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Pathway to Paramedicine Program perspectives Part 1: Paramedic students

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Research

Pathway to Paramedicine Program perspectives

Part 1: Paramedic students

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Abstract

Introduction

Paramedic practice has evolved significantly with a greater emphasis now being placed on paramedics to perform educator-type roles to junior paramedics, patients and the wider community. Paramedic training and education should therefore include preparing students for this important role. The Pathway to Paramedicine Program used a peer assisted learning (PAL) model to expose paramedic students to the educator/mentor role. The aim of this study was to evaluate the student paramedics' perspectives of the Pathway to Paramedicine Program.

Methods

A pilot intervention study using paper-based surveys conducted with 14 paramedic students enrolled in either the Monash University (Melbourne, Victoria) Bachelor of Emergency Health (Paramedic) degree or the Bachelor of Nursing/Emergency Health (Paramedic) degree. The paramedic students acted as mentors/educators to secondary school students, teaching them theory and practical skills common to paramedic practice during weekly tutorials. The Pathway to Paramedicine Evaluation (PPE) survey was used to determine the participants' perspectives at the completion of the program.

Results

All 12 Likert scale questions on the PPE achieve a median score of 4 or higher with four items achieving a maximum median of 5 (strongly agree). A thematic analysis of the free text questions found that the participants enjoyed teaching and this helped to reinforce their own knowledge and skills.

Conclusion

This pilot study showed that the paramedic students had an overwhelmingly positive perspective of the Pathway to Paramedic Program and would happily recommend it to others.

Keywords

paramedic; paramedic as educator; peer assisted learning; PAL; mentor; undergraduate education; careers

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Introduction

Paramedic practice has evolved significantly in the past decade, with major changes in the education and clinical practice spheres (1–3). Also gaining prominence in industry and paramedic training programs is the significance of the 'paramedic as educator' role (2). Participation in mentoring, teaching and development of others has been deemed essential by the Council of Ambulance Authorities (CAA) in the current professional competence standards (1).

Paramedic clinical educators, including clinical instructors, mentors and preceptors, play a vital part in the development and growth of graduate paramedics in their first 6–12 months of practice. Not dissimilar to other health professions, this period allows novice practitioners to learn from qualified experience staff in often unpredictable, highly charge and diverse clinical settings (4). The 'paramedic as educator' role is however, not confined to this formal period. Based on the 2008–09 annual report by the CAA, qualified paramedics routinely mentor junior practitioners informally, with one in three paramedics acting as the 'senior' paramedic to a student or newly graduated paramedic (2). Paramedics also play a role in educating patients and family members in relation to their ailments and treatment or service options, similar to patient educator roles in nursing (5). In addition, experienced paramedics often teach in undergraduate courses at university level and service specific profession development programs (2).

With the increasing demand, and importance placed on the diverse paramedic educator role, there is greater necessity to introduce more training at undergraduate level to prepare students to be educators in addition to clinicians (2). Some universities have already introduced training and programs to develop these skills (6). Most of these programs involve a peer assisted learning (PAL) model.

Peer assisted learning is a well-researched area, with evidence to support its effectiveness (6–10). It is touted as an inexpensive tool which is adaptable and can be applied to many different disciplines and situations (7). It has proven to be a valuable tool in other health professions such as medicine, nursing and allied health professions (8–11). Proponents of PAL cite numerous benefits. Unlike traditional teaching environments with an authority figure teaching, student mentors/teachers encourage a less intimidating learning environment which fosters natural interaction where students are freely able to ask questions and express opinions (12). A recent study of paramedic students participating in a peer mentoring program found the mentor's ability to form relationships with their mentees and staff improved as did their clinical skills and their knowledge of the subject (12). In addition, both mentors and mentees alike had a positive experience and gained in confidence (12). Hryciw et al achieved similarly positive outcomes (6). Mentors and mentees found the program to be a valuable resource, with mentees showing an increase in performance and a decreased fail rate compared to students who were not involved in the study, and mentors experiencing an increase in their communication and

leadership skills (6).

