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Allied health professionals increasingly need continuing education (CE) to maintain and improve competencies and standards of care. Research suggests that professional access to CE in rural areas can be difficult. This article uses an action research framework to describe the development and implementation of a CE programme for allied health professionals in a rural area in Australia, and its subsequent evolution into a state-wide programme. To evaluate programme relevance, attendance and perceived clinical relevance, physiotherapists (n=75) in southwest Victoria were surveyed 1 year after commencement of a CE programme. A secondary outcome was the perceived effect on clinical practice. More than two-thirds (68.6%) of physiotherapists attended at least one workshop, 57.2% attended four or more sessions and 22.9% attended at least one of the two conducted courses over the period. In addition, 20% of the physiotherapists perceived that attending the programme had a large positive effect on their therapeutic skills, whereas 68.6% reported some effect. From a regional CE programme for physiotherapists the programme evolved into a state-wide programme for 22 allied health professions.

Key words: • continuing education • interactive learning • clinical competence • physiotherapy

Submitted 4 December 2007, accepted for publication following double-blind peer review 4 January 2008

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Allied health professionals increasingly need continuing education (CE) that complies with requirements for registration and re-accreditation. CE involves lifelong learning to improve and maintain competencies and standards of care (Hunter and Nicol, 2002; Shillitoe et al, 2002). Younger allied health professionals and those further removed from regional centres find poor access to CE a major barrier in rural employment (Belcher et al, 2005). Additional benefits of CE reported in the allied health literature include enhanced workforce retention (Smith et al, 1995; Hunter and Nicol, 2002; Belcher et al, 2005), peer motivation (Driesen et al, 2005), feelings of personal accomplishment, reduced risk of professional burnout (Schlenz et al, 1995), and job satisfaction (Solomon et al, 2001).

Recent research from south-west Victoria, Australia, showed that allied health professionals wished to access CE more than four times per year (Stagnitti et al, 2005). In addition to formal in-service there was a need for specific CE on request which was preferably hands-on (Stagnitti et al, 2005). The major challenge for CE programmes is to allow interaction between attendees and presenters, and to develop programmes that are accessible and perceived as meaningful to geographically-dispersed health professionals. This is especially important in rural areas where the viability of CE programmes requires a strong attendance from a smaller cohort of practitioners. Given the positive effect of interactivity on clinical practice (Thomson O’Brien et al, 2006) and increased access to video conference facilities (McNamara, 2006), providing CE with interactive learning to geographically dispersed health professionals may no longer be insurmountable.

ACTION RESEARCH FRAMEWORK

Action research is a method of research that informs practice and brings together practitioners and researchers acting together on a cycle of activity (Avison et al, 1999). Action research can be used to monitor organizational process and change-related dynamics required to effectively implement programmes (Avison et al, 1999).
Action research is a cyclical process which begins with a determination of the initial problem, then continues in a spiral of planning, action (implementation), monitoring progress, evaluation, and reflection. Street (2003) suggests six criteria that can be used to determine whether action research is achieved. These criteria state that the research should be: (i) issue and outcome-based; (ii) cyclical; (iii) knowledge in action; (iv) participatory and democratic; (v) educative; developmental and responsive; and (vi) credible, sustainable and transferable.

Following the findings of Stagnitti et al (2005), the problem of easy access to CE for rural allied health professionals was identified in the geographical area of south-west Victoria, Australia. The region is classified as accessible and moderately accessible on the Accessibility/Remoteness Index of Australia (Hugo, 2002). This article describes the development, implementation, evaluation and reflections upon a regional CE programme in this region, delivered by the Greater Green Triangle University Department of Rural Health. The programme is coordinated from Hamilton which is centrally located in the region, approximately 1–2 hours drive from the peripheral parts of the region and 3.5 hours from Melbourne. The Victorian Department of Human Services provided a grant to the Greater Green Triangle University Department of Rural Health (which is formed as a result of a partnership between Flinders and Deakin Universities) to develop and implement an allied health workforce recruitment and retention project, starting with physiotherapy. The CE programme was part of this. The first author led the project, building on earlier work of the second author. The third author led a CE programme for rural pharmacists. No such programme had been run in the region previously. Continuous evaluation of the programme was measured by attendance levels throughout the CE programme and satisfaction with the education received in terms of perceived clinical benefits.

