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Case Study

Engaging paramedic students in research: A case report

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Summary

The use of volunteer undergraduate students to support simulated training for peers is common in paramedic science. However, there are limited examples of engaging paramedic student-volunteers in research as compared to that reported in cognate disciplines such as medicine and nursing. This case report shares our experience with engaging a penultimate year paramedic student in evaluation research. This information we hope will start the dialogue on the epistemology and pedagogies for effective engagement of undergraduate paramedic students as future researchers.

Keywords

paramedic, research, education

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Background

The engagement of undergraduate clinical students in research is not new and is routinely done in disciplines such as medicine and nursing. However, by comparison to these disciplines, little is published about the involvement of undergraduate paramedic students in research activity. A plausible reason for this is that the undergraduate paramedic program in Australia is relatively new and the academic capacity to supervise student projects is consequently still developing. The purpose of this report is to share our experience with the engagement of a penultimate-year paramedic student in a research project and to explore from two points of view (student and supervisor) the potential benefits and value of this approach.

The student's perspective

As the study of paramedic science moves from on-the-job vocational training to a 3-year university-based undergraduate program, the use of evidence-based research to guide clinical practice increases. The involvement of undergraduate students in research is sparse at best and no clear pathway has been developed to encourage or advertise future involvement. As a penultimate Bachelor of Nursing/Bachelor of Paramedic Science student with a slightly lighter study load due to recognition of prior learning (three subjects including one practicum) and a keen interest in research, I found myself with down time.

Having completed research and evidence based practice in semester one of 2013, I had been exposed to the basic principles of study designs and literature reviews that left me with a desire

to learn more about research processes and their applicability in the paramedic field. Although research involvement is not a mandatory or even advised component for the undergraduate paramedic program, my interest had been peaked enough to further investigate research options. After a chance meeting with Professor Vivienne Tippet at the Centre for Emergency and Disaster Management Forum during the June 2013 break, I found myself meeting with Dr David Lim. David and I discussed intellectual property, occupational health and safety, indemnity and logistics at the first meeting before discussing mutual areas of interest in an endeavour to match me up with a suitable study area within the faculty.

As paramedics progress towards professional recognition and university-based education, universities become reliant on local ambulance services to provide students with on-road placements to supplement simulation and university-based learning (1,2). As a student who will one day be a mentor, it is in my best interests to ensure that future students are as equipped as possible to be job-ready upon graduation hence any project with a focus on paramedic education fits within my key interest areas. The projects David was working on with the faculty were a perfect fit for me.

As a penultimate student, time was the main constricting factor in my involvement as I juggled placement, course work and research work with non-university work. My major concern in becoming involved with the research project was becoming a burden to the research team due to lack of experience and area specific knowledge. As a supervisor, David did an excellent job of ensuring I was adequately briefed on expectations and timeframes for all of my assigned tasks. Due to clashing teaching/learning timetables, we mostly kept in contact via email with weekly meetings arranged to assess progress.

In the first stage of the project, David involved me in the formulation of the evaluation instrument with the view that as a student I held a unique expert opinion. After the Delphi-questionnaire was finalised I was tasked with recruiting students via social media used by my cohort - although after a lacklustre response this was bolstered by a faculty-initiated email. I assisted in the organisation of the focus groups and transcribed the resultant taped interview. Following the collection of data from the second stage of the research I was responsible for the transcription of the qualitative data and was guided in a one-on-one session in quantitative and qualitative analyses to fill a knowledge void. Not only did this assist me with my ability to contribute in this project but also my ability to confidently contribute in future projects without the need for as much guidance.

Throughout this project I have learnt a number of invaluable lessons, had the privilege of working alongside academics I have admired since first year and been given the opportunity to contribute to the improvement of paramedic education for the next generation of university-trained paramedics. I would

recommend student research positions to every paramedic student with a keen interest in improving the way we learn and teach paramedic science.

The supervisor's perspective

To the best of my knowledge, this is the first time that an undergraduate paramedic student at the Queensland University of Technology (QUT) has volunteered for experience being involved in a research. At QUT, undergraduate paramedic students are not required to conduct independent research, however emphasis is placed throughout the course on the importance of evidence-based clinical practice. The ability to critically analyse the literature and form an evidence-based opinion on any topic of relevance to the profession is taught in a 12-credit point second year unit (evidence-based paramedic practice). Having had experience supervising medical students in research projects, I see this as an opportunity to transfer successful models from this setting to paramedicine.

The student (Courtenay Grant-Wakefield) was provided with a workstation and resource access, conducted occupational health and safety assessment, and appropriate indemnity. Intellectual property and Fair Work Act 2009 implications had to be addressed in the context of a volunteer activity.

Undergraduate research is touted as the pedagogy for the 21st century and is congruent with current 'romantic' curriculum which emphasises personal and professional growth (3). In the literature, undergraduate research had been shown to have a positive impact on student retention (4,5), and if properly conducted can push students from the base of Bloom's Taxonomy of Learning pyramid: Remembering, Understanding and Applying (6) to acquire skills at the top of the pyramid: Analysing, Evaluating and Creating (7).

I had approached this collaboration focusing on why I teach as compared to how or what to teach (8). I felt strongly that any research project which Courtenay became involved with needed to be 'situated' in real-life practice so that it had meaningful purpose and utility to Courtenay's professional practice (9). In social constructivism, learning is student centred and the role of the supervisor is that of a facilitator (10).

