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WEB PAPER

The clinical skills experience of rural immersion medical students and traditional hospital placement students: A student perspective

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Abstract

Background: Recent decades have seen an international trend for the development of undergraduate medical programmes in rural locations. These have been considered educationally equivalent alternatives to traditional hospital-based programmes. A pilot Rural Medical Immersion Programme (RMIP) was launched at the University of Otago.

Aims: To examine the clinical skills experience of RMIP students and to compare it to that of fifth-year students based in the traditional, often urban and hospital-based, rotations.

Methods: An online questionnaire was completed by 23 medical students: six RMIP students and 17 hospital-based students. Students rated their level of experience in a variety of skills and their self-perceived competence for performing these skills after their fifth year. Total experience and confidence was compared using Mann–Whitney U test, as were subsets of skills.

Results: There was no difference found in the total clinical skills experience and confidence between RMIP and traditional students. RMIP students reported greater experience of patient examination and patient education skills; traditional students reported greater experience and confidence in investigation and interpretative skills.

Conclusion: Clinical skills experience of the RMIP students is at least equivalent to that of their peers in the tertiary hospital setting. However, attention may be needed in the development of 'investigative and interpretative skills' for rural immersion students.

Introduction

The development of rural medical programmes has been an international trend in medical education over the past few decades (Worley et al. 2004a; Lang et al. 2005; Tesson et al. 2005). This trend can be justified both in moving students away from often student dense urban learning areas and also to attract students to continue practice in rural areas (Maley et al. 2009).

Research suggests that rural community-based programmes are sound alternatives to traditional urban-based medical courses, reflecting as they do the change in medical practice to far greater levels of community care, with students performing well academically and reporting positive experiences (Denz-Penhey et al. 2004; Farry & Williamson 2004; Worley et al. 2004b; Hunsaker et al. 2006). Overall, end-of-year scores of students in rural programmes have been similar or better than their urban-based peers (Schauer & Schieve 2006; Worley et al. 2004a; Waters et al. 2006).

Only a small number of studies have focused on educational experience looking at the clinical encounters and skills performed by students on rural placements in comparison to their hospital-based peers (Worley et al. 2004b, 2006; Waters et al. 2006).

Practice points

- Clinical skills experience of students in rural immersion setting is equivalent to that of students in more traditional placements.
- The nature and level of expected clinical skills learning should be realistic irrespective of location.
- The rural immersion setting may be particularly useful in gaining history taking and patient education skills.
- The levels of rural immersion students' exposure to and confidence with investigative and interpretative skills should be explored further.

For the first time in New Zealand, six medical students spent the fifth year, of their 6-year undergraduate course, based in rural communities. This University of Otago pilot was known as the Rural Medical Immersion Programme (RMIP). This study aimed to compare the self-reported experience and self-perceived competence in performing clinical skills at the end of the fifth year between the students in rural locations and those in the traditional predominantly urban-based hospital rotations.

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Method

The pilot RMIP programme took six students from the fifth-year class who were all interested in rural practice. The RMIP students were placed in two rural locations in New Zealand's South Island. The two rural locations have populations of approximately 31,000 and 23,000 people, serviced by a small local hospital. Non-RMIP students were located in two of the three traditional clinical main teaching hospitals servicing populations of approximately 125,000 and 380,000.

The RMIP students were supervised by experienced GPs and practice nurses, rural hospital generalists and specialists, nurses, midwives and visiting specialists. The sites were equipped with study centres, and the students were provided with laptops with remote wireless internet access. The traditional students had facilities and learning opportunities commensurate with modern main teaching hospitals.

Immediately following the end of year 5 (within 4 weeks), 6 students from the RMIP and 39 students from traditional hospital placements were contacted by email and asked to take part in research into their fifth-year experience. The students were selected from their sixth-year classes partly based on their availability at the time of the research.

The authors developed an online survey which focussed on the 'Confidence in common procedures and conditions' survey instrument (Spike & Veitch 1991; Culhane et al. 1993; Worley et al. 2004b), which examines experience and competence in performing clinical skills, with ratings of educational value for common learning activities and environments for learning clinical skills.

A list of skills was generated from attachment objectives within the traditional predominantly hospital urban-based setting. The Year 5 experience focussed on the following areas: dermatology, emergency medicine, human nutrition, musculoskeletal/rheumatology, neurosensory, obstetrics and gynaecology, ophthalmology, otolaryngology, paediatrics and psychological medicine. A list of clinical skills comprised five subareas:

- (1) 23 examination skills, e.g. examination of the ankle, examination of vision;
- (2) 12 history taking skills, e.g. taking a dermatological history;
- (3) 32 practical procedural skills, e.g. venepuncture;
- (4) 9 patient education skills, e.g. give advice on pregnancy;
- (5) 5 investigative and interpretation skills, e.g. ultrasound interpretation.