**PROGRAMME DEVELOPMENT**

Once the problem of lack of easy access to CE for allied health professions was identified, a needs assessment consisting of two surveys was sent to all physiotherapists in the region. The surveys aimed to establish appropriate content and format for education delivery. In this way, the surveys enabled all physiotherapists in the region to provide input into what would be their CE programme.

In March 2004 a small survey was sent to the two regional physiotherapy groups of the Australian Physiotherapy Association (APA) in south-west Victoria to be distributed among their members. Physiotherapy was targeted as the first profession to begin the programme because approximately 70–75 physiotherapists worked in the region—the majority of which were full-time (58.1%)—with minimal locally-available CE. The first survey obtained a snapshot of CE needs, and established whether the results were in line with those reported in the literature, as well as the 2003 internal survey by one of the regional groups. Based on earlier surveys (Services for Australian Rural and Remote Allied Health (SARRAH), 2000; O’Reilly, 2002), the first survey determined suitable times and frequencies for CE activities in addition to preferred education topics for local delivery. Eleven of the 25 surveys were returned. A total of 72.7% of respondents favoured conducting professional development activities in the evening, and 45.5% favoured early evenings. Forty six percent preferred Wednesday and 36% preferred bimonthly attendance. Most respondents nominated topics of clinical relevance. The results of the surveys justified development of workshops and presentation sessions on topics of interest that could be delivered locally (e.g. in a local clinic) as requested.

These findings are in line with existing rural allied health reports (SARRAH, 2000; O’Reilly, 2002) and a 2003 survey in South West Barwon (Stagnitti et al, 2005). Late afternoons and early evenings have been found to be suitable for rural Victorian professionals of both the public and private sectors (O’Reilly, 2002). Reports have shown a need for clinical training on demand, opportunities to network, and to develop skills such as evidence-based research and intervention (SARRAH, 2000; O’Reilly, 2002; Stagnitti et al, 2005). With support from the physiotherapists in the region, the agreed format of the evening workshops and presentations was 6 pm for a 6.30 pm start (with refreshments), a short break for interaction with the presenter or with peers, contents that could be practised or that had clear practical applicability, and time for questions at the end.

In August 2004 a second survey was distributed to 70 physiotherapists (including non-members of the APA) in the region, with the aim of clarifying and confirming the areas that physiotherapists wanted to cover in their CE programme. This survey, adapted with permission from the Queensland branch of the APA, asked physiotherapists to indicate all course topics of interest. Thirty-one of the 70 questionnaires were returned (44.3%). Although the results of the survey showed that most physiotherapists had a musculoskeletal CE interest and preferred musculoskeletal topics rather than neurological or cardiothoracic, some practical considerations favoured alternating the many topics in the musculoskeletal arena with topics in other areas.
Clinical

Substantial ownership of the developmental process was then given to all physiotherapists, regardless of position or place of work. The aim of giving ownership of the process to the participants of the CE programme was to enhance ease of attendance and to promote the perception of clinical applicability and relevance arising from CE among rural physiotherapists.

IMPLEMENTATION

Based on the first survey, which also tapped into immediate CE needs, the programme commenced at the start of July 2004. Once CE needs were further explored the programme was further developed and a calendar of events was distributed to the physiotherapists. The programme was based on physiotherapists’ requests; and included evidence-based presentations and a minimum of 25% of the session time assigned to practice skills and for interaction. Sessions were held once a month; some were given as presentations (with a mix of approximately 75% theory and 25% practice) and others were held as workshops (where the majority of time was spent practising). In addition, there were clinical topics that could be delivered ‘on-site’ and that offered participants substantial time to practice (more than 75% of the session time).

