



Training the primary care team

A successful interprofessional education initiative

BACKGROUND

A multidisciplinary approach to the education of health professionals is being increasingly promoted as a means to cultivate collaborative practice between professions in the health care sector and to enhance patient care.

METHOD

One hundred and two students from seven different University of Queensland Health Science disciplines completed between one and three interprofessional seminars involving small group work, case discussion, expert panel presentation, and interactive question and answers.

RESULTS

Paired sample T testing indicated significant differences in pre- and post-responses related to knowledge of effective clinical management, multidisciplinary assessment, goal setting, roles and responsibilities, and referral networks across all disciplines. Similar testing also indicated significant shifts in attitude to increased job satisfaction, reduced fragmentation of care, and reduction in professional boundaries related to multidisciplinary care. Ninety-six percent of participants indicated that the benefit of a team approach was effectively modelled.

DISCUSSION

Undergraduate interprofessional education can result in highly significant shifts in knowledge of, and attitudes to, multidisciplinary team care.

Health care systems internationally are striving to improve the integration of their acute and primary care systems to better manage an aging population with increasing chronic disease needs. Effective teamwork between health care professionals across multiple disciplines and numerous settings is central to this. Despite a dearth of hard educational evidence, a multidisciplinary approach to the education of health professionals is being increasingly promoted as 'a means to cultivate collaborative practice between professions in the health and social care sectors, and ultimately enhance patient care'.¹

Interprofessional education has been defined as 'an educational intervention during which members of more than one health and/or social care profession learn interactively together',¹ and has been reported in the literature to contribute to an increased level of critical thinking among health professional staff, a positive working environment for all involved, and improved patient health outcomes.^{2,3}

Educational methods for interdisciplinary learning differ from traditional lectures and discipline specific curricula. While debate on the optimal timing of interdisciplinary education within undergraduate courses continues, opportunities for integrated clinical learning exist in environments in which students undertake clinical practicums.^{4,5} Relevant approaches include the service/learner model, where a clinical setting is used to challenge learners to work effectively to address real clinical problems,⁶ and the application of adult learning approaches to interactive, group based and case based learning.

Our setting, the Brisbane South Centre for Health Service Integration (BSCHSI), was established as Queensland's GP/Hospital Integration Demonstration Site in 2003. This multi organisational collaboration involved Queensland Health (via Brisbane South Community Health Services), the Brisbane Inner South Division of General Practice, and the Mater Misericordiae Health Services (via the Domiciliary Allied Health Acute Care and Rehabilitation Team and the Mater Centre for Integrated Health Care & General Practice). The overarching

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goal committed all organisations to work collaboratively to facilitate the development of an integrated health care culture.

One of BSCHSI's key objectives was 'a commitment to excellence in integrated multidisciplinary training and professional development, dedicated to the facilitation of an integrated health care culture'. We aimed to test the feasibility and outcome of a multidisciplinary undergraduate educational intervention, initiated in a clinical education environment. The objectives of our educational intervention were: to compare students' knowledge and attitudes before and after multidisciplinary educational experiences and to evaluate the effectiveness of an integrated multidisciplinary educational program for undergraduate students on clinical placement.

Method

A literature review to identify the key elements of successful interprofessional education failed to locate any randomised trials, controlled before and after studies, or interrupted time series studies of sufficient methodological rigor to provide conclusive evidence of the effectiveness of this approach.¹ However, from the literature available, 10 key principles in effectively delivering a multidisciplinary training intervention were developed (*Table 1*). Our intervention built upon these principles, as well as strategies previously developed as part of the Mater Model of Health Care Integration.⁷

Following this review, academic representatives from medicine, nursing, pharmacy, physiotherapy, dietetics, speech pathology and occupational therapy met at the BSCHSI to plan an integrated undergraduate

seminar program for 2004 based on the principles detailed in *Table 1*. This academic planning group identified three clinical topics around which such an educational intervention could be based: falls management and prevention, the assessment and management of cerebrovascular accident, and managing chronic pain.

