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PROJECT REPORT

A 'RIPPER' Project: advancing rural inter-professional health education at the University of Tasmania

JJ Whelan, JF Spencer, K Rooney

University of Tasmania, Launceston, Tasmania

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Whelan JJ, Spencer JF, Rooney K

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ABSTRACT

Introduction: Attending to the shortage and sustainability of health care professionals and resources in rural areas in Australia is a continuing challenge. In response, there is a heightened focus on new models of healthcare delivery and collaboration that optimise the quality of patient care, respond to complex health needs and increase professional job satisfaction. Interprofessional rural health education within universities has been proposed as one way of addressing these challenges. Background and Objective: This article reports on the development, design, implementation and evaluation of the RIPPER initiative (Rural Interprofessional Program Education Retreat). RIPPER is an interprofessional rural health education initiative developed by a team at the University of Tasmania's Faculty of Health Science. The objective of the program was to develop a rural interprofessional learning module for final year undergraduate health science students at the University of Tasmania. The program was first piloted in a rural Tasmanian community in 2006, with a second iteration in 2007. Participants in the program included approximately 60 students from the disciplines of Medicine, Nursing and Pharmacy.

Method: The format and educational design of the RIPPER program was focussed on a multi-station learning circuit using interprofessional case-based scenarios. Each learning station employed experiential and interactive educational strategies that included high and low fidelity simulation, role play and reflection. The learning stations required students to work collaboratively in small interprofessional teams to respond to a series of rural emergency healthcare scenarios.

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Results: Qualitative and quantitative evaluation data was collected from student participants over two years utilising a pre- and post-test quasi experimental design. Results demonstrated a positive shift in students' understanding of interprofessional practice and the roles and skills of other health professions. There was also an increase in the value ascribed by students to collaboration and team work as a way of problem solving and improving patient outcomes.

Conclusion: The project evaluation indicated the importance of developing a sustainable and embedded interprofessional rural module within the undergraduate health science curriculum. The project evaluation findings also point to some of the strengths and limitations of implementing interprofessional education activities in a rural setting.

Key words: interprofessional health education, interprofessional practice, rural health, rural health education.

Introduction

Attending to the critical shortage and sustainability of health care professionals and resources in rural areas in Australia is a continuing challenge. In response, there is a heightened focus on new models of healthcare delivery and collaboration that optimise the quality of patient care, respond to complex health needs and increase professional job satisfaction. The incorporation of interprofessional rural health education within universities has been proposed as a key way of addressing these challenges both internationally and within Australia[1-8].

Interprofessional education (IPE) is currently defined as occurring 'when two or more professions learn with, from and about each other to improve collaboration and the quality of care'[9]. It is argued that 'there is a strong theoretical base to support the implementation of IPE'[6] in the training and educational pathways of all health professionals. Exposing students to effective IPE programs throughout their curriculum has been shown to have a number of positive outcomes[5,7,10,11]. These outcomes include an increase in mutual understanding of the roles and values of other health professionals, raised awareness of the importance of collaborative and team working skills, enhanced communication and improved patient care and outcomes[5,7,10,11]. The development and implementation of IPE strategies has been claimed to prepare future health professionals for 'real' practice and collaboration. However there is as yet 'only limited evidence of success'[6,12] in measuring the long term effects of IPE on professional practice and collaboration.

The tertiary education of health professionals provides a key opportunity for universities to develop and promote consistent opportunities for IPE that prepare health science students for future practice. Effective IPE programs must therefore reflect the changing nature of healthcare provision and collaboration by using, for example, interactive and problem-based authentic learning environments[2] that promote group work, reflection and mentorship[1]. These strategies facilitate one of the key aims of IPE by providing students with the opportunity to 'learn with, from and about one another'[2], whereby students are able to 'investigate their professional roles and determine the boundaries between them'[13-14].

