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Student Paramedic Research at Fanshawe College

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Introduction

The need for paramedic students to learn about, undertake and lead the research required by the new paramedic profession is an obvious one which has been discussed previously. These future researchers need to be encouraged and supported throughout the research process.(1)

The importance of developing the paramedic profession's knowledge base through questioning of current practices and knowledge needs to be emphasised – small studies, case reports and reviews potentially pave the way for future studies that can result in not only changes to clinical practice (2) but changes and improvements to future paramedic education.(3)

Many paramedic education programmes at undergraduate or pre-registration level around the world do not include education addressing research methods, evidence appraisal or academic writing skills. Hargreaves et al. previously stated that whilst paramedics are in general interested in undertaking research, the lack of understanding surrounding research amongst paramedic students and qualified paramedics is a significant barrier.(4)

Encouraging students to undertake scholarly activities such as academic writing, abstract submission, drafting letters to the editor, designing and delivering poster presentations and oral abstract presentations are core research activities that should be promoted and encouraged by educators, service leaders and clinicians alike. Paramedicine research needs to be owned by the paramedic. Far too often we are guilty of alienating our colleagues with research findings and publications that are not owned by the practicing paramedic.

At the School of Public Safety in Fanshawe College, London, Ontario, Primary Care Paramedic students complete research education and a group research project in the second year. These projects are undertaken with supervision, advice and guidance provided by faculty and external experts. We are committed to beginning this process in the first year of the program going forward, allowing more time for students to develop the appropriate research literacy skills, and providing additional time to undertake larger, more substantive projects if desired.

Abstracts from several student-led research studies currently ongoing in the Primary Care Paramedic Program at Fanshawe College are detailed below. These projects are presented at the annual Paramedic Programs Research Day, and several of these projects were also presented at the Fanshawe College Research and Innovation Day held in April.

Abstracts

1. The Effect of High Fidelity Simulation on Acute and Chronic Stress

Wong, M., Abols, P., Cressman T., Holmes, A. and Nam, S.

Hypothesis: High fidelity simulations allow for positive physical adaptations to stress and improves overall quality of patient care

Sample population: Second year paramedic students at Fanshawe College. Ages range from 19-40 years of age. All students are expected to undergo both high and low fidelity training

Method and Materials: Heart rate and blood pressure were gathered before and after undergoing high-fidelity training scenarios. The DASS survey has also been administered within one week of scenarios. A live actor simulation was organized by Fanshawe College and was utilized in this study.

Results: Heart rate and change of heart rate after a scenario was shown to decrease after repeated exposure to high fidelity simulations. Blood pressure changes were negligible and insignificant. With the self-reported stress and anxiety survey, fewer participants experienced severe and extreme stress and anxiety and more participants felt no anxiety.

Conclusions: Further study is needed to make definitive conclusions. High fidelity seems to have an effect on reducing patient care oriented stress and thus reducing both acute and chronic stress levels. Lower stress levels are indicative of higher performance and decreased anxiety during patient care in medical practitioners.

2. Closing a Gap in the Circle of Care – Patient Outcome Feedback for Paramedics

Mason, P., VanDenBrink, M., Docking, C., Donovan, K. and McDonald, J.

Background and Purpose: There is an immense need for quality assurance in all fields of medicine. A potential way to increase quality improvement in prehospital health care is to provide hospital driven feedback to paramedics. We devised a study to gain insight into professional opinions and attitudes regarding patient outcome feedback. Furthermore, we aimed to evaluate the effectiveness of patient outcome feedback in increasing clinical diagnostic skill and confidence.

Methods: Participants were recruited via email and social media (i.e. Facebook, Twitter). Upon approval of ethics, a general consensus survey was distributed to working paramedics to gain insight into professional opinions regarding patient outcome feedback. Responses for over 426 people were analyzed. The second phase of the research involved two online case study modules formulated to objectively measure outcomes. The case studies were modelled after 6 medical conditions and participants were asked to provide a differential diagnosis, treatment plan and to rate their confidence in their differential diagnosis. Following the first round of modules, participants were emailed the emergency department (ED) diagnosis of 50% (randomly placed into Group 1: feedback on 1, 3, 5 or Group 2: feedback on 2, 4, 6) of their patients. The second set of modules involved the same medical conditions with slight variations, requiring participants to answer the same

set of questions. Upon completion from all participants, results will be gathered and statistically analyzed.