The education delivered during the programme was deliberately designed to be relevant and clinically applicable, in keeping with the principles of adult learning. Presenters were instructed that a minimum of a quarter of content should focus on practical application. Written participant feedback, using an evaluation form, was sought after each session or workshop as a means of continuous quality improvement of the format.

EVALUATION

In advance of this programme being made available to other professions and before video-conferencing was made an option, the following targets were set:
- Attendance at a minimum of four CE session by 50% of survey respondents
- Ratings of usefulness for clinical practice equal-ling or exceeding five on a seven-point Likert scale of perception of clinical applicability, with seven being highly applicable.

Attendance
To ascertain if the programme met the first target, attendance at CE sessions for physiotherapists held between the start of July 2004 and the end of August 2005 were measured (Table 1). More than half (57.2%) of physiotherapists in the region attended a minimum of four sessions and 68.6% attended at least one ‘on-site’ workshop. Only 17.1% of the physiotherapists did not attend at all.

Numbers attending sessions were consistently high (about 25–40% of physiotherapists in the region). In addition, 22.9% attended at least one course (i.e. clinical pilates or myofascial dry needling) and 68.6% attended at least one workshop ‘in-clinic’ delivered at the participants’ workplace. More than two-thirds of the physiotherapists (68.6%) knew of others who attended at least one of the CE functions of the 2004/5 programme and 45.7% of these physiotherapists received useful information from others who attended. Four CE sessions a year were found to be the number of educational activities preferred by health workers in a survey of allied health professionals in same area of the CE programme (Stagnitti et al, 2005).

Usefulness for clinical practice
To ascertain if the programme met the second target, ratings of usefulness for clinical practice were gathered from participant evaluation forms. More than 60% of participants completed the evaluation form at the end of individual CE functions (Table 2). Table 2 presents the cumulative data on the evaluation of usefulness of workshops, based on just over 60% response rate from 365 attendees to the CE programme. As physiotherapists attended multiple sessions and evaluation forms were anonymous to increase the likelihood of honest feed-
back, each attendee to each session was counted. This resulted in 221 evaluation form responses. The evaluation showed that the median and mode of the Likert scale of perceived clinical usefulness of the programme exceeded five. In fact the programme was perceived by attendees to warrant a maximum score of seven. Although self-reported application of educational activities into clinical practice is unreliable (Dunning et al, 2004), it is commonly used in the literature when other measures are not justified. Since the CE programme included a range of topics and allowed selective attendance, testing knowledge or application of the entire programme was inappropriate.

**Effect on clinical skills**

A third survey (Figure 1) was mailed out in August 2005 to the 75 regional physiotherapists who had participated in the CE programme. The survey received ethical approval from the Flinders University Social and Behavioural Research Ethics Committee. This survey explored the perceived effect of the 2004/2005 CE programme on clinical physiotherapy skills. Before distribution, the six questions on the survey were examined by a panel of four experts and were found to have face validity. Four questions were related to attendance and two questions asked about the quality of information and perceived effect on clinical skills. All participants provided informed consent. Data were analysed using Excel® and SPSS® statistical software. Appropriate descriptive statistics were calculated based on the nature of the dataset and its distribution. A return rate of 46.7% (n=35) was gained for the third survey. The results of the third survey showed that the interactive CE programme had a positive influence on perceived clinical skills (Table 3).

**Overall**

Satisfaction with the CE programme was extremely high; with organization of the sessions and perceived clinical relevance rated highly. Qualitative comments supported the relevance of the programme items to clinical practice, calibre of the presenters, positive effects on clinical skills and patient outcomes, and frequency of attendance whether in person or via video conference.

**REFLECTION ON THE PROGRAMME**

**Needs assessment**

The first two surveys were used to establish the professional needs of physiotherapists in the region and to develop and implement the CE programme. This is an accepted method for identifying professional CE needs (Owen, 2006). It was used to inform content as well as context of the programme so that the physiotherapists in the region could take ownership of the outcomes and identify themselves with it. There is evidence to suggest that perception-based needs assessment, i.e. asking participants what they need, is a subjective process which has the potential to produce different results to other types of structured needs assessment, i.e. asking participants what they need, is a subjective process which has the potential to produce different results to other types of structured needs assessment, i.e.

