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Entry-Level Evidenced-Based Practice Training in Physiotherapy Students: Does It Change Knowledge, Attitudes, and Behaviours? A Longitudinal Study

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ABSTRACT

Evidence-based practice (EBP) is an integral part of health professionals' training. However, there is little research concerning learning outcomes in the allied health student population. This study explored changes in self-reported EBP knowledge, attitudes, and behaviours, and actual EBP knowledge of entry-level physiotherapy students following exposure to formal EBP training. **Methods**: Entry-level Bachelors and Masters physiotherapy students were surveyed before and after completing EBP training courses. Two validated and reliable surveys, the Evidence-Based Practice Profile Questionnaire (EBP2) and the Knowledge of Research Evidence Competencies (K-REC) survey were used. The EBP2 included self-reported domains: relevance, sympathy, terminology (knowledge), practice, and confidence. The K-REC survey measured actual EBP knowledge. Paired t-tests and effect sizes (ES) were used to assess the change in scores after exposure to one or both EBP training courses. Mixed design between-within ANOVAs were performed to assess the impact of EBP training on participants' scores in the two different student groups (Masters and Bachelors). **Results**: In the group of 77 students, completion of EBP courses resulted in significant change in all self-reported domains: relevance $p < 0.001$ (ES = 0.49), sympathy $p = 0.005$ (ES = 0.30), terminology $p < 0.001$ (ES = 1.07), practice $p < 0.001$ (ES = 1.34) and confidence $p < 0.001$ (ES = 0.89), and also actual knowledge $p < 0.001$ (ES = 1.13). There were no interaction effects between time and the student sub-group (Masters or Bachelors) for relevance, terminology, confidence, and sympathy ($p \geq 0.05$). There was a significant interaction between time and the student sub-group for practice and actual knowledge ($p<0.05$). **Conclusion**: These findings allow identification of the size of changes likely to result from current EBP courses in entry-level training. The results provide a basis for measuring the effect of modifications to EBP courses and for future EBP training interventions.

BACKGROUND

Evidence-based medicine is defined as "…the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients."[1] The term has now been expanded to "evidence-based practice" (EBP) to encompass all health professional disciplines. This decision making process involves the use of the current best available research evidence, clinical circumstances, and the consideration of patient values.[2] Regardless of the health field, there are often gaps between research and clinical practice, and EBP aims to bridge this gap.[3]

Training student health professionals in EBP is one way to initiate life-long learning.[4] Formal EBP education aims to provide students with the key skills and knowledge needed to undertake EBP once graduated and allow the provision of high quality care based on current evidence, clinical skills and patient values.[5] The uptake or change in practice required for the implementation of EBP may be dependent on factors such as knowledge, skills, professional role, beliefs about capabilities and consequences, motivation, decision processes, the environment and social influences, emotion and behavioural regulation, and the nature of behaviour such as routines or habits.[6] While exploration of the barriers to and facilitators of EBP in working health professionals is common, there is little information regarding students and beginning health professionals in terms of EBP and EBP training.

Different types of EBP training have been explored and assessed with various outcomes investigated, including both self-report and actual EBP knowledge, attitudes, behaviours and skills. However, previous studies investigating EBP training predominately focus upon medical practitioners and the medical student population (Table 1).[7-12] Flores-Mateo et al in 2007 estimated the effect size for the impact of EBP training in medical practitioners (clinicians or post-graduate students) to range between 0.27 (95% CI -0.05 to 0.59) and 1.32 (95% CI 1.11 to 1.53), suggesting small to moderate effects across the domains of knowledge, attitudes, confidence, and attitudes.[7] The body of knowledge concerning EBP in professions other than medicine is comparatively small, with studies investigating participant perspectives on the use of EBP in clinical practice rather than specifically assessing the effect of EBP education pre- and post- training.[13-25]

