

Enhancing patient education skills of physiotherapy students in a clinical education setting

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Abstract

Introduction: Effective patient education is a fundamental aspect of healthcare provision, which requires the use of effective clinical and communication skills. Simulation approaches using group discussion and feedback are effective for clinical and communication skills training in healthcare students. The purpose of this study was to investigate such an approach in improving physiotherapy students' patient education skills and self-efficacy in a clinical education setting.

Methods: A simulated learning activity consisting of a case study and structured role play with feedback and discussion was developed for use during the first week of final-year musculoskeletal physiotherapy clinical placements. Student self-efficacy in relation to patient education was evaluated before and after, and compared using non-parametric statistical tests. Student performance of patient education was contrasted to that of previous cohorts. Student and clinical educator perception of the intervention was also evaluated with descriptive statistics and qualitative framework analysis.

Results: Twenty-four students took part in the study. Student self-efficacy significantly improved following the intervention ($p < 0.01$). Although performance scores were not significantly higher than those of previous cohorts, all students within the current study passed the assessment of physiotherapy practice, which contrasts to previous cohorts. The intervention was well received by students, and themes relating to importance of patient education, improved quality and increased engagement in patient education were generated from clinical educator and student qualitative data.

Conclusion: Within physiotherapy clinical placement settings, a small group learning intervention using case studies, simulation, facilitated feedback and discussion provides an effective and well-received approach to patient education skills training.

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Introduction

Patient education has been defined as “a planned learning experience using a combination of methods such as teaching, counselling and behaviour modification techniques which influence patients’ knowledge and health behaviour” (Bartlett, 1985, p. 323). Patient education provides clinicians with tools to effectively communicate important information (Hoving, Visser, Mullen, & van den Borne, 2010) and to develop patient and clinician cooperation for improved treatment adherence (Schreiber & Colley, 2004). Specific health-related education also allows patients to improve their coping and self-management skills and have greater involvement in decision making (Rankin & Stallings, 2005; van den Borne, 1998). Specifically within physiotherapy, patient education may improve awareness of inappropriate pain beliefs and behaviours and facilitate patient self-efficacy for improved therapeutic outcomes, including pain, disability and function (Clarke, Ryan, & Martin, 2011; Louw, Diener, Butler, & Puentedua, 2011; Ryan, Gray, Newton, & Granat, 2010).

Despite the recognition that physiotherapists are positioned to plan and provide individualised education programmes (Davis & Chesbro, 2003), research relating to actual practice within physiotherapy is limited (Rindfleisch, 2009). Reports suggest that most physiotherapists engage in some form of patient education centred on the principles of adult learning and self-efficacy (Bresse & French, 2012), where sessions are often not delineated from other interventions (Rindfleisch, 2009). Other research suggests that physiotherapists are not routinely engaging in patient education in the areas of health promotion, stress reduction and pain physiology, with practice continuing to focus predominantly on the physical dimension of health (Fruth, Ryan, & Gahimer, 1998). Similar reports also suggest there is little “individualisation” of health education information (Kerssens, Sluijs, Verhaak, Knibbe, & Hermans, 1999), which is primarily clinician-centred or didactic in nature (Trede, 2000). Furthermore, there is often a decline in patient education practice over the course of physiotherapy treatment (Fruth et al., 1998; Gahimer & Dumholdt, 1996; Gahimer, Lyons, McAtee, & Utterback, 1997). These reports are in contrast with current recommendations that patient education should be an ongoing aspect of practice and should be individualised to facilitate a shared decision-making approach (Hoving et al., 2010).

As patient education requires the co-construction of clinical knowledge and reasoning, with communication skills to disseminate information and engage with the patient (Bastable, 2006; Jensen, 1999; Sluijs, 1991), appropriate training would combine these two skill bases. It is strongly recommended that communication training occurs in as realistic a setting as possible (Berkhof, van Rijssen, Schellart, Anema, & van der Beek, 2011). Simulated learning methods are largely recognised as effective approaches for the authentic practice of such skills (Berkhof et al., 2011; Lane, Slavin, & Ziv, 2001). Additionally, such methods may address the potential financial, ethical and organisational challenges and burdens of clinical education (Blackstock & Jull, 2007;

