why it matters; what you need to know. *J Clin Psychol* 2007; 63(7):611–31.
- [19] Cidell J. Content clouds as exploratory qualitative data analysis. *Royal Geogr Soc* 2010; 42(4):514–23.
- [20] Bruniges M. An evidence-based approach to teaching and learning [Internet] Department of Education and Training, Canberra, Australia, 2005. Available from: http://research.acer.edu.au/research_conference_2005 (Accessed 11 October 2018).
- [21] Fineout-Overholt E, Levin R, Melnyk B. Strategies for advancing evidence-based practice in clinical settings. *J N Y State Nurses Assoc* 2004; 35(2):28–32.
- [22] McFadden J, Thiemann L. Evidence-based practice for lifelong learning. *Am Assoc Nurse Anaesth J* 2009; 77(6):423–6.
- [23] Melnyk B, Fineout-Overholt E. Evidence-based practice in nursing & healthcare: a guide to best practice. Lippincott Williams & Wilkins, Philadelphia, PA, 2005.

- [24] Bickhoff L, Levett-Jones T, Sinclair P. Rocking the boat – nursing students’ stories of moral courage: a qualitative descriptive study. *Nurse Educ Today* 2016; 42:35–40.
- [25] Levett-Jones T, Lathlean J. Don’t rock the boat: nursing students’ experiences of conformity and compliance. *Nurse Educ Today* 2008; 29:342–9.
- [26] Kilminster SM, Jolly BC. Effective supervision in clinical practice settings: a literature review. *Med Educ* 2000; 34(10):827–40.
- [27] O’Brien A, McNeil K, Dawson A. The student experience of clinical supervision across health disciplines – perspectives and remedies to enhance clinical placement. *Nurse Educ Pract* 2019; 34:48–55.
- [28] Larsson M, Pettersson C, Eriksson C, Skoog T. Initial motives and organizational context enabling female mentors’ engagement in formal mentoring – a qualitative study from the mentors’ perspective. *Child Youth Serv Rev* 2016; 71:17–26.