While the philosophy of EBP remains unchanged across professions, the consistency with which EBP is interpreted or applied across medical and allied health professions is not clear from the literature. EBP relies partly on research evidence. The nature of research evidence which underpins professional clinical practice differs between medicine, nursing, and allied health professions. A recent study by McEvoy et al found differences in professional discipline groups (physiotherapy, podiatry, occupational therapy, medical radiation, human movement) for self-report EBP domains of relevance, terminology, practice ($p<0.001$) and confidence ($p=0.006$).[20] Furthermore, a recent bibliometric study reported there were significant differences in the nature of research published across professional journals of ten Australian health professions (including medicine and allied health).[26] This was especially the case for research design, which could potentially influence the levels of research evidence used by different professions in EBP. Little information exists concerning the effect of EBP training in undergraduate students in health areas outside of medicine and nursing, with only six studies identified (Table 1).[14,17,22,27-29] While the EBP teaching intervention, outcome measures, and professional discipline differed, these studies reported short term positive changes in the outcomes of knowledge, attitudes, confidence and behaviour following EBP training. Effect sizes were not reported.

This study aimed to explore changes in self-reported EBP profiles (incorporating knowledge, attitudes and behaviours), and actual EBP knowledge of students following exposure to EBP training courses in an entry-level physiotherapy program.

Table 1. Summary of Studies in Various Health Areas Investigating EBP Training and Associated Outcomes

Study	Participants		Study design						Outcome					Psychometric properties
	Students (UG)	Clinicians	Systematic Review	Pre-post	Longitudinal	Cross sectional	Descriptive	Qualitative	Skills	Attitudes	Knowledge	Practice	Barriers	
Fritsche et al 2002[8]	Med	Med		■	■				■		actual			RV
Weberschock et al 2004[11]	Med			■					■	■	self-report			R
Gruppen, Rana & Arndt 2005[9]	Med			■					■					
Flores-Mateo & Argimon 2007[7]	Med (PG)		■						■	■	actual+ self-report	■		Varied among studies
Taheri et al 2008[10]	Med			■					■	■				R
West & McDonald 2008[12]	Med			■	■					■	actual+ self-report			RV
Leung 2002[18]	Nurs						■							
McCleary & Brown 2003[19]		Nurs				■				■	self-report	■		RV
Swenson-Britt & Reineck 2009[23]		Nurs						■	■					
Metcalfe et al 2001[21]		AH				■				■			■	
Jette et al 2003[16]		PT				■				■	self-report		■	
Welch & Dawson 2005[25]		OT						■	■	■	self-report	■		
Iles & Davidson 2006[15]		PT				■		■	■		self-report	■		
Upton & Upton 2006[24]		AH				■					self-report	■	■	RV
Caldwell et al 2007[13]		AH				■				■		■	■	
Connolly, Lupinnaci & Bush 2001[14]	PT	PT		■	■					■	self-report			
Kamwendo & Tornquist 2001[17]	AH					■			■	■				R
Heiss & Basso 2003[27]	PT			■						■				
Sabus 2008[29]	PT			■					■			■		
Stern 2008[22]	OT						■	■						
Lewis 2010[28]	PT					■					actual			RV
McEvoy et al 2010[20]	PT OT MR Pod HM	PT OT MR Pod HM				■	■		■	■	self-report	■		RV

AH allied health, HM human movement, Med Medical, MR medical radiation, Nurs Nursing, OT occupational therapy, PG post-graduate, Pod podiatry, PT physiotherapy, R reliability, UG undergraduate, V validity
Shaded cells denote study design and outcomes measured.

METHODS

Research Design

This study used a longitudinal pre-post design. Self-reported EBP profiles and actual EBP knowledge of physiotherapy students were tracked over four occasions before and after two EBP training courses (July 2009 to June 2010). Ethical approval for the study was obtained from the University of South Australia Division of Health Sciences Human Research Ethics Committee.