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**TABLE 3.**

**Perceived effect of the 2004/2005 programme on clinical skills and the number of patients visiting the clinic (n=35)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Percentage of respondents</th>
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<tbody>
<tr>
<td></td>
<td>No effect†</td>
</tr>
<tr>
<td>On clinical skills</td>
<td>11.4%</td>
</tr>
<tr>
<td>On patient assessment</td>
<td>20%</td>
</tr>
<tr>
<td>On patient treatment</td>
<td>17.1%</td>
</tr>
<tr>
<td>On the number of patients visiting the clinic</td>
<td>68.6%</td>
</tr>
</tbody>
</table>

† Two of the respondents noted ‘no perceived effect’, although they did not practice at the time. They have been included in the results.
assessments (Cervero, 2001). Therefore, this process could more accurately be seen as a means of identifying the education that local participants would value. Therefore perhaps a perceived improvement in clinical performance should be considered in terms of the effect it has in encouraging attendance at CE programmes rather than an actual measure of improved performance.

Programme contents
The contents of the CE programme were predominantly in the domains of practice and clinical reasoning. There is evidence from medical research that self-directed CE might encourage participants to stay within their ‘comfort zone’ (Sibley et al, 1982). This influenced the decision not to focus exclusively on musculoskeletal topics despite participant preferences. In addition, the format of the monthly workshops and on-site training sessions of the CE programme were based on principles of adult learning to optimize the potential effect of the programme on clinical skills (Spencer and Jordan, 1999).

Efficacy
The continuous evaluation of the programme provided some evidence that transfer of knowledge and skills had taken place. Most physiotherapists reported improved perceived clinical skills and some physiotherapists reported increased patient demand. The evaluation did not allow the separation of the combined effect of needs-based demand, programme content, the interactive delivery or the initial excitement of having access to rural CE. Kirkpatrick (1994) described four levels of CE effect evaluation and Gusky (2000) suggests five levels. This study provides evidence of learning (level two) and potential implementation of learning among the rural participants. Direct evidence of improved clinical practice and patient outcomes was outside the scope of this project, although some qualitative comments made reference to this level. For example, the newly acquired knowledge and skills led to frequent positive comments on implications for clinical practice.

Personal conversation with one of the physiotherapy registration boards also confirmed that the current CE programme assists with the registration of physiotherapists who have let their registration lapse (Personal communication, August 2006). This is likely to be similar for other professions that have mandatory registration and CE requirements. As such, needs-based rural CE programmes can be a valuable tool to build rural workforce capacity, although the influence of these programmes on recruitment and retention remains to be tested by controlled studies.

Implementation and delivery
The practitioner-centred approach to programming may have aided the high levels of satisfaction with the education provided. The factors that are often reported to negate CE programmes, such as access issues, costs, poor applicability to clinical practice and lack of practical content in CE activities were successfully addressed in the 2004/5 programme. It is evident that the respondents to the third survey did not feel these negative constraints. Participants valued locally-presented workshops with presenters who were highly qualified. Where travel was involved, participants valued its recognition, with the supply of food and drinks, for example.

Access to CE can be improved by technologies such as tele/video/virtual conferencing, electronic mail, videotapes and print materials (Hughes, 1998; Sheppard and Mackintosh, 1998). Video-conferencing was offered during the programme.

Findings of a systematic review of 32 studies (30 randomized control studies) demonstrated that lectures alone (i.e. passive dissemination of information) were not sufficient to change clinical practice, but that interactive workshops had a moderately large effect (Thomson O’Brien et al, 2006). The APA (1998) demands that members undertake approximately 30 hours of formal and informal learning a year. It is suggested by the authors that a formal planning process allowed the delivery of a tailored CE structure that was valued by participants and matched their needs in terms of desired content, delivery and number of CE hours that was available. A deliberately interactive approach to teaching may have enhanced appreciation of the course content. This model has potential to be used more widely in the development of CE for physiotherapists.