At the initial meeting, Courtenay and I discussed her interests in some detail. At all times, I was cognisant of the importance of providing Courtenay with the opportunity to build on her existing content knowledge; and also of doing the research with the student. In constructivist pedagogy, supervision is a meaningful two-way dialogue (10). Hence we established ground rules and understanding of how we were to engage with each other so that we had a shared goal and developed a relationship of trust.

Courtenay had expressed an interest in our research in evaluating the competencies of our paramedic graduates. This interest was informed by her experience while on clinical

placements. We discussed a planned project to revise our assessment tool for final-year clinical placement in terms of job-readiness. However, 1 month into this project, we agreed to drop this research due to the lengthy stakeholder consultation process that the project would require and the need for funding.

A secondary project, which fell into place quickly and which also aligned with Courtenay's interest, was the evaluation of human cadaveric training offered to penultimate-year paramedic students. This evaluation research was already approved by the QUT's Human Research Committee. The evaluation of cadaveric training was conducted in two sequential phases. The first stage employed a Delphi methodology to formulate an evaluation instrument. The second stage involved the implementation of the evaluation instrument to the 2013 cadaveric training workshop.

In the first stage of the evaluation research, Courtenay was involved as an 'expert' in formulating the evaluation instrument. We adopted the approach that Courtenay as a student was a key stakeholder in the learning process. Students have an active role in knowing what they need to learn and should have a voice in articulating what works and what does not. In the first round of the Delphi process, Courtenay and the other experts were asked to articulate what they wished to achieve from the evaluation. Consequently, a Delphi-questionnaire comprised of 26 questions was developed. The questionnaire underwent two further rounds of consensus survey to refine minimum content required. To assess the instrument's content and face validity, two rounds of focus groups were held. Courtenay took an active role in recruiting respondents for these focus groups. Her experience with social media and the familiarity with the student body were a bonus to us. The interview guide was formulated in partnership with Courtenay. Courtenay helped out at the focus groups by noting key themes and was solely responsible for transcribing the taped interviews. During the second stage of the evaluation, Courtenay was away for her scheduled clinical placement. Her involvement was in the entering of the qualitative comments while I entered the quantitative data. In the writing up of this research, Courtenay was involved in the planning and drafting of the report, and was named as a co-author in the report.

Even though Courtenay had been taught research methodology in her previous unit of study, this research required her to undertake significant reading especially in qualitative methods. One-on-one sessions were held with Courtenay to analyse the quantitative and qualitative data. Explanation as to why particular steps and statistical tests were performed was tailored to fill Courtenay's knowledge gap. At all stages I was cognisant of being non-evaluative and non-hierarchical in my approach. I had viewed Courtenay as my peer in this research journey and encouraged her to own the project. For Courtenay, other than the experience of being involved in research and owning the research, she was exposed to the pragmatic nature of doing research; specifically the need to drop our first research project to work on something that was more tenable. The opportunity

provided Courtenay with a different perspective and was a powerful tool in context of reflective learning (11). As a supervisor, I believed I had as much to learn from Courtenay as she from me. Courtenay has provided me with a unique insight into the paramedic student's culture, which the inherent power structure in an academic institute would have insulated me from. Working collegially with someone who was not necessarily as technically skilled as I was, enabled me to pause and reflect on why things were done and be critical about whether academic conventions were indeed just convention or truly necessary.

The student cohort also benefitted from seeing research being done with them and not just to them. This reflected QUT's commitment to its students.

Conclusion

The engagement of undergraduate paramedic students as volunteers is common practice in simulated training and in the Objective Structured Clinical Examination. However, there is little in the literature that describes the engagement of undergraduate paramedic students as research assistants. Paramedic science as an academic discipline is relatively new and the body of paramedic-led research is growing slowly. Engagement with undergraduate paramedic students in research may already occur but at an individual and/or ad hoc level.

In the preparation of this paper, we reflected on the lack of formal integration of undergraduate paramedic research into a whole-of-course curriculum by comparison to curricula in medicine. Medical students can elect to undertake research and be awarded credits towards their undergraduate degree, and informally towards their postgraduate specialisation. In several academic institutions, medical students who completed an advanced level of research may also be eligible to be separately awarded a Bachelor of Medical Science degree. Supervisors of undergraduate medical research are encouraged to formulate research projects that 'transform' medical students in a recognised field of medical specialties, such as general practice (12–17). The transformation paradigm follows problem-based learning which is widely adopted in medical training (18).

By comparison, case-based teaching is the predominant form of pedagogy in undergraduate paramedic training in Australia (19,20). Regardless, both case-based and problem-based learning have their roots in constructivism (21), which is the approach we have adopted for this project. Despite the extra work and the learning Courtenay had gained from doing undergraduate research, QUT does not offer Honours recognition as part of its paramedic science program. It is worthwhile for us to explore whether learning which addresses higher levels of Bloom's Taxonomy (research) should be appropriately recognised and become a conduit to higher degree qualification in paramedic science at either the Master or Doctoral level.

It is not clear from the existing literature on paramedic student research whether the undergraduate research investigation was student-led or student-assisted; what pedagogies supervisors used to engage students; what worked and what had not; how the work was supported and coordinated; nor how best to facilitate innovation in undergraduate research. Addressing these questions and providing opportunities for undergraduate paramedics to explore research are vital for the discipline

in establishing itself as an individual and unique academic discipline, complementary to but separate from other cognate disciplines. The teaching of paramedic science will be richer if we are able to share our experiences in this regard.

Competing interests

The authors declare no competing interests for this work.

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