Participants

In Australia, completion of a recognised degree program is the prerequisite for qualification and registration to work as a physiotherapist.[30] Degree programs may include a four year Bachelors degree or a two year Masters degree for people holding an appropriate Bachelors degree. A convenience sample of students currently enrolled in the physiotherapy degree programs (Bachelors and Masters) at the University of South Australia participated in this study. The sample size was limited by the number of students enrolled in the courses at the time of the study. The potential maximum number of students eligible to participate in this study was 94 with a minimum of 48 subjects needed to detect a medium effect size of 0.5 with 80 per cent power.[31]

EBP Interventions

To date, there is no "gold standard" approach to the most effective teaching practice to facilitate knowledge and skills specific to EBP, and the literature is especially limited concerning entry-level or undergraduate education in the allied health science professions. A consensus statement was created by Dawes et al in 2005 which provided recommendations concerning the content and skills training essential for inclusion with EBP training.[4] These recommendations reflected the five steps of EBP; Ask, Access, Appraise, Apply and Assess. Students were required to complete two EBP training courses during their degree; one theory-based and one clinically-based course. Both courses were based upon the recommendations outlined in the Sicily statement (Table 2).

The EBP theory-based course consisted of didactic face-to-face lectures and tutorials/interactive discussions in an online environment covering the key principles and practices of EBP (equivalent to 13 weeks). This course included foundation knowledge concerning research design, evidence hierarchies, development of search questions, skills in accessing and searching databases, appraising studies for methodological bias, and synthesising, summarising and reporting research evidence. It should be noted that while theoretical information was provided on the different types of clinical questions (intervention, prognosis, diagnostic etc), the emphasis in online discussions and assessments was on questions of intervention effectiveness [population, intervention, comparators, and outcome (PICO format)]. Outcome measures were assessed prior to the first and following the last lecture in this course. This course was an essential prerequisite for enrolling in the second course.

Following completion of the theory course, students were scheduled to complete a six week clinical placement where the principles of EBP were integrated and applied into clinical practice. For example, with each patient, students were required to assess the needs and values of the patient, assess and plan a treatment program which included searching for the best available evidence for the particular treatment problem, educate the patient concerning the best available evidence and reassess and reflect upon the process. The outcome measures were completed before and after the clinical placement.

Table 2. Summary of the Basis and Teaching Modes of the EBP Interventions

Step	Abbreviation	Description of the 5 steps	Theory course 2 hours x 13 weeks	Clinical Course 4 hrs x 6 weeks
Ask/Formulate a research question	'Ask'	Ability to formulate a research question based on a clinical problem that needs to be solved or a gap in the literature	Didactic lectures Practice developing and critiquing others questions in online discussions. Assessed in assignments.	Practice developing specific patient related questions. Assessed through case study and clinical report.
Access and retrieve the evidence	'Access'	Design and conduct a search strategy choosing comprehensive search terms and the most appropriate databases	Didactic lectures Practice developing and critiquing others search strategies in online discussions. Assessed in assignments.	Practice developing search strategies specific to patients Assessed through case study and clinical report.
Appraisal and assessment of the evidence	'Appraise'	Using appropriate chosen critical appraisal tools, the evidence is appraised for suitability to answer the research question, assess bias, suitability of analysis, reliability of the outcome measures	Didactic lectures Practice selecting and applying appraisal tools in online discussions. Assessed in Assignments.	Practice selecting and applying appraisal tools specific to patients' related question. Assessed through case study and clinical report.
Application of the evidence	'Apply'	The evidence is applied to a clinical situation or to respond to a specific research question	Not formally included in course content.	Practice educating the patient about the best available evidence relevant to the specific patient issues/values and previous therapist experience. Assessed through case study and clinical report.
Assess and adapt practice and thinking to integrate new knowledge	'Assess' or 'Adapt'	Integration, evaluation, and adaptation of practice based on evidence and application of these findings	Not formally included in course content.	Practice adapting and updating new knowledge. Assessed through case study and clinical report.

