Evidence-based Practice Intentions and Long-term Behaviours of Physiotherapy Graduates Following an Intensive Education Programme

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Abstract

Background. Assisting physiotherapists to implement research evidence into clinical practice is essential to ensure the quality of practice and encourage lifelong learning and professional progression. However, many physiotherapists report barriers to implementing research, and there is little evidence regarding the sustainability of intended evidence-based practice (EBP) behaviours following EBP education programmes. This paper reports on intended and actual long-term EBP behaviours of physiotherapy students who completed an intensive EBP training programme embedded within a post-graduate coursework programme. Methods. An intensive 3-week course in quantitative health research methods and EBP was delivered annually from 2007 to 2014 as part of the programme to national and international students. Following the course, students were asked about their intention of using evidence to inform their future clinical practice. An online survey was used to evaluate EBP behaviours of graduates. Results. Of a possible total of 202 students, contact details for 193 students were sourced, and 65 students responded to the survey (34% response rate). At course completion, 174 students (86%) indicated that they intended to use research to guide their clinical decisions at least once a week. At follow-up, most graduates reported frequently using research to inform their clinical practice; indicated by a mean score of 6.5 (±1.9) from a possible range of 0 (not at all) to 10 (all the time). On average, students reported spending 2.2 (±2.2) hours accessing and reading research evidence per week. The most common barriers to implementing evidence were time, limited access to evidence sources and a perceived lack of generalizability of research findings to specific patient groups. Conclusion. Graduates of an intensive EBP training programme embedded within an existing post-graduate physiotherapy programme regularly implemented EBP in clinical practice. Barriers to evidence implementation were time, access to research and perceived lack of generalizability of research findings. Copyright © 2016 John Wiley & Sons, Ltd.
Background

There is a growing body of literature relating to the processes and outcomes of evidence-based practice (EBP) training for clinical physiotherapists (Stevenson et al., 2004; Grimmer-Somers et al., 2007; Salbach et al., 2007; Dizon et al., 2011; Lizarondo et al., 2011; Young et al., 2014). Within this body of literature, there is sound evidence for the short-term effectiveness of training in improving knowledge and raising awareness of EBP principles (Young et al., 2014). For instance, Dizon et al. (2011) in a randomized controlled trial (RCT) involving 54 Filipino physiotherapists, found that an EBP training intervention resulted in improvements in EBP knowledge, skills and behaviours compared with no training and that these improvements were sustained over 3 months. Peter et al. (2013), in an RCT involving 203 Dutch physiotherapists, also found that an EBP training course (an interactive workshop) was more effective than conventional education at improving EBP behaviours at a 3-month follow-up. However, there is limited evidence that the EBP behaviour of clinicians can be maintained in the long term following EBP education programmes (Bernhardsson et al., 2014).

The literature suggests that most physiotherapists have positive attitudes towards EBP; specifically, they are motivated to access current research evidence to update their knowledge and skills (Iles and Davidson, 2006; Jansen et al., 2012; Bozzolan et al., 2014). Multidimensional and interactive EBP course designs can certainly improve attitudes, knowledge and possibly skills; however, university-based teaching programmes alone may not change clinical behaviour (Petty et al., 2011). Enablers to using EBP, as identified by clinicians, include improved access and knowledge of evidence-based guidelines, improved access to journals, comprehensive knowledge in searching and appraising literature, knowledge of journal clubs (Lizarondo et al., 2011) and efficient use of online resources (Milanese et al., 2014).