The Pathway to Paramedicine Program employed a PAL model. The program involved second year paramedic students teaching secondary school students interested in a career in paramedicine. The program ran for 2 hours per week over 9 weeks in the Department of Community Emergency Health and Paramedic Practice at Monash University Peninsula Campus in Melbourne, Victoria. The paramedic students in consultation with lecturing staff planned the entire curriculum, which focused on basic yet sequential components of the undergraduate degree and paramedic practice. Pairs of paramedic students were required to plan weekly content and submit a lesson plan to staff 1 week prior to their session to allow time for feedback and amendments. Weekly topics included but were not limited to: primary survey, vital signs survey, cardiovascular system, respiratory conditions, cardiopulmonary resuscitation and trauma. Theoretical sessions were augmented with practical experience, which saw the participants practising skills and learning to use equipment such as sphygmomanometers, stethoscopes, splints and cardiac monitors in small groups of two paramedic students to three secondary school students. The program culminated with pairs of secondary school participants performing a full scenario utilising the skills and knowledge they had gained throughout the program.

This pilot program aimed to develop the mentoring and teaching skills of the paramedic students. While the Pathway to Paramedicine Program did not involve peers teaching their direct peers, the relationship between the paramedic students and secondary school students is very similar. Topping and Ehly described peer assisted learning as 'learning through other learners who are not professional teachers' (7). Studies have looked at students from different disciplines teaching one another with similar positive educational and professional results (10). However, to the authors' knowledge, there is currently no published literature reporting on programs similar to the Pathway to Paramedicine Program.

The aim of this study was to evaluate the student paramedics' perspectives of the Pathway to Paramedicine Program.

Methods

A pilot intervention study using paper-based surveys was conducted with 14 paramedic students enrolled at Monash University Peninsula Campus in Victoria.

Participants

A total of 14, second year paramedic students – 10 Bachelor of Emergency Health (Paramedic) (single degree) and four Bachelor of Nursing/Emergency Health (Paramedic) (double degree) – from Monash University were the subjects of this study. Students were presented with relevant details of the program and asked to record their interest via email.

The first 14 respondents were recruited for the program. Participation in this program was completely voluntary however, hours accumulated could be used to satisfy volunteer hour requirements for a second year unit titled 'The Paramedic in the Community'.

Instrumentation

The Pathway to Paramedicine Evaluation (PPE) survey was developed by the authors. It includes 12 questions utilising a 5-point Likert scale with 1 (strongly disagree) to 5 (strongly agree) and two free text questions. The evaluation asked the participants to rate their perceptions of the program in relation to their own skills and their experiences as teachers.

Procedures

On the final day of the program, the paramedic students were asked to complete the PPE. The purpose of the evaluation was explained to all participants and completion was voluntary.

Data analysis

The Statistical Package for the Social Sciences Version 20.0 (SPSS) was used for entry, storage, retrieval and analysis of the quantitative and demographic data. The non-parametric Mann-Whitney U Test was performed. Results were considered

statistically significant ($p < 0.05$) and effect size was considered large ($r \geq 0.5$), medium ($r \geq 0.3$) or small ($r \geq 0.1$).

The two free text questions were transcribed verbatim. The authors performed a thematic analysis and collaborated to identify major themes.

Ethics

Monash University Human Ethics Research Committee (MUHREC) granted ethics approval for this project.

Results

Participant demographics

A total of 14 paramedic students participated in this pilot study ($n=14$). Of the student participants, 64.3% ($n=9$) were female and 71.4% ($n=10$) were enrolled in the Bachelor of Emergency Health (Paramedic). The majority were aged less than 23 years ($n=12$, 85.7%) and the median age was 22 years.

Paramedic student evaluations

All 12 Likert scale questions on the PPE achieve a median score of 4 or higher. Four items achieved a maximum median of 5 (strongly agree). Item 7, 'made me think about becoming a clinical instructor', had the greatest interquartile range (2.8–5.0). See Table 1 for overall evaluation results.