Educational methods congruent with the detailed principles were adopted. Therefore, the program was based on integrative pedagogies: collaborative learning,⁸ experiential learning,⁹ and case based problem solving.¹⁰ Newell¹¹ suggests that collaborative learning begins with and is driven by a problem, and draws on the perspectives contributed by students. Therefore our seminars began with small group work relating to patient management in response to the case scenario presented. There was a focus on experiential learning in that students were encouraged to report and reflect on their own clinical experiences, to question and challenge each other, and to articulate how their discipline would contribute to holistic case management.

The seminars took place in the context of the students' clinical practicums. Throughout the program, the service/learner model was utilised.⁶

Collaborative learning groups included at least one representative from each of the seven clinical disciplines. Facilitators ensured contributions from students of all disciplines, and recording and reporting of key group clinical decisions.

Each seminar included brief panel presentations from at least five different health disciplines. The planning group nominated expert discipline presenters who had a commitment to integrated clinical teamwork for each seminar. Each discipline provided speakers, rostered the seminars in their student timetables and promoted the sessions internally. BSCHSI briefed the presenters on the 10 principles to be followed, produced the cases, created the informational materials, and coordinated room bookings, audiovisual facilities, catering and speakers (*Table 2*).

In 2004, 102 students from the seven different disciplines completed 1–3 multidisciplinary seminars involving these topics, spread evenly across the year.⁶ Pharmacy students, rostered at the Mater

Table 1. Key principles for multidisciplinary education and training

<p>Active learner participation and exchange between learners from different professions</p> <p>Emphasis on a patient perspective, focusing on the patient experience</p> <p>Promoting a whole of person approach to service delivery</p> <p>Developing sufficient knowledge of other disciplines to allow problem recognition, appropriate referral and collaboration</p> <p>Concentrating on, and emphasising, the areas that will benefit from multidisciplinary input</p> <p>Providing learning experiences that are directly transferable in terms of content to participants' every day jobs and practice</p> <p>Acknowledging the potential implications of organisational variables in the provision of integrated service delivery</p> <p>A focus on equal status of students within the multidisciplinary groups</p> <p>Seminar development in partnership with experts in adult learning and including a mix of delivery methods</p> <p>Explicitly addressing the underlying 'mechanics' of team work and interprofessional collaboration</p>
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Table 2. Seminar format

<p>Pre-evaluation – 5 minutes</p> <p>Facilitated group case discussion and report back – 30 minutes</p> <p>Expert panel presentation and response – 60 minutes</p> <p>General question and answer and group discussion – 20 minutes</p> <p>Postevaluation – 10 minutes</p>
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Table 3. Self reported knowledge shifts

	N paired samples	Pre-mean (SD*)	Post-mean (SD*)	p value**
Effective management of patients with...	102	2.8 (0.9)	4.0 (0.4)	<0.001
Multidisciplinary nature of assessment and management of...	102	2.9 (1.0)	4.2 (0.4)	<0.001
Roles and responsibilities of the multidisciplinary team in the management of patients with...	102	2.9 (0.9)	4.2 (0.4)	<0.001
Extent of management provided by the multidisciplinary team	102	2.7 (0.9)	4.1 (0.5)	<0.001
Goals of the multidisciplinary team	102	2.9 (0.9)	4.1 (0.5)	<0.001
Responsibilities of the health team in this clinical situation	102	2.8 (0.9)	4.1 (0.5)	<0.001
Referral networks available for... management	50***	2.1 (0.9)	3.4 (0.9)	<0.001
Referral guidelines for... management	50***	2.0 (0.8)	3.2 (0.9)	<0.001

* Standard deviation

** Two-tailed significance

*** Participants in the CVA training conducted on 29 April (n=52) were not presented with these questions

Table 4. Attitudinal changes to multidisciplinary management

	N paired samples	Pre-mean (SD*)	Post-mean (SD*)	p value**
...improved working relationships for those involved	102	4.2 (0.5)	4.2 (0.6)	0.733
...higher levels of continuity of care	102	4.2 (0.7)	4.3 (0.6)	0.329
...compromising my relationship with the patient	102	4.0 (0.9)	4.1 (1.0)	0.373
...effective use of resources	102	4.1 (0.5)	4.2 (0.6)	0.508
...reduced duplication	102	3.8 (0.8)	3.9 (0.8)	0.348
...improved patient outcomes	102	4.3 (0.7)	4.4 (0.7)	0.200
...increased workload	102	3.6 (0.8)	3.6 (1.1)	0.428
...increased job satisfaction for those involved	102	3.8 (0.7)	4.1 (0.7)	0.001
...improved patient care	102	4.3 (0.5)	4.4 (0.6)	0.083
...reduced fragmentation of care	102	3.8 (0.8)	4.0 (0.8)	0.048
...reduction in professional boundaries	102	3.2 (1.0)	3.5 (1.1)	0.002