The literature consistently reports disincentives (barriers) to regularly using evidence in physiotherapy practice (Grimmer-Somers et al., 2007; Lizarondo et al., 2011). These include lack of time (Jette et al., 2003; Scurlock-Evans et al., 2014), lack of support from peers (Grimmer-Somers et al., 2007), lack of managerial support (Salbach et al., 2007), limited access to evidence sources such as university library databases (Grimmer-Somers et al., 2007), lack of incentives (Scurlock-Evans et al., 2014) and lack of knowledge (Stevenson et al., 2004; Salbach et al., 2007). We recently reported on significant short-term improvements in confidence and anxiety in knowledge of statistical terminology and concepts related to research design and EBP following an intensive 3-week course embedded in an existing post-graduate physiotherapy programme at one Australian university (Perraton et al., under review). The ongoing post-course collegiality of the cohorts and consistency in the delivery of the course provided a unique opportunity to examine intended post-course EBP behaviours and actual long-term EBP behaviours of graduates. Such observations are important because they can inform the development of future EBP training programmes, provide insight into potential long-term barriers to EBP and provide foundational knowledge for future experimental studies.

This paper reports on students’ intended (aspirational) behaviours regarding the use of research evidence to inform their clinical practice and their actual long-term EBP behaviours following graduation and return to clinical practice.

Methods

Ethics

Ethical approval for the study was provided by the University’s Human Research Ethics Committee (Application ID: 0000033559). No student names were disclosed during either the short-term or long-term follow-up, and students were asked in the long-term follow-up not to provide personal details in their response. In the long-term follow-up, the invitation was sent to a group email list, the membership of which was blinded to the recipients.

Data collection instruments

As previously reported (Perraton et al., under review), a purpose-built pre-course and post-course evaluation instrument was administered to every student enrolled in an intensive 3-week course on health research methods and biostatistics and EBP (2007–2014 inclusive). The intensive 3-week course was delivered annually as part of an existing post-graduate physiotherapy programme. At the time of completing the course, students were practising physiotherapists who were completing post-graduate studies. In the post-course instrument, additional questions were asked to capture intended EBPbehaviours upon returning to the workforce (Figure 1). Long-term self-reported EBP behaviour was assessed in October 2014 using a purpose-built online survey instrument ( surveymonkey.com; Figure 2).
Contacting past students

Students who graduated from the programme between 2007 and 2013 were followed up. Students enrolled in the course in 2014 were not surveyed as they had not completed their programme of study and were therefore not in a position to implement EBP in unsupervised clinical practice. As noted previously (Perraton et al., under review), the majority of students were international. Contact details for past students were therefore sourced using a variety of methods, for instance through the University alumni database, personal contacts of researchers, university lecturing staff and graduates and social media (Facebook). Some students in some years had formed Facebook groups at the end of the programme to keep in contact, and these groups were contacted to provide names of others known to the group. Thus, sampling was an iterative process, which continued until no new names and contact details were elicited. An initial email was sent to all known addresses, using a blinded email list for confidentiality purposes. The email enclosed a description of the survey and why it was being conducted. The email also enclosed the link to the SurveyMonkey survey. A 3-week window was provided for each student to respond to the survey. A reminder email was sent to the same email address list 1 week before the survey end date. We did not check the number of responses until the survey period was complete.

Data analysis

The specific post-course questions on intended EBP behaviours and the responses to the follow-up survey on long-term self-reported EBP behaviours were reported descriptively.

Results

Sample

Contact details were able to be sourced for 193 of a possible total of 202 physiotherapy students who completed the immediate post-course evaluation between 2007 and 2013. All of these students were sent email invitations to participate in the study, with the SurveyMonkey link included in the email. Only 65 alumni responded to the survey (34% response rate). Twenty-three (35%) respondents were international graduates. Five respondents were no longer working clinically; two were working in academic positions, two were undertaking further study and one respondent did not provide this information. These respondents did not complete the remainder of the survey, as it was aimed at clinicians in current practice. Thus, at the time of completing the survey (October to November 2014), respondents in clinical practice (n = 60) were an average of 4.6 (±2.1) years following graduation from the post-graduate programme and were working clinically for an average of 37 (±12) hours per week. Few (n = 6) graduates reported having a break of 12 months or more since graduating from the programme. Eleven respondents had undertaken further training in statistics or EBP in the form of further degrees, or non-university/professional development courses, since graduation from the programme.