The contextual setting of interprofessional health education has also been identified as a critical component of its effectiveness[5-6,15-18]. The implementation of interprofessional health education in rural areas has been argued to be beneficial for two key reasons. First, rural communities are argued to provide 'an ideal context in which learners can observe and participate in sound interprofessional clinical practices'[6] by exposing students to the necessity of collaborative practice and expertise[4,8]. Facilitating students to experience the opportunities and challenges of rural healthcare is thus an effective context for interprofessional education, where disciplines 'must learn to collaborate with

others to solve problems beyond their immediate scopes of practice and expertise'[7]. Second, there is acknowledgement that educating health professionals within a rural environment is an effective strategy for increasing health professional knowledge and experience of working or living in a rural environment[7]. The ultimate outcome of this strategy is potentially the recruitment and retention of health professionals in rural and remote areas internationally and also within Australia. Within the state of Tasmania, the provision of rural education opportunities is particularly critical to health workforce strategies, given the geographical classification of much of the state as rural or remote.

Method and Implementation

> *If health care workers are expected to work together and share expertise in a team environment, it makes sense that their education and training should prepare them for this type of working environment*[19].

An interprofessional development team within the University of Tasmania's Faculty of Health Science, led by the University Department of Rural Health, collaborated in designing the RIPPER (Rural Interprofessional Program Education Retreat) project. The initial objective of RIPPER was to develop a rural interprofessional learning module for final year undergraduate health science students at the University of Tasmania. The aims of the RIPPER project were:

- To foster and facilitate positive and productive inter-professional learning experiences for final year undergraduate health science students.
- To allow students to gain an understanding of the importance of an inter-professional and team approach to delivering health care to people living in both urban and rural areas.
- To encourage students to consider rural practice as a future career.

A rural community in North East Tasmania was chosen to be the one in which the RIPPER project would be implemented. Approximately 60 undergraduate students from the disciplines of medicine, nursing and pharmacy volunteered to participate in the program over two weekends in 2006 and 2007.

The format and educational design of the RIPPER initiative was focussed on a multi-station circuit that consisted of three learning stations. Each learning station was based on an interprofessional rural case-based scenario that employed experiential and interactive educational strategies. One station utilised high fidelity simulation using a resuscitation manikin, while the others focussed on low fidelity simulation and role play. Each learning station required students to work collaboratively in small clinically relevant[6] interprofessional teams that engaged the skills and knowledge of each profession. Each team was required to attend to and interact with the immediate management of the emergency health scenario, to consider strategies for prevention and patient aftercare, and ultimately to develop best practice management algorithms. Table 1 provides an overview of the three scenarios and their key learning outcomes.

A key part of building students' skills and knowledge was the running of each scenario in two iterations. At the commencement of each scenario, each interprofessional student group was divided into two smaller teams. The first team were provided with minimal briefing and were then required to interact with the scenario while the second team observed. Students and facilitators then reflected on and evaluated the performance of this first iteration of the scenario. The scenario was then re-run with the second student group, who were expected to draw on their discussion, reflection and evaluation from the first iteration. At the conclusion of both iterations, the larger group were bought back together to reflect on best-practice management for the particular health scenario, including consideration of prevention and aftercare. Table 2 provides an overview of the structure of the RIPPER program.

Table 1: Overview of RIPPER learning objectives, learning outcomes and scenarios

Program element	Overview and detail		
Learning objective	Students will develop some understanding of dealing with confused elderly patients who live in rural areas.	Students will develop some understanding and apply their knowledge and skills of responding to an emergency situation relating to a patient with an aggressive carcinoma.	Students will develop some understanding and apply their knowledge and skills to a patient experiencing an emergency cardiac event.
Scenario	Confusion in an older person who lives in a rural area and takes multiple medications.	A man diagnosed with a stage four NHL diffuse B large cell tumour who experiences an acute diabetic episode.	A woman with ischemic heart disease experiencing an unexpected cardiac arrest.
Learning outcomes	Students will develop understanding of the: • Issues of polypharmacy • Various causes of confusion in the elderly • Importance of interprofessional communication and collaboration • Innovative use of limited resources and services in a rural area.	Students will develop understanding of: • The presentation of nadir sepsis and its clinical consequences • Resuscitation principles in neutropenic sepsis in an immunocompromised patient • The biopsychological aspects of cancer care and its implications for a patient living in an rural area. Students practice skills relating to: • EAR/CPR • Venous access and diabetic pharmacological management.	Students will develop understanding of: • Assessing and diagnosing acute coronary syndrome • The importance of pharmacological management and clinical intervention • The biopsychological aspects of a patient with ischemic heart disease living in an rural area Students practice skills relating to: • EAR/CPR • Venous access and cardiac pharmacological management • ECG and rhythm strip monitoring • Arterial blood gases • Oxygen therapy.