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Health Professions Council of Australia, 2004; McMeeken, Grant, Webb, Krause, & Garnett, 2008). Simulated learning approaches facilitate social processing through placing the student at the centre of learning, thereby facilitating a constructivist pedagogy, integral in fostering a deep approach to learning (Barraket, 2005; Biggs & Tang, 2007; Lave & Wender, 1991). Current research indicates that peer role play and patient actors are equally effective simulation approaches for improving the performance of patient communication skills (Bosse et al., 2010; Lane & Rollnick, 2007; Luttenberger, Graessel, Simon, & Donath, 2014; Nestel & Tierney, 2007) and patient education skills (Papadakis, Croughan-Minihane, Fromm, Wilkie, & Ernster, 1996). It is suggested that role play has an additional advantage of creating an appreciation of empathy, as the student can play the role of the patient (Bosse et al., 2012) and is less time consuming and costly than patient actors (de la Croix & Skelton, 2013; Luttenberger et al., 2014).

Structured and timely discussion and feedback are important inclusions within simulation approaches to facilitate reflection on learning and build on existing knowledge to increase confidence (Bosse et al., 2012; Koponen, Pyorala, & Isotalus, 2014). Post-simulation discussion can reinforce the positive aspects of the experience and encourage the student to link theory to practice and research, think critically, and consider more complex situations (Bosse et al., 2012; Jeffries, 2005; Mann, Gordon, & Macleod, 2009). Peer and group work as part of simulated learning can enhance students' ability to manage group dynamics as well as promote "accountability of actions" (Cohen, 1994) and promote clinical reasoning and feedback, where questions can be raised and ideas discussed (Allen, Duch, & Groh, 1996). In particular, for a group of four to eight learners, using one or two simulation tasks, with a facilitator who solicits feedback and input from the group, has been recommended, as learners can take an active role at some point, while not feeling pressured to speak (Jackson & Back, 2011). Lastly, feedback is essential and is perhaps the most important factor influencing learning using simulation, thus is recommended within clinical simulation practice (Cant & Cooper, 2010).

The placement of simulation approaches within the timeline of training is also an important consideration for its success. Delany and Bragge (2009) argue that simulated patient-student skill activities should be included in the preparation for clinical experience, to enhance student engagement, negotiation and explanations within the clinical setting and improve role recognition. Other authors have suggested that such training should be integrated within the clinical experience, as only in the clinical context can the student truly identify the impact of their learned skills on patient care (Rees, Sheard, & McPherson, 2002).

The purpose of this study is to investigate the effect of a role-play simulation approach, including peer feedback and group discussion, on student self-efficacy and performance in relation to patient education during clinical education. The study also assesses the intervention from the view of the student and clinical educator.

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Methods

Setting and participants

Physiotherapy students within their final year of study at the University of Queensland are required to undertake at least four full-time clinical placements. The University of Queensland Musculoskeletal and Sports Injury Clinic is a major facility for the University of Queensland physiotherapy students undertaking placements. Students assess and manage patients with musculoskeletal conditions, most of whom are seeking treatment on a self-referred basis. Students undertake approximately 190 hours of clinical-based practice within 5 weeks, approximately 75% of which is spent in direct patient care. Eight students complete their placement within the facility at any one time. The project was undertaken across three sets of 5-week placements ($n = 24$). All participants had prior experience with role play during a second-year communication course. All students on placement from June–October 2015 were invited to participate.

Intervention

The 3-hour patient education learning intervention was placed within the first week of the 5-week placement. The intervention consisted of four parts:

1. Tutorial session and orientation (60 mins)

Skill training in the area of clinician–patient communication should include an outline of the evidence and relevance of current deficiencies and consequences, with clinical examples to demonstrate effective practice (Maguire & Pitceathly, 2002). Content from the clinical educator led tutorial included:

- evidence for patient education
- communication skills
- prioritising patient education
- reviewing principles of adult learning and self-efficacy theory
- clinical examples
- outline and guidelines of case study and role-play task.