Intended evidence-based practice behaviours (immediate post-course survey)

Considering all 7 years of responses to the immediate post-course evaluation (provided by the cohorts 2007–2013, n = 202), 174 students (86%) had indicated that they intended to use published research to guide their clinical decisions. Of these 174 students, 151 (87%) indicated that they intended to access and use research evidence at least once a week and all but one of the remaining students intended to access and use evidence at least once a month. The one remaining student indicated that he or she would never use research evidence to inform his or her treatment choices. In the post-course survey, students were asked to nominate at least one preferred research design to inform their future clinical practice. Ninety-four per cent indicated that they would use systematic reviews, 86% nominated clinical guidelines, 79% indicated that they would use RCTs and 45% of students indicated that they would use case studies.
Long-term follow-up of evidence-based practice behaviours

The mean of 6.5 (±1.9) for the question on frequency of use of research evidence to inform clinical decisions (scored 10 = all the time to 0 = never) indicates that research evidence was accessed often by respondents. One graduate indicated that he or she never used research evidence to inform clinical practice decisions (response of 0), and six graduates did not answer this question. Thus, there were positive responses (>0) to the use of research evidence in clinical practice decisions from 53 respondents (88.3%). The time per week that graduates reported accessing research to inform their clinical decisions ranged from zero to 17 hours (mean 2.2 ± 2.2). The Google Scholar search engine was used most often to search for research evidence (n = 45, 85% of respondents). Twenty-five (47%) respondents used

<table>
<thead>
<tr>
<th>Question</th>
<th>Response type</th>
</tr>
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<tbody>
<tr>
<td>What year did you complete the program?</td>
<td>Categorical</td>
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<tr>
<td>Were you an international student?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Are you still working as a physiotherapist?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>If No, what are you doing now?</td>
<td>Open response</td>
</tr>
<tr>
<td>Have you had a break of 12 months or more in your physiotherapy career since graduation?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>If Yes, how long was your break?</td>
<td>Years/months</td>
</tr>
<tr>
<td>How many hours per week on average do you work as a physiotherapist?</td>
<td>Open response</td>
</tr>
<tr>
<td>Have you undertaken further training in research (including courses in evidence-based practice) since completing the program?</td>
<td>Open response</td>
</tr>
<tr>
<td>If Yes, what training have you undertaken?</td>
<td>Open response</td>
</tr>
<tr>
<td>On a scale of 0 (not at all) to 10 (all the time), how would you rate the frequency of your use of evidence to inform your clinical practice decisions?</td>
<td>0-10</td>
</tr>
<tr>
<td>When you completed Summer School, many of indicated that you would use research evidence in your clinical practice. The most common research options that you said you would use were:</td>
<td>Categorical</td>
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<tr>
<td>• Clinical guidelines</td>
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<tr>
<td>• Systematic reviews</td>
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<td>• Randomised controlled trials</td>
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<td>• Case reports</td>
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<td>• Editorials</td>
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<td>• Textbooks</td>
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<tr>
<td>Using numbers 1-3, rank up to three of these evidence sources that you regularly use now? (1 = the source you use most often, 2 = the next most frequently used source, etc.)</td>
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<tr>
<td>How much of your time per week would you spend accessing research to inform your practice?</td>
<td>Hours</td>
</tr>
<tr>
<td>Which of these databases do you use?</td>
<td>Categorical</td>
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<tr>
<td>• Google Scholar</td>
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<tr>
<td>• Pubmed</td>
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<td>• Pedro</td>
<td></td>
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<tr>
<td>• Talk to colleagues</td>
<td></td>
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<tr>
<td>• Use hospital library or professional association access to databases</td>
<td></td>
</tr>
<tr>
<td>What are the main barriers you encounter regarding using evidence to inform your clinical practice?</td>
<td>Open response</td>
</tr>
<tr>
<td>Do you routinely read research journals?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>If Yes, which ones?</td>
<td>Open response</td>
</tr>
<tr>
<td>Do you have access to research journals through your professional association?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>If Yes, which ones?</td>
<td>Open response</td>
</tr>
<tr>
<td>How many times have you published on evidence since graduating?</td>
<td>Open response</td>
</tr>
</tbody>
</table>
| Do you use social media to keep up to date with the latest evidence? E.g. Twitter; Facebook; Blogs (e.g. Body in Mind) etc. | Open response     