Outcome Measures

While there are limitations in self-report instruments, they offer an economical and efficient method of understanding individual perceptions of the value placed on EBP.[32] Insight into self-assessed confidence, abilities, and attitudes can create an awareness that is considered integral to changing behaviours.[33]

Two survey instruments developed and tested specifically for the allied health disciplines were used to assess change in this study; the 'EBP Profile Questionnaire' (EBP2) and the 'Knowledge of Research Evidence Competencies survey' (K-REC survey).[20,28] These tools were chosen for this study as they were specifically developed for the allied health disciplines. The EBP2 consists of 74 Likert scale items where the first 58 items create a profile of five self-reported factors relating to EBP [relevance, terminology, practice, confidence, and sympathy (with professional work)]. Scores are calculated for each of the five factors with each item scoring one for each point on a 5-point Likert scale (relevance items 1-14, sympathy items 15-21, terminology items 22-38, practice items 49-47, confidence items 48-58). Demographic questions relating to age, gender, professional discipline, and previous exposure to EBP training are also included. The EBP2 demonstrates good to very good test-retest reliability (ICCs for factor scores range from 0.70 to 0.94) and convergent validity (Spearman's rho for factor scores range from 0.50 to 0.74).[20] Three factors (relevance, terminology and confidence) showed adequate discriminant validity in distinguishing between groups with different levels of exposure to EBP (factorial AVOVA $p < 0.05$).

The K-REC survey aims to assess participants' actual knowledge of the research evidence component of EBP. Rather than indicate whether respondents are familiar with particular EBP terms or rate their confidence or behaviours in relation to EBP principles, this survey invites respondents to select the correct answer to a series of questions (actual knowledge). The survey is

based on the Fresno Test for Evidence-Based Medicine.[34] It consists of a clinical scenario (exercise versus airways clearance techniques for a chronic pulmonary condition) and nine short answer and multiple choice items relating to the scenario. The K-REC includes a scoring template with a maximum possible score of twelve. The K-REC demonstrates good to excellent test-retest reliability (measured by Cohen's Kappa and ICC, range: 0.62 to perfect agreement).[28] Discriminant validity of the K-REC was determined by comparing two groups of undergraduate students. Those who had prior formal exposure to EBP training had significantly higher total K-REC scores than those who did not have prior formal exposure to EBP training ($p < 0.0001$).

The EBP2 survey was administered before the K-REC survey to minimise the risk of influencing students' EBP profiles (measured by the EBP2) by first asking questions regarding their actual EBP knowledge (measured by the K-REC). Participants recorded their student identification number on the surveys which enabled the research team to track responses longitudinally over the study period. Individual student identification numbers were converted to a numerical code for recording, analysis and reporting of the results.

Data Analysis

The Predictive Analytics SoftWare (PASW) Statistics computer program (Version 18, IBM) was used for this study. Missing or illegible data were recorded as missing data. In the EBP2 questionnaire where there was completion of at least 75 per cent of the non-demographic survey items, the missing values were imputed using the "Hot Deck" computer program.[35] Hot deck imputation fills in missing items with responses that that were determined to be closest to the most similar complete records. Where more than 25 per cent of the non-demographic items were not completed, the record was excluded from final analyses. The five profile factor scores (raw scores) were then calculated using PASW Statistics with a higher factor score indicating a more positive EBP profile factor score.

Descriptive statistics (means, standard deviations and ranges) for each of the EBP2 profile factor scores, the overall K-REC actual knowledge scores and demographic information were calculated. Paired t-tests were used to determine if there was a significant difference in participants' EBP profile and actual knowledge scores following exposure to any EBP training (one or two courses). Data from participants who had completed at least two test occasions pre-post EBP training were used. The change in EBP profile factors and actual knowledge was considered over each participant's widest exposure to EBP training. The widest exposure was determined as the very first time participants completed a survey to the very last survey completion. Results with a *p*-value equal to or less than 0.05 were considered statistically significant. Effect sizes and confidence intervals for the effect sizes for each profile factor and actual knowledge were also calculated using Hedges correction. Effect size was defined as "small" (< 0.2), "medium" (0.2–0.8) and "large" (> 0.8).[31] Mixed design between-within ANOVAs was undertaken to assess the impact of two different student groups (Masters and Bachelors) on participants' scores for the domains of relevance, terminology, confidence, practice and sympathy, and for actual knowledge across the two time periods (pre- and post- the EBP course). An interaction effect was tested using Wilkes' Lambda with significance set at 0.05.