2. Guideline review and patient case analysis (25 mins)

Students were separated into two groups of two pairs, each group facilitated by one clinical educator. All students were allocated 5–10 minutes to read guidelines for acting as the clinician, patient and observer, as well as guidelines for giving feedback. These guidelines explained that students were to interact with the patient as a clinician would in a professional setting. The student was instructed to create an education plan that they would perform with this patient, including any questions they would ask the patient to facilitate collaborative or individualised education. Students were informed that interruptions were to be avoided throughout the role play as to adhere to the realistic setting. The student in the role of observer was to evaluate the performance of

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the clinician in relation to communication skills and appropriateness of educational content. Discussion relating to the guidelines was encouraged and facilitated by the clinical educator.

Each student then received a unique musculoskeletal patient case scenario, which outlined the subjective and physical assessment findings of a patient case and included detail on the patients' social history and goals. The education session could be up to 10 minutes' duration, depending on the patient presentation.

3. Role-play task (30 mins x 2)

Students worked in groups of four to role-play their patient education session. Each student had the opportunity to act in the role of clinician, patient and observer. At the end of each role play, the students assigned to the role of observer were asked to provide specific feedback to the students in the clinician role. After each scenario, the roles were changed within the same groups in order for each student to play the role of clinician, patient and observer.

4. Group feedback and debrief session (30 mins)

After the role-play activity, the wider group (eight students and two clinical educators) came together to discuss their cases, debrief and provide feedback about the activity. Reflection on this task was facilitated, and discussion around applying these skills to their wider clinical practice was mediated by the clinical educator.

Evaluation methods

This study used a mixed-methods evaluation design for triangulation of data sources. Quantitative measures were used in relation to student pre- and post-self-efficacy, student perception of the intervention and student performance data. Qualitative measures were used in relation to clinical educator perception of student engagement in patient education during the remainder of the placement.

A pilot study was undertaken with a convenience sample of four students and two external clinical educators from the same site prior to commencement of the reported study group. The pilot was used to reach consensus about the structure, content and flow of the self-efficacy and student perception questionnaires. As a result of the pilot, minor changes were made to the instruments. Specifically, several questions were simplified to reduce the time required for completion, but no validity issues were identified.

All procedures complied with the approval granted by the University of Queensland Behavioural and Social Sciences Ethical Review Committee (Approval number 2009001668).

Self-efficacy measure

The questionnaire was specifically adapted from an existing self-rated confidence measure (Mueller et al., 2004) to address self-efficacy in relation to patient education in musculoskeletal clinical practice. This used a 5-point Likert scale for students to

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indicate their confidence in engaging with patients in 10 common patient education scenarios using the scale 1 = not confident at all to 5 = very confident. The instrument was employed before and after the main learning activity and distributed and collected by an independent staff member.

Student performance

Performance of patient education was evaluated using the overall course assessment tool—the Assessment of Physiotherapy Practice (APP). This is a one-page instrument used for summative assessment of the clinical competency of physiotherapy students, based on national practice standards (Australian Physiotherapy Council, 2006; Dalton, Keating, & Davidson, 2006). The measure contains 20 items, each item rated 0–4 on a 5-point scale, rated according to how students meet performance indicators for each item (0 = rarely demonstrates performance indicators, 4 = demonstrates most performance indicators to an excellent standard). Research relating to the tool has demonstrated that the scale operates as intended and can successfully discriminate four levels of competence (Dalton et al., 2006). For the purpose of this study, data were extracted from the item relating to education (Item 15), defined as “is an effective educator” and includes performance indicators such as “demonstrates skill in patient education”, “a realistic self-management programme is developed with the patient” and “confirms patient understanding of given information”. This item on the APP measure has previously demonstrated high inter-rater reliability with over 70% exact agreement between raters and an intra-class correlation of 0.82 (Dalton, Davidson, & Keating, 2012). This APP measure is scored by the clinical educators at the end of the 5-week placement. All clinical educators had more than 2 years’ experience in clinical education and had received training in the use of the APP instrument. The APP results were used to compare the intervention group with the previous 3 years’ cohorts from the same clinical placement site at the same time point in their final year of studies.

Student perception: Questionnaire

Student perception of the intervention was captured using an anonymous 10-item evaluation measure specifically developed for the innovation. This measure asked the student to rate their agreement on a 5-point Likert scale relating to different aspects of the learning intervention. The categories were: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

The questionnaire was distributed and collected by an independent staff member.