Figure 2. Long-term follow-up of evidence-based practice behaviours: survey questions
PubMed, and 14 (26%) used the Physiotherapy Evidence Database. Of the graduates who reported using research evidence to inform their clinical decisions, the majority (n = 27, 51% of respondents) used systematic reviews. Fourteen graduates (42%) used clinical guidelines, 12 (23%) used RCTs and 6 (11%) preferred to use case reports (Figure 3).

Forty-six (77%) respondents reported experiencing at least one barrier to implementing evidence into clinical practice, and six respondents reported more than one barrier. The most commonly reported barriers to implementing evidence were lack of time and limited access to evidence sources (both n = 22 respondents, 48%). Nine of these respondents (20%) reported a lack of generalizability of research findings to their patients, and one respondent reported lack of managerial support as a barrier to implementing EBP. Graduates with more than 4 years of clinical experience following completion of the programme most frequently reported lack of time as a barrier to implementing EBP. Graduates with 4 or less years of clinical experience since course completion most frequently reported limited access to evidence sources as a barrier to EBP (Figure 4). There was no influence of time since graduation on use of research evidence. Graduates with 4 or more years of clinical experience post-completion of the programme (n = 31, 52%) did not report accessing evidence any more frequently (p = 0.44), or spending more time per week accessing evidence (p = 0.39), than graduates with fewer than 4 years of practice following graduation (n = 29, 48%).

**Discussion**

To our knowledge, this is the first study to assess very long-term EBP behaviours in graduate physiotherapists following an intensive EBP training programme embedded within a clinical post-graduate programme. Half the respondents had completed this programme 4 or more years previously. Our findings add to the scant body of knowledge regarding post-graduate EBP practices, as previous research has almost exclusively involved undergraduate students, or EBP programmes that are not embedded in a post-graduate clinical programme (McEvoy et al., 2010; Wong et al., 2013; Bozzolan et al., 2014). The findings of this study will inform the development of future post-graduate EBP programmes, and targeted experimental research, to determine whether EBP programmes for experienced graduate physiotherapists can indeed influence long-term evidence-seeking behaviour change.

We were fortunate to be able to compare two datasets: short-term (immediate) post-course evaluation and a long-term follow-up, generated from the same student group. We were unable for ethical reasons to match student data from the immediate post-course evaluation with their long-term follow-up; however overall, it appeared that what students intended to do post-course translated into post-programme graduation behaviours. For instance, at the immediate completion of the course, the majority of students intended to access and use at least one form of research evidence regularly to inform their future clinical practice.

The long-term follow-up of these graduates indicated that the majority of responding graduates regularly used research evidence to inform their clinical
practice; however, the amount of time dedicated to EBP each week was variable. That EBP was routinely used in so many responding graduates’ practice, albeit in small measure, was a welcome finding, even with those who had graduated 4 or more years previously. Similar frequency of intended use of research in clinical practice (reported post-course) was also reported in the long-term follow-up (Figure 3). It is not possible to attribute this finding directly to the training provided in the intensive EBP course; however, the consistency of long-term behaviours with intended post-course behaviours is encouraging.

**Barriers**

The reported barriers to implementing evidence were time, limited access to evidence sources, a lack of generalizability of research findings and lack of managerial support. This finding is consistent with a large volume of literature that has sought to understand why clinicians do not access research evidence regularly (Jette et al., 2003; Stevenson et al., 2004; Grimmer-Somers et al., 2007; Salbach et al., 2007; Lizarondo et al., 2011; Scurlock-Evans et al., 2014). With expectations of increasing accountability for practices and businesses (Smallwood, 2006), individual clinicians and their workplaces should make concerted efforts to ensure that EBP is a supported and expected aspect of daily clinical practice. Bridges et al. (2007) demonstrated that the best predictors of the adoption of EBP in physical therapy were desire for learning, highest degree held and practicality (Bridges et al., 2007). Our graduates reflected the first two of these variables, and therefore, the ‘practicality’ of adopting EBP practices (lack of time, poor access to research literature and local supports) should be the focus of future EBP training programmes. Our findings support the need to ensure that the time and resources required to support physiotherapists to access, read and implement research-based practices need to be factored into workload and work agreements.