Table 1. Overall evaluation results

Question	Md (1QR)
The Pathway to Paramedicine Program has:-	
4. Helped me develop my interpersonal communication skills	4 (3-5)
5. Helped me reinforce my clinical skills and knowledge	4.5 (4-5)
6. Given me an insight into the role of 'paramedic as educator'	5 (4-5)
7. Made me think more about becoming a clinical instructor	5 (2.8-5)
8. Increased my confidence in teaching others	4 (4-5)
I found the high school students to be:-	
9. Enthusiastic and willing	4 (4-5)
10. Adept at picking up new skills	4 (4-4.3)
11. Willing to ask questions	4 (4-4.3)
12. Very interested in the Bachelor of Emergency Health (Paramedic) and Nursing Degrees	4 (3.8-4.2)
Overall:-	
13. The Pathway to Paramedicine Program was very well organised	4.5 (4-5)
14. I enjoyed participating in the Pathway to Paramedicine Program	5 (4-5)
15. I would recommend the Pathway to Paramedicine Program to other secondary students interested in the Bachelor of Emergency Health (Paramedic) Degree	5 (4.8-5)

Note: Not included in this table are the demographic questions (Q1–3), and the free text questions (Q16–17)

Qualitative themes

A thematic analysis identified four major themes from the PPE free text responses. The responses and subsequent themes were overwhelmingly positive:

- The program helped students reinforce their knowledge and skills
'Teaching others has reinforced my own knowledge' (participant 12)
- The program had a good ratio of students to mentors
'I really enjoyed the small group time' (participant 5)
- The paramedic students enjoyed and benefited from the teacher/mentor experience
'I enjoyed teaching the students all of the clinical skills' (participant 2)
'It was very rewarding watching their (secondary school students) knowledge and confidence grow from week-to-week' (participant 8).

There was one constructive theme identified: Too much time was spent on the theory of paramedic practice and the program should be more 'hands-on'.

Comparison results

Single degree students (n=10) achieved a median score of 4 or above on all PPE Likert questions and 50% of median scores were 5 (strongly agree). Double degree students (n=4) were less positive, with three median scores of 3/3.5 (neutral) and the remaining median scores 4/4.5. Only one item (question 4) achieved statistical significance and a large effect size ($p=0.02$, $r=0.60$). The comparison results should be viewed with caution however, as the small number of participants is inadequate to draw any conclusions. Table 2 provides the full comparison of single degree versus double degree student results.

Table 2. Single vs double degree student evaluation results

Question	Single degree (n=10) Md (1QR)	Double degree (n=4) Md (1QR)	P value	r value
The Pathway to Paramedicine Program has:-				
4	4 (4-5)	3 (3-3.8)	0.02	0.60
5	5 (4-5)	4 (4-4.8)	0.25	0.30
6	5 (4-5)	4 (2.3-5)	0.34	0.25
7	5 (3-5)	3 (1.3-4.8)	0.12	0.42
8	4 (4-5)	3.5 (3-4.8)	0.20	0.24
I found the high school students to be:-				
9	4 (4-5)	4.5 (4-5)	0.50	0.18
10	4 (4-4)	4.5 (4-5)	0.11	0.43
11	4 (4-4)	4.5 (2.5-5)	0.51	0.18
12	4 (3.8-4.3)	4 (3.3-4.8)	1.00	0.00
Overall:-				
13	5 (4-5)	4 (4-4.8)	0.25	0.30
14	5 (4.8-5)	4 (3-5)	0.16	0.38
15	5 (5-5)	4.5 (4-5)	0.11	0.42

Note: $p>0.05$ considered statistically significant; effect size $r>0.5$ (large), $r>0.3$ (medium), $r>0.1$ (small)

Discussion

The aim of this study was to evaluate the student paramedics' perspectives of the Pathway to Paramedicine Program. Although the results from this pilot study were encouraging they are not generalisable due to the small sample size. The PPE results did nevertheless indicate an overall positive perspective of the program. All results were positive in nature with students finding the program enjoyable, satisfying, well organised and worthy of recommendation to others.

This satisfaction and positive perspective of the program was

evident from the overall evaluation results with one-third of all items achieving a median of 5 and 100% with a median score of 4 or above.