Clinical educator perception: Open questions

Clinical educator perception of the learning innovation was evaluated using a written open questionnaire at the end of each 5-week placement, which requested feedback related to perceived engagement and performance of students in relation to educating patients. Clinical educators were asked to give examples of how students were engaging in patient education following the learning intervention. The questions were:

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Please provide comments regarding the current students' use of patient education during their placement.

Have you observed that the current cohort of students has engaged in patient education differently to previous students? Please provide comments and examples where possible.

Data analysis

A chi-square analysis was used to compare the gender and overall placement performance scores of the current cohort to the previous matched cohorts. Descriptive statistics were used to describe the sample and the survey results (frequencies, percentages, means and standard deviations). Non-parametric testing using Mann-Whitney U tests were used to detect score changes in self-efficacy and student performance. *P* values of less than 0.05 were considered significant.

The open responses from clinical educators were subjected to framework analysis. NVivo version 10 (QSR International) was used to manage the data. The principle researcher read through data multiple times to sensitise to the meanings ascribed to training experiences (Creswell, 2013). Passages were coded to reflect perceptions and were subject to continued comparison and differentiation. Similar concepts were clustered to form themes. Coding was verified by the research team. Triangulation of questionnaire data was intended to enhance the credibility of the study (Mays & Pope, 2000).

Results

Twenty-four students consented and completed all evaluation measures (16 females, 8 males; mean age: 24 years). There were no significant differences between the gender composition of the sample and overall final-year academic performance scores of the previous 3-year matched cohorts at the same clinical placement site ($p < 0.01$). The four clinical educators supervising these students all completed the open-response questionnaire: one female and three males with a mean experience as a clinical educator within the clinic site of 2.5 years.

Self-efficacy

All intervention students had an increase in self-efficacy scores, and this change was significant ($p < 0.01$). Modal score rose from 3 out of 5 (frequency: 41%) to a mode of 4 out of 5 (frequency: 55%).

Performance

At the end of each 5-week clinical placement, there was a higher frequency of students receiving the maximum performance score of 4 (70.8%) than those of matching cohorts from the previous 3 years (Table 1). In addition, no students failed this performance outcome. Within the matched cohorts of the previous 3 years, four students failed this outcome by receiving an APP score of 1. Although the scores of the current cohort were higher, there was a significant difference between these scores ($p > 0.05$) and the previous 3 years' cohorts.

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Table 1
Assessment of Physiotherapy Practice Performance Scores: Frequencies

Student Cohort (Year)	Number of students	APP Score of 1 (did not pass) (frequency %)	APP score of 2 (frequency %)	APP score of 3 (frequency %)	APP score of 4 (frequency %)
2011	24	2 (8.3)	10 (41.7)	6 (25.0)	6 (25.0)
2012	24	1 (4.2)	7 (29.2)	10 (41.7)	6 (25.0)
2013	24	1 (4.2)	6 (25.0)	13 (54.2)	4 (16.7)
2014*	24	0 (0.0)	3 (12.5)	4 (16.7)	17 (70.8)

*intervention study participants

Student evaluation

Response to the learning intervention was largely positive, with the most frequent overall item response being “agree” (46%) followed by “completely agree” (42%). The most positive response scores for student satisfaction relate to the facilitator summarising important issues relating to patient education in the tutorial and debriefing (“completely agree”, 90%) and the perception that the learning intervention aided in developing patient education skills (“completely agree”, 86%). The lowest score (“neutral”, 48%) was related to the feedback given by peers (Table 2).

Clinical educator questionnaire results

All clinical educators responded to the open questions. Three essential, non-redundant themes emerged from the data. These were: increased engagement, quality and specificity of education, and awareness of importance. Each theme is listed in Table 3 with examples.