Students rated their post-fifth-year self-experience in these clinical skills and the perceived competence in performing the skills on two separate, four-point ordinal scales as in Worley et al. (2004b). The scores for each skill were combined to give an overall score in each subarea.

Experience was rated as		The self-perceived competence	
3	Performed alone	3	Could perform alone
2	Performed with assistance	2	Could perform with minimal assistance
1	Watched skill	1	Could perform with considerable assistance
0	Never seen skill	0	Could not perform

The survey was piloted by sixth-year medical students and revised before launching online.

Differences between the RMIP and traditional students were analysed using an independent Mann-Whitney U test, equal variance not assumed. Spearman's correlation was used to determine the relationship between experience and self-perceived confidence. SPSS was used for the analysis.

Ethical approval for this study was gained at departmental level from the Faculty of Medicine and all students signed informed consent.

Results

The online survey was completed by all 6 RMIP students and 17 students from the traditional hospital setting. One student completed only half the survey; those responses were included for the sections completed. The response rate was 100% for RMIP (all 6 students), 40% (17 out of 39) for traditional hospital setting students, giving an overall response rate of 23 (51%).

Figure 1 displays the mean scores for the experience and self-perceived competence for the five subskills areas, for students in the rural (RMIP) and traditional setting. There was no significant difference in the overall clinical skills rating in experience and confidence between the RMIP and traditional rotation students. However, students in RMIP reported a greater experience of examination ($p = 0.012$) and patient education skills ($p = 0.013$). Traditional students reported a greater experience ($p = 0.011$) and confidence ($p = 0.013$) in investigative and interpretative skills.

In total, 12% of the skills were never seen by some or all of the students. No students saw 'Venous cut down', 'Needle thoracocentesis' and 'Cricothyroidotomy'. No RMIP student experienced 'Auroscope with pressure attachment', 'Fit eye pad and bandage', 'Bladder puncture and in/out catheter specimen', 'Urine bag collection', 'Doppler' and 'Paediatric lumbar puncture'. Many of these skills, listed above, were also not seen by the majority of traditional students (for example 56% of traditional students also failed to see Doppler being utilised).

A strong correlation was found between the level of experience and self-perceived competence (Spearman's correlation = 0.743, $p < 0.001$).

Discussion

RMIP student-perceived experience and confidence for clinical skills appears to be at least educationally equivalent to that of traditionally taught students, echoing the findings of other studies (Alderson & Oswald 1999; Raghoobar-Krieger et al. 2002; Worley et al. 2004b; Levy & Merchant 2005).

The greater level of experience of skills reported by RMIP students for examination and patient education may have been due to greater access to patients and a stronger requirement for patient education in the community-based rural setting.

The lower reporting by RMIP students of experience and confidence in investigations and interpretations may equally be ascribed to greater emphasis and exposure to this aspect of practice in the more traditional rotations. Perhaps within the