EAR, Expired airway resuscitation; ECG, electrocardiogram; NHL, non-Hodgkins lymphoma.

The use of clinically focussed learning scenarios within a rural community setting aimed to promote not only an engaging approach to collaborative practice, but also the opportunity to profile the capabilities of rural health care providers. The program involved University of Tasmania health academics, and health professionals from the regional hospital and the local community and hospital. Their backgrounds included expertise in the areas of rural health, clinical education, emergency medicine, nursing and midwifery, aged care, pharmacy and community practice. These health professionals and educators provided mentorship for students and facilitation of the learning sessions. This enabled the sharing of skills and knowledge between students and health professionals.

Table 2: Structure of the RIPPER pilot

Day 1:

- Introduction to interprofessional practice, rural health issues, group work
- Pre-workshop evaluations and program overview
- Students allocated into 3 groups of 10
- Each group divided into 2 interdisciplinary teams (5 in each)
- Team building exercises
- Student group rotate through a three-station learning circuit
- Structure of each scenario (1.5 hours)
  - First run scenario (team 1)
  - Discussion/ debrief (mentored)
  - Second run scenario (team 2)
  - Discussion/ reflection/ sum up (mentored)

  In each scenario, one group participated while the other observed

Evening social activities (dinner and trivia)

Day 2:

- Students worked in their original working groups of 10 to develop best practice management guidelines for one scenario
- Facilitated discussions including disciplinary and inter-professional considerations
- Presentation of algorithms and guidelines to the whole group
- Closing discussions supported by an expert panel
- Reflections, wrap up and post-workshop evaluation

Closing luncheon with members of the local health care community

Evaluation

In evaluating the RIPPER project a pre and post quasi-experimental design method was utilised. Two questionnaires were distributed before and after the event. This evaluative approach is argued to assist in detecting 'changes resulting from an interprofessional course more accurately as there is data collection at two points in time: before and after the course'[20]. The questionnaire was designed using open- and closed-ended questions to gather both quantitative and qualitative data. These data were used to measure students' perceptions of interprofessional learning and practice, and the degree to which the aims and learning outcomes of the program were met.

Quantitative data were collected from a 13 item questionnaire using a 5 point Likert scale ranging from 'strongly agree' to 'strongly disagree'. The questions aimed to measure students' attitudes to shared learning and teamwork; perceptions of other healthcare professionals including roles and responsibilities; understandings of collaboration and teamwork; and intention and likelihood of practising in a rural community.

Qualitative data were also collected on 8 items. Students were asked to define their understanding of interprofessional practice and the roles and responsibilities of respective health professionals before and after the program. Students were also asked to detail their learning expectations before the program; in the post-evaluation they were asked if these expectations were met.

Focus group interviews were used as an additional qualitative method for evaluating students' perceptions of the design and relevance of the program. The sessions were led by an independent facilitator, with full consent granted for interviews with each student. Informal group discussions with local health professionals and academics involved in facilitating the program were also undertaken immediately after the completion of the program. All qualitative data were recorded using notes and audio-recordings and transcribed. A thematic analysis was undertaken to interpret the qualitative data.

Thematic analysis is part of an interpretive method that examines and seeks to explain the meanings that emerge from qualitative data, such as the transcripts of focus groups, interviews and surveys[21-23]. The process of thematic analysis includes identifying emerging issues and categorising them into themes. For example, the analysis of the RIPPER focus groups and surveys focussed on what was said by students in the surveys and focus groups, similarities and differences between perceptions and statements, and the professional context in which the students spoke.

Results and Discussion

In total, 59 students from the disciplines of medicine, nursing and pharmacy participated in RIPPER over the first and second iterations of the project. In evaluating the program, 58 pre- (98% response rate) and 57 post-surveys (96% response rate) were completed by participating students. The collection of qualitative and quantitative evaluation data allowed an integrated analysis of the themes and issues that were raised by students and staff who participated in the program[24]. The following section provides a brief synopsis of the key themes and results of this evaluation.