RESULTS

Eighty-nine out of 94 potential participants were surveyed during the study. Data from two participants were excluded as they withdrew from the course prior to completion. Data from the remaining 87 participants were included in the analyses. Not all participants completed surveys on every possible test occasion. The majority of participants (n=77) completed surveys on *at least* two test occasions, 26 completed *at least* three test occasions and 12 completed all four test occasions. Details of the samples at each occasion of testing are presented in Table 3.

Table 3. Participant Demographics Over the Four Test Occasions and in the Total Sample

Demographic	PRE-theory course (test occasion 1)	POST-theory course (test occasion 2)	PRE-clinical course (test occasion 3)	POST-clinical course (test occasion 4)	Total Sample
Number of participants (n=)					
Total	43	56	51	52	87
Bachelors	29	44	40	40	72
Masters	14	12	11	12	15
Gender (n=)	M = 21 F = 22	M = 22 F = 34	M = 19 F = 32	M = 20 F= 32	M = 35 F = 52
Age [years, mean (SD)]	22.6 (3.3)	23.2 (5.0)	22.9 (3.7)	23.8 (5.4)	23.2 (5.0)

F=female, M=male, SD-standard deviation

Table 4 presents the change in EBP profiles and actual knowledge (paired t-tests and effect sizes) for the 77 participants across their widest exposure to EBP training. There was a significant increase in all scores for all outcomes from pre- to post- EBP training. The effect sizes were large for all outcomes except relevance and sympathy with very large effect sizes for terminology (1.07), practice (1.34) and actual knowledge (1.13).[31]

Table 4. Descriptive Statistics and Results from the Paired T-tests Investigating the Change in EBP Profiles and Actual Knowledge After Exposure to EBP Training

EBP Domain	Maximum possible score	Mean Score (SD) PRE-	Mean Score (SD) POST-	95% confidence interval of the difference		*p*-value	Effect Size	95% confidence interval for the effect sizes	
				Lower	Upper			Lower	Upper
Relevance (n=77)	70	59.1 (6.0)	61.9 (5.2)	1.7	3.9	<0.0001	0.49	0.29	0.69
Sympathy (n=77)	35	21.2 (3.9)	22.4 (4.1)	0.4	2.1	<0.005	0.30	0.08	0.51
Terminology (n=77)	85	48.1 (9.9)	59.1 (10.5)	9.0	13.0	<0.0001	1.07	0.83	1.30
Practice (n=77)	45	21.3 (5.0)	30.4 (7.9)	7.5	10.9	<0.0001	1.34	1.00	1.68
Confidence (n=77)	55	33.2 (8.4)	40.4 (7.8)	5.7	8.7	<0.0001	0.89	0.67	1.10
Actual knowledge (n=75)*	12	6.0 (1.9)	7.9 (1.4)	1.4	2.4	<0.0001	1.13	0.77	1.49

SD standard deviation
Shaded cells denote a significant change ($p < 0.05$)
*Actual knowledge scores missing for two participants

From the mixed design between-within ANOVAs there was no significant interaction between the student sub-group (Masters versus Bachelors) and time (pre-post) for relevance, terminology, confidence, and sympathy (p for Wilks Lambda ≥ 0.05). There was a main effect of time with both groups showing an increase in scores over the period of the course. There was a significant interaction between the student sub-group (Masters versus Bachelor) and time (pre-post) for practice (Wilks Lambda = 0.86, $p < 0.001$) and actual knowledge (Wilks Lambda = 0.87, $p < 0.001$).