* Standard deviation

** Two-tailed significance

for the full year, completed all three. All other students participated in one seminar during a subject attachment. Each student completed a pre- and post-workshop self report evaluation of their knowledge, skills and attitude to interprofessional care during each seminar.

Before conducting the analyses, data was checked for accuracy of data entry and missing values. A total of 102 undergraduate responses were involved in the analysis. Paired sample t-tests were conducted for both content knowledge (*Table 3*) and attitude (*Table 4*) for each area of interest. *p* values based on two-tailed statistical significance were calculated.

Results

Objective 1: to compare students' knowledge and attitudes before and after multidisciplinary educational experiences.

Pre- and post-seminar comparison showed a highly statistically significant shift across all disciplines ($p < 0.001$) in self reported knowledge across all clinical areas (*Table 3*). Attitudinal changes to multidisciplinary management were less dramatic (*Table 4*). While increased job satisfaction ($p = 0.001$) and reduction in interprofessional boundaries ($p = 0.002$) demonstrated statistically significant change, other attitudinal variables such as higher levels

of continuity of care, effective use of resources, reduced duplication, improved patient outcomes, and increased workload showed no statistically significant attitudinal difference.

Objective 2: to evaluate the effectiveness of an integrated multidisciplinary educational program for undergraduate students on clinical placement.

Students were asked about key measures of effectiveness in interprofessional education (*Table 5*). Ninety-six percent agreed or strongly agreed that the benefit of a team approach was effectively modelled; 94% that the panel suited their learning needs and 81% that the small group sessions did the same; and 88% agreed that the session was relevant to their every day

Table 5. Effectiveness of the multidisciplinary educational program

	% agreed or strongly agreed
The benefit of a team approach was effectively modelled	96
The panel suited my learning needs	94
The session was relevant to my everyday job/practice	88
The small group discussions suited my learning needs	81

practice. The panel presentations in particular were highly valued.

Discussion

Our study aim was to test the feasibility and value of a multidisciplinary undergraduate educational intervention. Results indicate a high degree of success, with students reporting statistically significant shifts in knowledge (as well as some measures of attitude) following the intervention. The educational approach was well matched to student learning needs and the benefit of teamwork was effectively modelled. The knowledge shifts were observed across students from all disciplines.

While the evaluation utilised student self report without objective pre- and post-knowledge measures, there is now a significant body of work in the field of educational research that supports self reporting of knowledge and skill as a valid proxy for objective measures. While use of self report measures in individuals has inconsistent correlations with objective knowledge measures, such measures across groups have been shown to be valid measures of learning.¹³⁻¹⁶

Use of the expert panel, modelling effective professional teamwork and providing broad discipline specific information to the seminar, were highly successful and key to the positive outcomes achieved. This is supported by recent publications on role modelling in medical education which discuss the importance of personal qualities, teaching skills and clinical competence in students' choice of role models.¹²

Just as important as the students' reception of the educational intervention was the continued commitment of the seven academic disciplines throughout the program. All continued to provide presenters, promote the sessions, and give input into session development throughout the 18 month

intervention. Programs in 2005 and 2006 have been supported by all disciplines and strategies to mainstream this approach via the Faculty of Health Sciences at the University of Queensland (and to measure longer term attitudinal shift) have been enthusiastically received.

Undergraduate multidisciplinary education can result in highly significant shifts in self reported knowledge and attitude to interprofessional team care, as well as providing effective team role modelling for students. Appropriately targeted, educationally sound multidisciplinary education is necessary, feasible and well accepted by students and disciplines, and should be adopted widely across the health sciences.

Conflict of interest: none declared.

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