Table 2
Student Evaluation of Intervention: Scores out of Five

Evaluation Question	Mode Score (frequency %)
The facilitator summarised important issues relating to PE during the tutorial and debriefing	5 (90%)
The instructions and guidelines were helpful to facilitate my role in the role play	5 (72%)
The role play helped me to apply what I have previously learned	5 (65%)
The facilitator made me feel comfortable and at ease during the role play and debriefing	4 (54%)
The feedback given by peers were helpful for learning patient education skills	3 (48%)
Reflecting on and discussing the role play enhanced my learning	4 (56%)
The facilitator provided constructive criticism during the debriefing	5 (63%)
The session developed my patient education skills	5 (86%)
The session developed my confidence in patient education	5 (76%)
As a result of the session, I am more likely to engage in patient education of patients	4 (51%)

A 5-point, anchored Likert scale was used, where 1 = strong disagreement and 5 = strong agreement

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Table 3
Results of Clinical Educator Evaluation: The Three Emergent Themes and Examples Quotes

Qualitative Theme	Supporting Statement Examples
Increased engagement	<p><i>"Patient advice and education has been given time amongst other interventions."(CE 1)</i></p> <p><i>"These students are more actively planning it [patient education] and engaging in it."(CE 3)</i></p>
Quality and specificity of education	<p><i>"Rather than just noting that advice and education was given, these students have been specific."(CE 3)</i></p> <p><i>"Patient education has been recorded in greater detail in the notes... I have noticed some students even noting the patient's understanding of what was discussed."(CE 2)</i></p>
Awareness of importance	<p><i>"Students prioritising it more indicates for me that they see it as being more important."(CE 1)</i></p> <p><i>"I sense they view education as a valuable intervention, more so than previous groups."(CE 4)</i></p>

Discussion

This paper outlines a practical simulation approach using group and peer work that can be easily integrated into small group practice, such as clinical education. The paper also outlines the use of case studies alongside simulation methods to promote problem solving, decision making and patient-centred practice (Boissonnault, Morgan, & Beulow, 2006; Wilson & Rockstraw, 2012). The mixed-methods findings from the study demonstrate significantly higher levels of student self-efficacy in relation to patient education ($p < 0.01$) and higher performance scores relating to patient education than previous cohorts, although this finding was not significant. This paper also demonstrates that the learning intervention was well received by students and clinical educators and indicates that students were more successfully integrating patient education skills into clinical patient care immediately following the intervention.

To the author's knowledge, this is the first article to outline and evaluate the use of a case study and role-play task with a particular focus on student self-efficacy using an approach that can be implemented within small group practice in clinical education settings. This approach has the advantage of allowing students to immediately apply new or enhanced skills into real patient practice and being situated within clinical settings using case studies and peer role play.

An important finding from this study was that all students in the current cohort passed the performance outcome related to patient education, whereas four students from the previous matched cohorts did not. Further investigation into how such clinical placement-based simulation interventions may influence student self-efficacy and performance, or students' subsequent clinical placements, may provide further insight.

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Further research using an appropriate control group or further exploration of the relationship between student performance data and self-efficacy may be warranted, in addition to exploring other avenues for assessing student performance in this area.

A major finding from the study is the significant increase in patient education self-efficacy. Bandura (1997) noted that self-efficacy strongly influences individuals' decisions about the activities in which they engage or avoid and their subsequent effort in performing tasks. Self-efficacy is highlighted strongly within healthcare education literature as an area for specific attention in the development of curricula, given its impact on student engagement, motivation, skill development, clinical performance and career development (Clark, Owen & Tholcken, 2004; Jones & Sheppard, 2012; Turan et al., 2013; van Dinther, Dochy & Segers, 2011). Further evaluation of the relationship between student self-efficacy and performance scores, within similar studies and future research, could potentially add to the understanding of the role of student self-efficacy in clinical performance.

The view of the clinical educator was an important inclusion within the evaluation of the intervention. The clinical educators were positioned to assess the ability of the student to engage in patient education, and the effect on patient care, in addition to contrasting the performance of each student to previous cohorts. Clinical educators observed and perceived students as placing more importance on patient education than previous cohorts, with increased frequency of engagement, specificity and individualisation of patient education practice. The findings also demonstrated that students placed more focus and emphasis on planning patient education and were more aware of its role in effective physiotherapy practice.