INCLUDING OTHER HEALTH PROFESSIONALS

The CE programme was initially developed in response to identified regional clinical physiotherapists’ needs. The CE needs of the physiotherapists cannot be generalized to all professions. For example, Dunbar and Franklin (2004) found nursing staff preferred having education timed for their working hours (mid-afternoon, while shifts overlap) when establishing a continuing nurse education programme by video-conference in the region. However, in view of the programme’s success in meeting the targets of attendance and usefulness for clinical practice, the authors considered its application to other allied health professions worthy. In addition, professionals from other disciplines had begun asking whether they
too could access the programme. Qualitative comments also reinforced the notion that the programme format was relevant to clinical practice in a rural setting and to other professional groups such as occupational therapists, podiatrists, prosthetists and orthotists. Therefore the programme was expanded to include other allied health professions in the 2005/6 CE programme and greater access was created by video-conferencing. There was no evidence to suggest that access via video conference during the latter period had a detrimental effect on the quality and the outcome of the interactive workshops. Acceptability of video-conferencing was measured by a separate survey of those who used this medium during the period between August 2005 and August 2006 (n = 15). The survey form was an adaptation of that used to investigate their views of pharmacists in the same region (McNamara, 2006). Reported problems related to sound, overheads, and learning practical clinical skills. Broadcasts at a minimum frequency of 384kbp were best received. Video-conferencing was perceived as an acceptable method to increase attendance at CE, and some of those who used it indicated their intention to increase their use of this medium. Although findings are consistent with those of a CE programme for rural pharmacists (McNamara, 2006), this area requires further investigation.

DEVELOPMENT INTO A STATE-WIDE PROGRAMME

In 2007 the programme developed into a state-wide Victorian CE programme for 22 allied health groups. The programme was also expanded to be accessible in person, via video conference, live streaming or retrospective viewing of Rich Media Presentations via the internet. Although retrospective viewing does not give professionals the opportunity to interact, it allows them to access CE at a time that suits them. This programme has an extensive evaluation framework, which includes sessional evaluation based on learning objectives and skills and competencies learnt, as well as pre-programme and follow-up surveys. Access to the programme remains free and the content of sessions are of interest to more than one discipline. In line with findings of an earlier survey on managerial issues (Stagnitti et al, 2006) the programme includes a 2-day personal effectiveness training course which aims to improve self-management, team skills and leadership. From 2008, the programme is further expanding and recorded sessions of the CE programme can be accessed by professionals in other states in Australia via the internet.

STRENGTHS AND LIMITATIONS

In using the six criteria of action research (Street, 2003) the following strengths and limitations of this action research project need to be considered:

■ Given the undisputed shortage of education opportunities for rural health professionals, it is reasonable to suggest that issues of practical, context-specific knowledge are addressed through this CE programme.

■ Two cycles have been included in this article. Ongoing open cycles enable the programme to further develop in relation to contents and its expansion in Australia and across professions. This requires ongoing monitoring, analysing, evaluating, reflecting, modifying and monitoring.

■ Knowledge is tested in action and in context. Outcomes from CE programme evaluations have and continue to be used to modify further action and correspondingly, modifications are subsequently evaluated to test the theory developed from the previous evaluation.

■ Action research requires involvement of all participants who will be affected by the new knowledge or changes. Although for the purpose of the paper only those who responded to the surveys could be included in the analyses, all participants were involved in the process from the start; through the needs assessment and informal input. Although it is a leap to infer ownership, participation in the development process was encouraged through repeated formal feedback mechanisms, and the high attendance rates suggest that participants supported the process.

■ Change through acquiring knowledge and learning new strategies needs to be sustainable. Although the second cycle showed that participants learnt and informed others, this aspect could have been explored in greater detail. The large proportion of local physiotherapists participating does however, support the notion that this CE programme has sufficient impact on its own to influence local professional attitudes and capacity.