DISCUSSION AND CONCLUSIONS

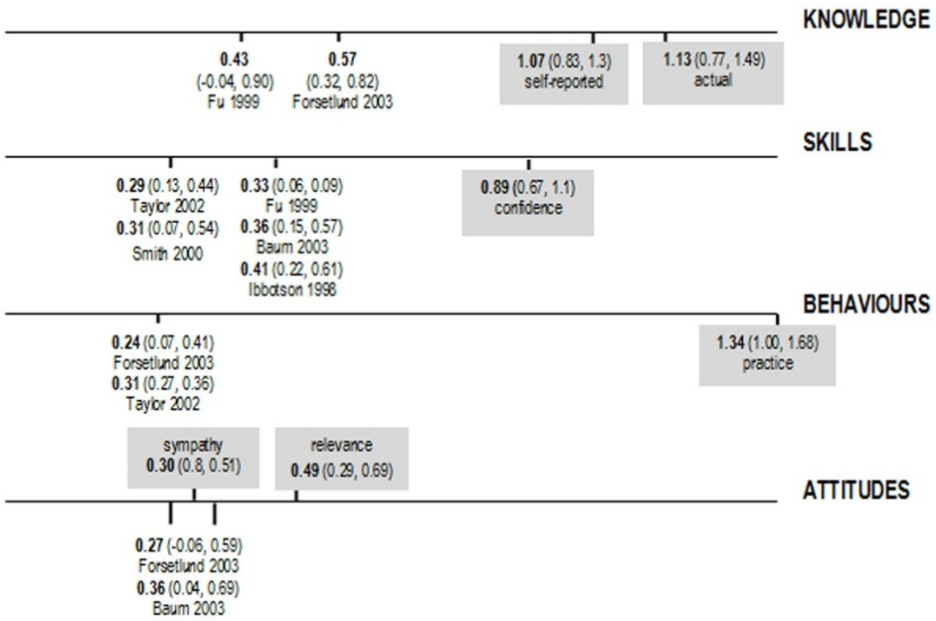
The Sicily Statement on EBP states that on graduation, health care professionals need to have the skills to search, appraise, and apply new knowledge into their practice and undertake a life-long learning approach to adapt to changes throughout their careers.[4] The inclusion of EBP into the health professional entry-level curriculum is relatively recent and little is known regarding the effect of EBP training at an undergraduate level in disciplines such as physiotherapy.[36,37] This study sought to explore the changes in self-reported EBP profiles and actual EBP knowledge of entry-level physiotherapy students following exposure to EBP training. Overall, there was a significant improvement in all self-reported profiles and actual knowledge post- EBP training. There was evidence of a large effect in the majority of self-reported EBP outcomes and actual EBP knowledge.

A comparison of scores for students undertaking a Masters entry-level physiotherapy program found that these students performed similarly to those students undertaking a Bachelors program for relevance, terminology, confidence, and sympathy. For the domains of practice and actual knowledge, there was some influence from both the time period (pre-post the course) and the student sub-group. While both groups improved significantly pre-post the EBP course in practice and actual knowledge, the Bachelors students had a greater improvement in practice and the Masters students had a greater improvement in actual knowledge. The Masters students had completed a previous degree, and while their tested EBP knowledge prior to the commencement of the course was lower than that of the Bachelor students, they demonstrated greater improvements after the EBP course. This may be due to greater motivation, greater maturity, or greater ability to synthesise, learn, and retaining new knowledge. The greater improvement in practice of EBP reported in the Bachelor students may be a reflection of the informal content or process material relating to EBP that may be included in lectures in the first two years of the Bachelors program. The content and quality of this informal input would be dependent on the lecturers own EBP exposure or experience but there would be greater opportunity for this to occur in the four-year Bachelors program compared to the two-year Masters program.

Both the Bachelors and Masters students included in this study were in the second half of their physiotherapy degree. While they had not yet undertaken formal EBP training at the beginning of this study, it is likely that they had been exposed to ideas and principles relating to EBP during the initial stages of the degree. Therefore it might be expected that these students started at a slightly higher baseline than what would be expected of beginning students. Despite this possibility, large effect sizes were shown in the current study for the self-reported outcomes of practice (1.34), terminology (1.07),and confidence (0.89), and for actual knowledge (1.13). The self-reported domains related to attitudes showed a smaller effect (relevance 0.49, sympathy 0.30). These findings possibly suggest that while the current EBP training at the University of South Australia is having an overall positive effect on EBP knowledge (both self-reported and actual), skills, and behaviours, aspects of training may need to be targeted more at addressing personal attitudes toward EBP. This small change may also be a reflection of the already relatively high pre-test score for relevance of 59.1 with a maximum possible score of 70. Compared to relevance, the pre-test scores for other domains did not approach the "ceiling" score as closely (Table 4). It is also possible that attitudes may be "caught not taught", and that perhaps the methods of delivery or attitudes of teaching staff need to be further evaluated.