Understandings of 'interprofessional practice'

A key aim of the RIPPER program was to increase students' understanding of interprofessional practice and the importance of a team approach to rural healthcare.

In both iterations of the program, the pre-questionnaires indicated that students' interpretations of interprofessional practice most commonly included themes of 'using professional skills and knowledge' and 'collaboration'. The post-evaluations in both program iterations showed significant shifts in how students' conceptualised and defined interprofessional practice. As Table 3 demonstrates, one of the most significant examples from the 2006 program was the students' increased recognition of 'patient outcomes' as a key focus of interprofessional practice.

This increased focus indicates that students ascribed greater value to interprofessional teamwork and collaboration as a way of optimising the quality of patient care. The following comments by three students highlight this view:

> *Utilising the strengths of each team to achieve best patient results.*
>
> *Better appreciation of how a team can effectively work together for a patient even they aren't familiar with each other.*
>
> [Have learnt] *we all have significant roles that are interconnected for optimum patient outcomes.*

In respect to students' understanding of rural interprofessional practice, the post-surveys showed that students recognised the importance of 'working together' and 'problem solving' as a key component of interprofessional practice in a rural setting. The following quotes demonstrate the ways in which RIPPER helped students to increase their understanding of this team approach to rural healthcare.

Table 3: Summary of understanding of 'interprofessional practice' pre- and post-workshop 2006 (multiple categorisations using χ-squared tests where $p < .05$)

Interprofessional practice focuses on	Pre-workshop count (n=30)	Respondents %	Post-workshop count (n=30)	Respondents %
Problem solving	8	27	14	47
Collaboration	20	67	15	50
Working together to solve problems	6	20	7	23
Using professional skills and knowledge	26	87	22	73
Patient outcomes	3	10	13	43
Total coded responses	63	–	71	–

Fantastic weekend, very important to work as a team and see how that works in rural health.

Better understanding of rural health care and issues.

I've got more of an idea what it's like to work in rural.

Professional roles and responsibilities

Another key component of how students understood and valued interprofessional practice was associated with their perceptions of professional roles and responsibilities. Students were asked to describe their perceptions about the professional role of doctors, nurses and pharmacists before and after the workshop. In both survey evaluations the majority of respondents identified more traditional, preconceived aspects of other health professionals. For example, students described pharmacists as providers of 'medication advice', nurses as providers of 'patient care' and 'assessment and diagnostics' as the focus of the role of doctors.

In the post-workshop questionnaire, a number of comments illustrated a broader understanding among students of their own professional role in their own discipline, as well as the respective roles of other disciplines. This shift can be viewed as indicative of students positively learning together[1,25]. The evaluation revealed that RIPPER provided students with an opportunity to challenge and redefine their professional boundaries (including skills) in a setting that mirrored an authentic practice environment. The following quotes exemplify how the program facilitated students to 'learn with, from and about one another'[2].

I enjoyed the opportunity to learn and work with nursing and pharmacy students; we've never really done this in our six years of uni before.

I now see that we all have significant roles in patient care, doctors aren't the only ones treating diagnosing…

I now know more about what the other professionals do, helpful for next year when I'm 'out there' doing this stuff in practice.

Will feel more comfortable working alongside doctors and nurses in the future.

Program design

The evaluation gathered information concerning the design and content of the program. Approximately 70% of students (n = 41) specifically identified the interactive and authentic case-based learning environment of RIPPER as one of the

most positive aspects. Students most commonly commented on the 'real' and 'authentic' nature of the learning environment. The use of role play and high fidelity simulation as a way of utilising and improving students' skills and knowledge was identified as one of the most liked parts of the program. The following quotes demonstrate this.