The study has several limitations. Using the APP tool as the sole quantitative measure for student performance could be viewed as a potential limitation of the current study. The clinical educator is required to apply a score relating to their perception of student performance over the placement. The learning outcome related to education is entitled "is an effective educator" and can have different meanings to different clinical educators, thereby potentiating reliability issues and rating error (Wilson & Rockstraw, 2012). This was ameliorated by using qualitative approaches to evaluate clinical educator views of the performance of patient education over the placement and comparing observations with previous cohorts of students. It should also be noted that all clinical educators received the same training in the use of the APP measures, which may reduce such bias.

Since a major focus has been evaluating student and clinical educator perspectives of patient education skill training, the important perspective of the patient has been left out. Inclusion of patient insight is important within clinical education, especially considering the impact of patient education on patient care. Further larger-scale research should include consideration of patient insight in order to improve the evaluation of the effect of patient education skills on clinical outcomes. The study employed purposeful selection of a small cohort of students within only one musculoskeletal clinical education site, limiting the generalisability of the study findings to other physiotherapy clinical education settings. Evaluating the use of this approach with different patient case scenarios in various settings across physiotherapy clinical education and various

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health professions may be warranted. Rater bias through the use of a clinical educator as the designer and facilitator of the intervention is recognised as a potential issue. This may have been ameliorated to some extent by the process of having each student's performance scores decided by a pair of clinical educators as is the normal practice at the clinical education site.

Conclusion

Overall, the learning intervention developed and outlined within this paper demonstrates an evidence-based and applicable approach to facilitating patient education skills training within clinical education or small group teaching. Student performance and self-efficacy in relation to patient education were enhanced following the intervention. Students and clinical educators responded positively, with improved confidence, engagement and quality of patient education identified.

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References

- Allen, D., Duch, B., & Groh, S. (1996). The power of problem-based learning in teaching introductory science courses. In L. Wilkerson & W. Gijsselaers (Eds.), *New directions in teaching and learning in higher education* (pp. 43–53). San Francisco, CA: Jossey-Bass.
- Australian Physiotherapy Council. (2006). *Australian standards for physiotherapy*. Canberra, Australia: Author.
- Barraket, J. (2005). Teaching research method using a student-centred approach? Critical reflections on practice. *Journal of University Teaching and Learning Practice*, 2(2), 64–74.
- Bartlett, E. E. (1985). At last, a definition [Editorial]. *Patient Education and Counseling*, 7, 323–324.
- Bastable, S. B. (2006). *Essentials of patient education*. London, England: Jones & Bartlett.
- Berkhof, M., van Rijssen, H. J., Schellart, A. J. M., Anema, J. R., & van der Beek, A. J. (2011). Effective training strategies for teaching communication skills to physicians: An overview of systematic reviews. *Patient Education and Counseling*, 84, 310–318.
- Biggs, J. B., & Tang, C. S. (2007). *Teaching for quality learning at university: What the student does* (3rd ed.). Maidenhead, England: McGraw-Hill.
- Blackstock, F. C., & Jull, G. A. (2007). High-fidelity patient simulation in physiotherapy education. *Australian Journal of Physiotherapy*, 53, 3–5.
- Boissonnault, W., Morgan, B., & Beulow, J. (2006). A comparison of two strategies for teaching medical screening and patient referral in a physiotherapist professional degree program. *Journal of Physical Therapy Education*, 20(1), 28–34.