Results: The results of phase 1 of the research demonstrated that paramedics are interested in learning the diagnosis of their patient from the emergency department. Of the 426 survey participants, 95.8% (n=408) of them believed that learning their patient's diagnosis in the ED would be beneficial to them. Furthermore, 86.1% (n=367) of participants believed receiving feedback would lead them to complete research on the topic of their patient's diagnosis. Phase 2 research is still ongoing.

Conclusions: Based on phase 1 of our research, it is apparent that paramedics currently working in the field are of the professional opinion that patient outcome feedback information would be beneficial.

3. CPR Retention In First Year Paramedic Students

Dunn, B., Johnston, C.W., Payne, J. and Waldie, P.

Introduction: A prospective observational study examining CPR skill, knowledge, and confidence in first year paramedics over a four-month period.

Methods: 52 first year paramedic students' CPR skills were observed prior to completing a CPR course and one week post course. Participants' skills were evaluated using standard CPR knowledge and skill evaluations from the Canadian Heart and Stroke Foundation. Participants also completed a questionnaire addressing confidence in performing CPR.

Results: Significant improvements were noted in confidence, CPR skill, and CPR knowledge. No correlation was found between confidence in CPR and performance on a CPR skills evaluation. Significant correlation was found between CPR knowledge scores and confidence. No correlation was found between performance on a CPR skill evaluation and performance on a CPR knowledge evaluation. Significant difference was noted in CPR skills and length since previous certification.

Discussion: There was significant correlation between length since previous certification and score on the CPR skills evaluation. This suggests that CPR skills should be updated earlier than the 2-3 year standard currently set. Additionally, the lack of correlation between the CPR knowledge and skills evaluations suggests that the knowledge exam needs to be redesigned to improve its validity.

Conclusion: This preliminary study into CPR retention and performance suggests there are significant changes in CPR skills following time. No significant conclusions can be drawn until the remainder of the data has been collected.

4. #FOAMems – the impact to date (5)

Mason, P., Batt, A. and Steary, D.

Background: Twitter use amongst paramedics and other clinicians involved in prehospital care is on the rise, and is increasingly being used as a platform for continuing education and international collaboration. In 2014 the hashtag “FOAMems” (#FOAMems) was registered. It is used by clinicians who are involved in the sharing of clinical and other knowledge related to emergency medical services (EMS), paramedicine and prehospital care. It is an extension of the FOAM (free open access medical education) movement.

Objective: The purpose of this study was to characterise and evaluate the content of #FOAMems tweets in the first two years of operation.

Methods: An analytical report for #FOAMems was generated on symplur.com, with a search date from 4th February 2014 (registration date of hashtag) to 4th February 2016, a total period of 24 months. The full transcript and analysis of all tweets for a randomly selected one month period (1st-31st October 2015) containing the hashtag was also generated on both symplur.com and Followthehashtag. All tweets for the one month period were reviewed and categorised by two reviewers. Data from both reports was used to obtain the results.

Results: During the study period, there were over 42,000 tweets containing #FOAMems, generated by over 6,000 participants. These tweets resulted in over 60 million impressions. The top 92 tweeters of #FOAMems during this period were analysed for professional qualification or identity. Of these, 48 were paramedics (52%). Tweets were also categorised based on content, source (original tweet or retweet) and whether each was referenced.

Conclusion: Paramedics are engaging with both clinical and non-clinical content on Twitter using #FOAMems, with the majority of tweets relating to clinical issues. Social media resources are widely tweeted, which is in line with the FOAM movement’s philosophy. However, opportunities exist for paramedics to share further diverse clinical knowledge supported by referenced material.

These represent just several of the ongoing student paramedic research projects. All projects are student paramedic led, from drafting the research question and identifying appropriate methods to collect data, to gathering and analysing the results and preparing abstracts and manuscripts for submission.

We encourage all paramedic education programs in Canada and around the world to empower student paramedics to develop adequate research literacy skills, undertake research projects, and publish the findings of these projects, bearing in mind that small, seemingly insignificant projects can lead to larger studies that can result in changes to clinical practice and education. *“A mighty flame followeth a tiny spark” – Dante Alighieri.*

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