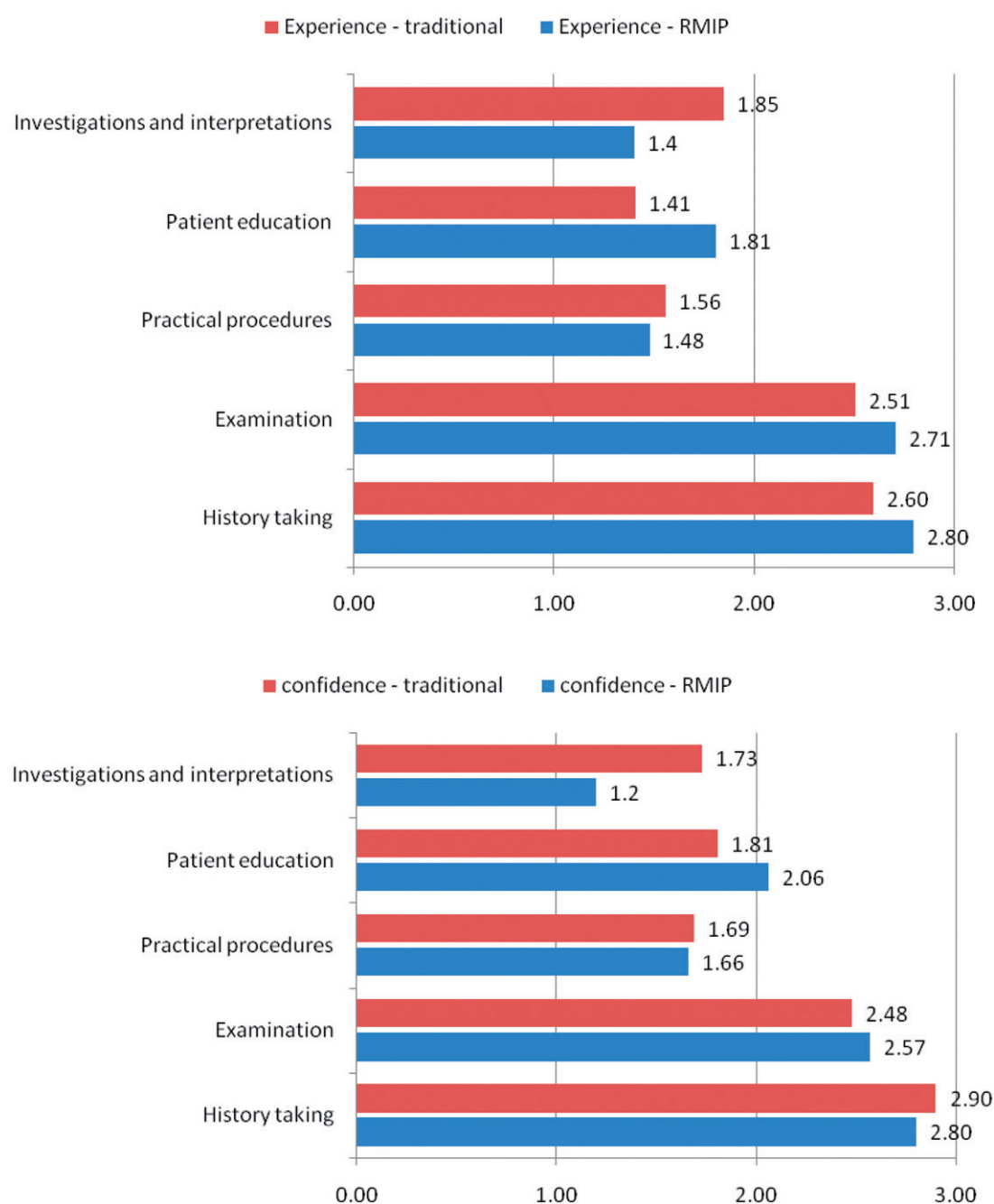


Figure 1. Mean scores for experience and confidence of history taking skills, physical examination, practical procedures, patient education in the RMIP and traditional courses.

rural setting there is greater reliance on history and examination skills. Considering the low number of investigation and interpretations skills (five skills) reported upon, the significance of the finding is perhaps even more interesting and needs greater exploration.

The lack of experience of some skills, for all students may be due to the lack of opportunity to perform the skills. Clinical medicine is somewhat opportunistic and therefore not all students will encounter scenarios which require a particular clinical skill or involve a particular medical condition (Alderson & Oswald 1999). The appropriateness of the list of the clinical skills should also be questioned and also the level

of attainment. It is possible that some of these requirements cannot be met at this stage in the programme and that it may be inappropriate to include them or to the level expected. A curriculum mapping exercise is currently being undertaken to establish agreed and appropriate learning outcomes which will include an updated list of skills. It may be important that students have a theoretical understanding of some of the skills and conditions currently listed but unrealistic to expect that these would have been seen or practised.

Lack of experience may also be due to low curricular emphasis on some particular skills. Students should be clear about learning expectations. Exposure to clinical environments

does not by itself lead to improved clinical skills. Students may need a structured curriculum, with teaching and assessment in the skills they are expected to acquire (Culhane et al. 1993; Remmen et al. 2001; Stolarek 2007). However, equally an emphasis on self-learning supported by mentoring and or supervision may be strongly advocated. This balance between a prescriptive curriculum and the expectation for supported self-identified learning is difficult to determine and achieve.

Failure to gain experience in skills may also be due to low motivation or confidence of the students to acquire those skills or to see the conditions (Spike & Veitch 1991; Culhane et al. 1993).

There are a number of limitations to the study. The small number of students affects the power of statistical analysis of the results and there is likely to be some selection bias as the RMIP students chose to take part in the programme and were only allowed to do so if they had a good academic record. Due to the small numbers, it may not represent the experiences of all students in the fifth year. The low response rate by the traditional students may also indicate an unknown bias. This may over-or-under state the experience and confidence of these students. The reliability of the survey data is also likely to have been affected by recall bias. Caution must also be taken when considering the ratings of self-perceived competence as, although experience and self-perceived competence were found to have a strong correlation (a finding supported by other studies; Worley et al. 2004b), studies show that there is no such relationship between self-perceived competence and actual competence as judged by supervisors (Morgan & Cleave-Hogg 2002; Barnsley et al. 2004).

In conclusion, it appears that the clinical skills experience and confidence of the RMIP students is educationally equivalent to that of their peers in the traditional hospital rotations. All students reported gaps in their experiences suggesting that there are discrepancies between the clinical skills that students are expected to experience and those that students are actually able to experience. The rural setting seems particularly useful in gaining history taking and patient education skills, whereas the traditional rotations have a greater focus on investigations and interpretations. A review of the lists of skills, the level of exposure expected and the way in which these are acquired are recommended to optimise expectation and acquisition of skills for future medical students.

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PATRICK FARRY, MBChB, FRNZCGP, was the Inaugural Director of the Faculty of Medicine Rural Medical Immersion Programme until his sudden death in October 2010. He was largely responsible for the initiation of the Rural Medical Immersion Programme.

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