> *It simulated real life.*
>
> *It was confronting but the role plays were a great way of learning…*
>
> *Having practical experience to work collaboratively…the CPR session was particularly useful.*
>
> *I didn't expect to be challenged, it was a useful experience.*

A small group of students (n = 5) identified that they were uncomfortable with the use of experiential learning techniques such as role play. This response was most common to pharmacy students, and may have been attributable to the limited nature of interactive case-based learning in their undergraduate program. It may also reflect language barriers, for example a number of the students were international students with English as their second language. Students also identified the supportive learning environment as one of the most positive parts of their experience. Over 80% of students (n = 48) specifically noted themes associated with mentorship, guidance and support from facilitating health professionals and academic staff as beneficial to their learning experience. Comments included:

> *Good scenarios and great support from clinicians, teaching staff throughout.*
>
> *Excellent staff resources and support.*

Students were asked to provide feedback in the post-workshop survey about the most liked and disliked aspects of RIPPER. General feedback associated with the design of and suggestions for future improvement to the course included the desire by students for more learning stations and scenarios.

> *I felt some of the activities could have been condensed into a shorter time period which could have furthered other learning opportunities.*
>
> *I think there was too much reflection, we could have done another scenario instead.*
>
> *More scenarios please!*

Students further relayed their desire for more rural IPE within their undergraduate training. This is a key point raised within the literature[6] relating to the effectiveness of interprofessional learning and training opportunities being strengthened by the 'vertical integration'[6] of these activities in the university curriculum. Examples of students' comments included:

> *Invaluable, we need more scenarios and interdisciplinary training throughout our degree.*
>
> *Good to have before making the transition to a health profession.*
>
> *Should be more things like this in our course.*
>
> *It was too short; we needed more time to learn together.*

Table 4 shows the positive aspects of RIPPER most frequently described by students. These included the value of working and learning together, the opportunity of meeting people and networking professionally, and learning in a mentored environment.

Table 4: Aspects of RIPPER most liked by students (n=59)

Most frequently described responses	Responses
Learning and working together with other students/professions	37
Opportunity to meet people and network professionally	23
Scenarios/ stations	20

Students also commented on their learning expectations before and after participating in RIPPER. The most common response before the program indicated an expectation of increased skills and knowledge. At the conclusion of the program, students noted that the greatest learning outcome was related to the theme of collaboration and development of team working skills, rather than the acquisition of new skills. These results were supported by comments which demonstrated a shift in students' perceptions about the value of the experience of learning together. Students identified that learning together is important in its own right; is important for team work; and will better prepare them for professional practice.

Conclusion

Interprofessional health education is a well recognised key to more effective interprofessional practice. However, discipline-specific health education has been the standard practice at undergraduate level in the Faculty of Health Science at the University of Tasmania. Evaluation data from the RIPPER initiative indicates that the program has been successful in promoting the value and need for undergraduate health science students to learn with and from one another, in a relevant and supportive environment.

The evaluation further demonstrates that RIPPER is an effective model for interprofessional learning and practice. This included the use of a number of relevant educational models including adult learning, experiential learning, simulation, reflective practice and peer evaluation. The evaluation highlighted that student exposure to rural health issues resulted in an increased awareness of the nature of rural healthcare provision and the importance of professional collaboration. In the light of an under-resourced rural workforce, these positive learning experiences relevant to rural practice could enhance the future recruitment and retention of staff.

It is important to note that the evaluation findings acknowledged that the students themselves identified the value and importance of interprofessional learning. For example, students voluntarily provided comments expressing their desire for similar and other interprofessional learning opportunities throughout their undergraduate program.

The authors believe that RIPPER should be retained as an elective rural learning module or as one component of a core interprofessional educational unit at the University of Tasmania. The authors also acknowledge that to be truly effective IPE requires a number of interprofessional learning activities incorporated as core and vertically[6] integrated components of the University of Tasmania's Health Science curriculum.

There are a number of issues impacting on the sustainability of RIPPER similarly reported in other IPE courses overseas and within Australia[4,7]. The continued funding of the course is a particular issue. At present the project is funded by the University Department of Rural Health; however, the continued sustainability of the program is dependent on the integration of the course into the Faculty of Health Science curriculum. The resources and time constraints of the program on health professionals and academic staff should also be recognised. With the exception of the development team, the involvement and steadfast commitment of local health professionals and academics to the program is on a voluntary basis. The commitment to IPE and learning needs

to be fostered and advanced at faculty level. Initiatives such as staff development for all academics involved in the education and training of health science undergraduate students is one strategy to encourage this commitment to interprofessional education.

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