The improvement in outcomes following EBP training found in this study are consistent with improvements reported in similar studies of undergraduate physiotherapy students.[14,27,29] However, these studies did not report effect sizes and did not report sufficient information to enable the calculation of effect sizes for more detailed comparison with the current study. It was, however, possible to compare the effect sizes with those reported in a recent systematic review of studies investigating EBP training in post-graduate medical students.[7] There was a larger effect in the current study for the domains of knowledge (self-reported and actual), skills (confidence) and behaviours (practice), while the outcomes relevant to attitudes toward EBP (relevance and sympathy) were comparable to previous studies (Figure 1).

Figure 1: Effect sizes calculated by Flores-Mateo & Argimon (2007) for the studies included in their systematic review with the effect sizes from the current study shaded for comparison.[7]



The difference in effect sizes may imply that there is a greater change in EBP domains in undergraduate students as opposed to post-graduate students following EBP training. This is consistent with a previous systematic review by Norman & Shannon in 1998 which found small changes in knowledge in medical residents but large changes in knowledge in undergraduate medical students following EBP training.[38] While it might be optimistic to think that the larger improvements seen in the current study may imply that a comparatively higher quality of EBP training was provided to the students, it is more likely that the larger improvements in undergraduate students may be explained by the fact that they begin with minimal previous formal exposure to EBP concepts. From a starting point of relatively lower EBP knowledge, a larger improvement may therefore be seen.[38] Post-graduate students may have a smaller change because they already begin with some knowledge in the area and have "less to learn."

One further possible explanation for the difference in effect size following EBP training in undergraduate compared to post-graduate students is that it is likely that undergraduate students would be examined or assessed on their EBP knowledge and this formal assessment may act as a stimulus to learning.[38] It is important to consider the context of the post-graduate EBP training, as where EBP is not an assessable component but rather an additional training opportunity, the commitment to learning may not be as great as in undergraduate and entry-level programs where EBP is built into the curriculum.[38]

We are unable to generalise the changes found in EBP outcomes in the current study to other formal EBP training courses. The absence of a control group, or comparator tertiary institutions and EBP training courses, prevents a confident statement that the specific training included in this study was the direct cause of the improvement. However, the current study does allow for identification of the size of change that is likely to result from the current EBP training at one institution. The results may not be generalisable to other health professional programs or institutions.

Implications for Research

Evidence-based practice is an accreditation requirement in the Australian Standards of Physiotherapy.[39] The main EBP-related criterion is an expectation that upon graduation from an entry-level program, physiotherapists are able to apply an evidence-based approach to their own clinical practice. The current study evaluated EBP outcomes in entry-level physiotherapy students at one institution. It is currently not known whether graduates continue to improve, deteriorate, or retain the level gained during their entry-level EBP training. Further research is warranted to follow participants as they transition into the workplace and determine whether the improvement seen during entry-level training translates into clinical practice.

Implications for Education

Despite the consensus on the need for evidence-based clinical practice and EBP training of health professionals at the undergraduate level, there is a lack of rigorous published research into health professional educational processes and outcomes. Given how recently EBP training has appeared in the curriculum of physiotherapy programs, and the current accreditation requirements of the Australian Physiotherapy Council, research into the educational processes used to teach EBP, and the impact of different models of training on outcomes at the undergraduate level is warranted. Further investigation is also needed into student EBP profiles at the commencement of physiotherapy and other health professional programs to monitor change and to inform curricula. The aim of this study was to explore changes in self-reported EBP profiles and actual EBP knowledge of students following exposure to EBP training courses in an entry-level physiotherapy program. This study is the first to demonstrate that large to very large effect sizes in EBP knowledge, attitudes, and behaviours may be associated with EBP courses in an entry-level physiotherapy program.

NOTE

For further details and access to the instruments used in this study please contact Maureen McEvoy (maureen.mcevoy@unisa.edu.au) for the EBP2 and Dr Lucy Lewis (lucy.lewis@unisa.edu.au) for the K-REC survey.

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