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- Bosse, H. M., Nickel, M., Huwendiek, S., Junger, J., Schultz, J. H., & Nikendei, C. (2010). Peer role-play and standardised patients in communication training: A comparative study on the student perspective on acceptability, realism, and perceived effect. *BMC Medical Education, 10*, 27.
- Bosse, H. M., Schultz, J. H., Nickel, M., Lutz, T., Möltner, A., Junger, J., . . . Nikendei, C. (2012). The effect of using standardized patients or peer role play on ratings of undergraduate communication training: A randomised controlled trial. *Patient Education and Counseling, 87*(3), 300–306.
- Bresse, U., & French, R. (2012). Adult learning theory and patient education for low back pain: A national survey of physiotherapists. *Journal of Allied Health, 41*(4), 198–203.
- Cant, R. P., & Cooper, S. J. (2010). Simulation-based learning in nurse education: Systematic review. *Journal of Advanced Nursing, 66*(1), 3–15.
- Clark, M. C., Owen, S. V., & Tholcken, M. A. (2004). Measuring student perceptions of clinical competence. *Journal of Nursing Education, 43*(12), 548–554.
- Clarke, C. L., Ryan, C. G., & Martin, D. J. (2011). Pain neurophysiology education for the management of individuals with chronic low back pain: A systematic review and meta-analysis. *Manual Therapy, 16*, 544–549.
- Cohen, E. (1994). *Designing groupwork: Strategies for the heterogeneous classroom*. New York, NY: Teachers College Press.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. London, England: Sage.
- Dalton, M., Davison, M., & Keating, J. (2012). The assessment of physiotherapy practice (APP) is a reliable measure of professional competence of physiotherapy students: A reliability study. *Journal of Physiotherapy, 58*, 49–56.
- Dalton, M., Keating, J., & Davidson, M. (2006). *Development of the assessment of physiotherapy practice (APP): A standardised and valid approach to assessment of clinical competence in physiotherapy*. Australian Learning and Teaching Council (ALTC) Final report PP6-28. Retrieved from <http://www.altc.edu.au/project-development-clinical-assessment-2006>
- Davis, L. A., & Chesbro, S. B. (2003). Integrating health promotion, patient education, and adult education principles with the older adult: A perspective for rehabilitation professionals. *Journal of Allied Health, 32*(2), 106–109.
- de la Croix, A., & Skelton, J. (2013). The simulation game: An analysis of interactions between students and simulated patients. *Medical Education, 47*(1), 49–58.
- Delany, C., & Bragge, P. (2009). A study of physiotherapy students and clinical educators' perceptions of learning and teaching. *Medical Teacher, 31*, 402–411.
- Fruth, S. J., Ryan, J. J., & Gahimer, J. A. (1998). The prevalence of health promotion and disease prevention education within physiotherapy treatment sessions. *Journal of Physical Therapy Education, 12*(1), 10–16.

PATIENT EDUCATION SKILLS

- Gahimer, J. E., & Domholdt, E. (1996). Amount of patient education in physiotherapy practice and perceived effects. *Physical Therapy, 76*(10), 1089–1096.
- Gahimer, J., Lyons, L., McAtee, S., & Utterback, E. (1997). Documentation of patient education in physiotherapy practice: Are physiotherapists documenting what they are teaching? *Journal of Physical Therapy Education, 11*, 7–10.
- Heath Professions Council of Australia. (2004). *Solving the crisis in clinical education for Australia's health professions: A discussion paper from the Health Professions Council of Australia*. Melbourne, Australia: Author.
- Hoving, C., Visser, A., Mullen, P. D., & van den Borne, B. (2010). A history of patient education by health professionals in Europe and North America: From authority to shared decision making education. *Patient Education and Counseling, 78*, 275–281.
- Jackson, V. A., & Back, A. L. (2011). Teaching communication skills using role-play: An experience-based guide for educators. *Journal of Palliative Medicine, 14*(6), 775–780.
- Jeffries, P. R. (2005). A frame work for designing, implementing, and evaluating simulations used as teaching strategies in nursing. *Nursing Education Perspectives, 26*(2), 96–103.
- Jensen, G. (1999). Patient education. *Journal of Physical Therapy Education, 13*(3), 2.
- Jones, A., & Sheppard, L. (2012). Developing a measurement tool for assessing physiotherapy students' self-efficacy: A pilot study. *Assessment and Evaluation in Higher Education, 37*(3), 369–377.
- Kerssens, J. J., Sluijs, E. M., Verhaak, P. F. M., Knibbe, H. J., & Hermans, I. M. (1999). Back care instructions in physiotherapy: A trend analysis of individualised back care programs. *Physical Therapy, 79*, 286–295.
- Koponen, J., Pyorala, E., & Isotalus, P. (2014). Communication skills for medical students: Results from three experiential methods. *Simulation and Gaming, 45*(2), 235–254.
- Lane, J. L., Slavin, S., & Ziv, A. (2001). Simulation in medical education: A review. *Simulation and Gaming, 32*, 297–314.
- Lane, C., & Rollnick, S. (2007). The use of simulated patients and role play in communication skills training: A review of the literature to August 2005. *Patient Education and Counseling, 67*(1–2), 13–20.
- Lave, J., & Wender, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, England: University of Cambridge Press.
- Louw, A., Diener, I., Butler, D. S., & Puentedua, E. J. (2011). The effect of neuroscience education on pain, disability, anxiety, and stress in chronic musculoskeletal pain. *Archives of Physical Medicine, 92*(12), 2041–2056.
- Luttenberger, E., Graessel, E., Simon, C., & Donath, C. (2014). From board to bedside: Training the communication competencies of medical students with role plays. *BMC Medical Education, 14*, 135.