■ In relation to improvements over time, the programme is now a state-wide programme that is expanding into other states in Australia. The evaluation framework is much more extensive to assist the monitoring of programme expansion, and to analyse, evaluate, reflect and further modify the programme. This is crucial as more professionals and professions access the programme. The concept of this action research-based programme is transferable to other professional groups and to other countries. Interstate expansion also facilitates the sustainability
of the programme through a broader base of funding sources, and through increasing input from stakeholders with a wide variety of skills and experience.

**CONCLUSION**

This action research project was set up to address the CE needs of rural physiotherapists, who are known to face barriers in accessing the education required to maintain and improve competencies and standards of care (Belcher et al, 2005). Evaluation of the CE programme delivered in 2004/5, which integrated the use of needs-based education, adult learning principles and an interactive workshop format, suggest that the programme was acceptable to attendees and benefited rural physiotherapists. The programme was well-attended and, following its initial implementation, access was requested from other professions. In response to this, the 2005/6 programme was extended to other allied health professions; with enhanced access from video conference broadcasts. In 2007, the CE programme evolved into a state-wide programme with an extensive evaluation framework. This CE project illustrates that action research can be used successfully to develop and implement a national needs-based programme, both within and across the allied health professions, that seeks and implements continuous improvement.

This study was supported by grants from the Victorian Department of Human Services.

Australian Physiotherapy Association (1998) Professional development portfolio. APA, Melbourne


**KEY POINTS**

- Rural physiotherapists are known to face barriers in accessing the education required to maintain and improve competencies and standards of care.
- An interactive continuing education (CE) programme based on professional needs and adult learning principles was set-up for rural physiotherapists in one region of south-west Victoria, Australia.
- The programme was well-received and well-attended.
- Perceived clinical usefulness of the interactive and CE programme was high and attendees perceived a positive influence of the programme on their clinical skills.
- Accessing CE by video-conferencing can work well.
- Programme contents can be of interest to more than one discipline, although preferred access time may differ for some of the disciplines.


SARRAH (2000) A study of allied health professionals in rural and remote Australia. Services for Australian Rural & Remote Allied Health


It is interesting to note in this article that the only interpretation given to the need for continuing education among the surveyed physiotherapists was through participation in specifically-organized events. Indeed continuing education appeared to be synonymous with attendance at a course—either in person or via video link.

There is no doubt that considerable benefit can be gained from attendance at an appropriate training session—not only in terms of knowledge gained from experts and the fulfilment of mandatory training requirements—but also the sharing of experience and interest through informal networking. The participants included in the scheme reported in this article evidently enhanced their clinical skills and reported positive outcomes from their participation.

Although the successful outcomes of the reported scheme have prompted widening participation, there are no evident plans in place to meet other educational or training needs. Arguably, the topic of mentorship would provide an excellent workshop topic. In addition, a number of universities already offer distance learning at postgraduate level delivered electronically, and it would be highly appropriate to develop similar programmes of award-bearing study to benefit allied health professionals in the sort of rural environment that formed the background to the study described here.

The driver for much continuing education is the imposition of mandatory standards to ensure fitness for ongoing practice. This study reported that some 30 hours of formal or informal training were required by the Australian Physiotherapy Association to meet professional development requirements, but competencies could be achieved through practice, clinical reasoning, communication or management activities. The prioritization of the programme solely for formal learning does not encourage participants to consider more widely how their ongoing competence can be delivered. The Health Professions Council (HPC), the regulatory body for allied health professionals in the United Kingdom gives broad guidance on a range of work-based learning, professional activities, formal/educational and self-directed learning activities that can be used as part of continuing professional development (HPC, 2006), thus encouraging therapists to recognize that many of the activities they are undertaking as part of their professional life are indeed developmental.

While the authors are to be congratulated for the success of their educational initiative, and the current plans to extend the programme to benefit a wider range of allied health professionals is testament to its success, it would be timely to reflect on the content and mode of delivery and to consider how future developments might encompass a more diverse range of educational opportunities.

Health Professions Council (2006) Continuing professional development and your registration London: HPC

Elizabeth White, PhD
Head of Research and Development,
College of Occupational Therapists,
London, SE1 1LB
UK