Students felt that the program improved their interpersonal communication skills and reinforced their own learning. Hryciw et al similarly found this type of program can improve a mentoring student's communication skills, confidence and knowledge in their discipline (6). The paramedic students also indicated that the program helped reinforce their own knowledge and skills in the free text responses. Although not an explicit aim of the program, it is a welcome consequence of such a program.

The items related to the 'paramedic as educator' and becoming a clinical instructor achieved medians of 5. This is a good indicator that while the program may not fully prepare students for their future roles as educators, it did give them some insight and interest in the role. Students also agreed that the program increased their confidence in teaching others. This was evident in the results and through observation as the program progressed. Results from similar studies also indicate that mentoring increases leadership skills and confidence in teaching others (6,12).

Small group sizes and small ratio of mentors to mentees, fostered close relationships which increased in confidence and teaching ability (7). The paramedic students highlighted the benefits of the small groups in their free text responses. The small group sizes enabled both paramedic students and secondary school students to get to know each other, creating a comfortable and constructive learning environment. This was also evident from the secondary school student evaluation results which will be reported in the paper, Pathway to Paramedicine Program perspectives – Part 2: Secondary school students (13). They also felt more supported and confident working in small groups with another paramedic student rather than one-on-one. Group peer teaching has been shown to foster a more intensive learning environment and help mentors build confidence (7).

A constructive theme to emerge from the free text responses was the tutorial structure and the need for it to be less theory and more 'hands on'. The paramedic students indicated that they did not want the secondary students to be 'bogged down' with theory, but instead, wanted them to experience the clinical skill side of paramedic practice. They observed the secondary school students' enjoyment of these aspects of the program and felt they should be more prominent in order to make the program enjoyable and a positive experience. While the paramedic students planned and conducted the weekly sessions following objectives set by academic staff, in hindsight they should have been more rigorously reviewed and practically based. This is an easily rectifiable issue with the program, and will be taken into consideration for future programs.

Overall, the double degree median scores were lower than that of their single degree counterparts. As the double degree students made up a very small proportion ($n=4$) of the sample size ($n=14$), it is hard to determine if the lower scores were by chance or a true reflection of this cohort's perspectives. Item 7, which related to thinking about becoming a clinical instructor, had the biggest interquartile range overall (1.3-4.8) for the double degree students as well as the biggest difference between the single and double degree student perspectives with medians of 5 and 3 respectively. We could speculate that the double degree students were not interested in becoming

a clinical instructor in their future paramedic career, however this would be unwise due to the small number ($n=4$) of double degree respondents. Double degree students do however have far greater career and progression options available to them. Paramedics have very few career progression options in comparison, which may influence their interest in the educator role. This disparity was also evident in item 6 related to gaining insight into the role of 'paramedic as educator' with medians of 5 and 4 respectively. This further indicates that the double degree students in this program have less interest in becoming an educator in the future, however this is not generalisable.

Double degree students also rated their improvement in interpersonal communication skills (item 4) and reinforcement of clinical skills and knowledge (item 5) as less than that of their single degree counterparts. Again, it is difficult to identify why the double degree students answered lower for these items. Possible explanations could be found in variances in the units undertaken by each group, their clinical placement exposure, or merely the four individuals in that group.

Overall the paramedic students found the program to be beneficial and had a very positive perspective of the program. In particular, items 14 and 15 achieved median scores of 5. This indicated that the students thoroughly enjoyed the program overall and would happily recommend it on to other secondary school students interested in paramedicine. These results reinforce the students' positive perspective of the program and warrant its implementation in future years.

Further research

The overall positive perspective of the program justifies further research with a larger sample size. A pre and post-test study would be useful to identify changes in perspectives. Additional research to investigate student acquisition and development of teaching and mentoring skills and pre-training in educational methods is also indicated.

Limitations of this study

This study was extremely limited by the sample size and the small number of double degree students available for comparison with the single degree students.

Conclusion

This pilot study showed that the paramedic students had an overwhelmingly positive perspective of the Pathway to Paramedic Program. The paramedic students felt the program helped develop their interpersonal communication skills and reinforced their clinical skills and knowledge. They also enjoyed the small group sizes and found the program useful in developing teaching and mentoring skills. Overall, the students enjoyed and benefited from the program and would recommend it to others.

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Competing interests

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