PATIENT EDUCATION SKILLS

- Maguire, P., & Pitceathly, C. (2002). Key communication skills and how to acquire them. *British Medical Journal*, *325*(7366), 697–700.
- Mann, K., Gordon, J., & Macleod, A. (2009). Reflection and reflective practice in the health professions education. *Advances in Health Sciences Education*, *14*, 595–621.
- Mays, N., & Pope, C. (2000). Qualitative research in health care: Assessing quality in qualitative research. *British Medical Journal*, *320*, 50–55.
- McMeeken, J. M., Grant, R., Webb, G., Krause, K. L., & Garnett, R. (2008). Australian physiotherapy student intake is increasing and attrition remains as the university average: A demographic study. *Australian Journal of Physiotherapy*, *54*, 65–71.
- Mueller, P. S., Barrier, P. A., Call, T. G., Duncan, A. K., Hurley, D. L., Multari, . . . Li, J. T. C. (2004). View of new internal medicine faculty of their preparedness and competence in physician–patient communication. *BMC Medical Education*, *6*, 30.
- Nestel, D., & Tierney, T. (2007). Role-play for medical students learning about communication: Guidelines for maximising benefits. *BMC Medical Education*, *7*(3), 1–9.
- Papadakis, M. A., Croughan-Minihane, M., Fromm, L. J., Wilkie, H. A., & Ernster, V. L. (1996). A comparison of two methods to teach smoking-cessation techniques to medical students. *Academic Medicine*, *72*(8), 725–728.
- Physiotherapy Board of Australia and Physiotherapy Board of New Zealand. (2015). *Physiotherapy practice thresholds in Australia and Aotearoa New Zealand*. Canberra, Australia: Author.
- Rankin, S., & Stallings, K. (2005). *Patient education: Principles and practices* (4th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Rees, C. E., Sheard, C. E., & McPherson, A. C. (2002). A qualitative study to explore undergraduate medical students' attitudes towards communication skills learning. *Medical Teacher*, *24*, 289–293.
- Rindflesch, A. B. (2009). A grounded-theory investigation of patient education in physiotherapy practice. *Physiotherapy Theory and Practice*, *25*(3), 193–202.
- Ryan, C. G., Gray, H. G., Newton, M., & Granat, M. H. (2010). Pain biology education and exercise classes compared to pain biology education alone for individuals with chronic low back pain: A pilot randomised controlled trial. *Manual Therapy*, *15*, 382–387.
- Schrieber, L., & Colley, M. (2004). Patient education. *Best Practice in Research Clinical Rheumatology*, *18*(4), 465–476.
- Sluijs, E. M. (1991). Patient education in physiotherapy: Towards a planned approach. *Physiotherapy*, *77*(7), 503–508.
- Szybek, K., Gard, G., & Linden, J. (2000). The physiotherapist–patient relationship: Applying a psychotherapy model. *Physiotherapy Theory and Practice*, *16*, 181–193.
- Trede, F. V. (2000). Physiotherapists approaches to low back pain. *Physiotherapy*, *86*(8), 427–433.

PATIENT EDUCATION SKILLS

- Turan, S., Valcke, M., Aper, L., Koole, S., & Derese, A. (2013). Studying self-efficacy beliefs in medical education. *Procedia—Social and Behavioural Sciences*, *93*, 1311–1314.
- Van den Borne, H. W. (1998). The patient from receiver of information to informed decision maker. *Patient Education and Counseling*, *34*, 89–102.
- Van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students' self-efficacy in higher education. *Educational Research Review*, *6*(2), 95–108.
- Wilson, L., & Rockstraw, L. (2012). *Human simulation for nursing and health professions*. New York, NY: Springer.