The barrier of lack of access to resources post-university is one that universities should take seriously. It is problematic for students completing their programme who suddenly find that the tools they have been taught to use, such as library databases, are no longer available to them. The librarians involved in this course have been investigating free resources that these graduates could use following graduation from university and plan to start teaching advanced database searching techniques to final year undergraduate health science students. Such initiatives could help university graduates continue to access published literature, as well as clinical guidelines and grey literature, upon their return to clinical practice, even if they do not have access to institutional databases.

**Drivers of behaviours over time**

We found no evidence to suggest that graduates with greater years post-graduation were better at adopting evidence-seeking behaviours than those with less years of experience or that EBP behaviours differed between students based on their nationality. Our numbers however are small, and our power to detect such differences is limited. There were other tangible outcomes of the intensive course, with at least nine systematic reviews being published subsequently in peer-reviewed journals by completing students (Machotka et al., 2009; Perraton et al., 2010; Dunsford et al., 2011; Harvie et al., 2011; Lee et al., 2011; Pastakia and Kumar, 2011; Uden et al., 2011; Jarrett et al., 2012; Peters and Tyson, 2013). Other students may have published their systematic reviews after completing the course and either not informed us at the time or not responded to the survey.

**Limitations: response rate**

We were successful in identifying email contact details for a large number of graduates (2007–2013), using our multiple and iterative sampling strategies. However, the response rate was disappointing. Response rates of 30% or less are common in surveys of physicians or general medical practitioners, without specific incentives to encourage responses (Morris et al., 2001; Edwards et al., 2002; Parkinson et al., 2014). We had hoped for a better response rate from our graduate physiotherapy sample, particularly as the post-graduate programme from which they had graduated was due to close at the end of 2014, thus ending a 30-year programme, and many students had expressed their desire to maintain contact with each other and the university. However, we did not use any incentives suggested for GPs, apart from the one reminder email, and a short response period. We wonder whether our low response rate may have been because of contact issues (contact addresses of non-responders were incorrect or that we had been given old email addresses). An alternate explanation for
the low response rate is that graduates who were not using evidence in practice declined to participate, as they did not want to disclose this information.

**Prior behaviours**

All students of the post-graduate programme were already physiotherapy graduates, who may have practised embedded evidence-seeking behaviours prior to the course. We did not assess clinical EBP behaviours before the course; hence, it is not known whether the EBP behaviours observed at follow-up were a result of the course or related to already established pre-course practices. However, the pre-course finding of a lack of confidence in using terminology related to EBP and the significant improvement in confidence and decrease in anxiety demonstrated in the immediate post-course survey (Perraton et al., under review) suggests that there were few people with EBP knowledge prior to the course, and thus, the knowledge gained during the intensive course may have had a carry-over effect. Other post-graduate factors such as work environment or additional EBP training may also have contributed to ongoing long-term evidence-seeking behaviours, and we did not ask these questions.

**Conclusion**

We suggest from this small-sample, 7-year follow-up study that most of the responding graduates of an intensive EBP training course, embedded within a clinical post-graduate physiotherapy programme, had adopted long-term evidence-seeking behaviours in some form. This finding is encouraging; however, causality cannot be attributed to the intensive training course. The findings, however, provide a foundation for future research, specifically, observational studies involving both short-term and long-term follow-up periods and well-powered RCTs to assess the effectiveness of different methods of delivering EBP training in post-graduate clinical programmes.

**REFERENCES**


