Patient education best practice; enhancing physiotherapy students’ self-efficacy and skills.

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A thesis submitted for the degree of Doctor of Philosophy at The University of Queensland in 2017
School of Health and Rehabilitation Sciences
Abstract

Patient education is an important component of physiotherapy care and a required competency for entry-level practice. Despite its important role, how physiotherapists deliver patient education in practice and the specific competencies required to provide this effectively are currently unknown. Understanding how the current curriculum prepares graduates as patient educators and whether training can enhance self-efficacy and skills of physiotherapy students to perform patient education is an important step in advancing professional practice in this area.

Following a review of the literature which demonstrates a gap in this research, this thesis incorporates five studies (five manuscripts) with the overall aims to 1) explore how patient education is practiced and perceived by physiotherapists; 2) determine key differences in practices and perceptions based on levels of clinical experience; 3) identify the competencies required for physiotherapists in the area of patient education; 4) investigate the patient education self-efficacy of new-graduates and the influence of previous training, and 5) determine the effect of a patient education training intervention on physiotherapy students’ self-efficacy and performance.

Study 1 (Manuscript 1) was a cross-sectional survey of practicing physiotherapists in Australia. This study investigated the self-reported practices and perceptions of physiotherapists relating to patient education, and their perception of factors that led to their development of patient education skills. Participants (n=304) reported a broad range of educational activities and approaches in their practice, it was therefore deemed important to understand how practice and perception may differ based on levels of experience.

Study 2 (Manuscript 2) compared the self-reported practices and perceptions of experienced (n=204) and novice (n=52) physiotherapists. Experienced therapists reported a greater use of educational content consistent with patient-centred practice and a greater emphasis on self-management. Experienced therapists also reported a higher frequency of explicitly evaluating the effectiveness of their education than novice physiotherapists and perceived fewer patient-related factors as barriers to effective patient education. Findings from this study inform the patient education training needs of student and novice physiotherapists.
**Study 3 (Manuscript 3)** involved a two-round Delphi approach using expert physiotherapists (n=12) to generate and reach consensus on competencies that physiotherapists require for effective patient education. This study led to the consensus of a set of 22 competencies with a high level of expert agreement. Importantly, these competencies aided the development of a self-efficacy and performance assessment measure for the following two studies as well as contributing to further understanding patient education training needs.

**Study 4 (Manuscript 4)** used a mixed-methods design to investigate the self-efficacy of physiotherapy new-graduates (n=121) related to patient education and their perceptions of the influence of training on these practices. The results of this study highlighted the role of curricula experiences on self-efficacy to engage in patient education and the perceived importance of experience in the development of patient education skills. These findings further informed the intervention for Study 5.

**Study 5 (Manuscript 5)** was a single blinded randomized controlled trial that investigated the effectiveness of a patient education training program for final year physiotherapy students (n=164). The design of the training intervention was informed by the existing literature and included lecture content, observation of videos of patient education, practice with simulated patients, feedback and debriefing. Specific outcome measures were developed using the competencies derived from Study 3. A step-wise process was used to determine reliability and validity of the measures. The main outcomes were self-efficacy and performance of patient education using an objective structured clinical examination (OSCE). The results demonstrated a significant improvement in self-efficacy for the intervention group, and no change for the wait-list control group. In the OSCE, the intervention group performed significantly better than the control group for nine of the eleven performance items, with significantly higher performance scores overall.

This thesis provides important insights into patient education training in physiotherapy and how training can be utilised to enhance student self-efficacy and skills in this area. Furthermore, the results support the integration of patient education training into existing physiotherapy curricula, with potential for application to professional practice settings. This thesis also reflects on the limitations of this research and discusses relevant areas for further research. In relation to patient education training, there is a clear need for further research to understand the longer-term effects or maintenance of patient education self-efficacy and skills on professional practice, and the impact this may have on patient outcomes.
**Declaration by author**

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

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Dr Asad Khan
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Dr Michael David
Consulted on statistical analysis of research data for study 5

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<tr>
<td>APA</td>
<td>Australian Physiotherapy Association</td>
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<tr>
<td>OSCE</td>
<td>Objective Structured Clinical Examination</td>
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<td>PBA</td>
<td>Physiotherapy Board of Australia</td>
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<td>RCT</td>
<td>Randomised Controlled Trial</td>
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<td>SD</td>
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Research Questions and Aims

The overarching purpose of this thesis is to explore patient education use and competencies in physiotherapy practice and understand how training can influence physiotherapy students’ self-efficacy and skills to engage in patient education. In meeting this overall purpose the thesis addresses the following sequential aims, to:

1. Review and discuss patient education best practice, physiotherapists use of patient education and the training of health professionals and students in this area (Chapter One)

2. Understand the current practice and perceptions of physiotherapists related to patient education (Chapter Two)

3. Understand the differences in patient education practices and perceptions between novice and experienced physiotherapists (Chapter Three)

4. Identify the competencies required by physiotherapists to perform effective patient education (Chapter Four)

5. Investigate the self-efficacy of new-graduates in relation to patient education practice and the perception of how previous training experiences influences self-efficacy (Chapter Five)

6. Determine the effectiveness of a training program on physiotherapy students self-efficacy and performance in the area of patient education (Chapter Six)
Thesis Structure and Linkage of Chapters

As a requirement of a thesis by publication, Chapter 2 to Chapter 6 (inclusive) include accepted manuscripts from peer-reviewed international journals. The manuscripts have not been amended from their original accepted form, except for formatting.

Chapter One provides an introduction to the field of patient education and explores the theoretical frameworks, systems and evidence to describe best practice. This chapter also explores the literature in relation to how patient education is used within physiotherapy and reviews the literature relating to the effectiveness of training. This literature review forms the basis for the series of studies in this thesis and advocates the need for training in this area, and for research to support the use of such training.

Chapter Two includes the first study which aims to identify the current practice of Australian physiotherapists and their perception of the importance of educational content, barriers and factors that lead to skill development in this area. This chapter informs later studies in this thesis by providing a snapshot of patient education practice.

Building on Chapter One which emphasises the need to ascertain differences in practices and perceptions based on levels of professional experience, Chapter Three explores the effect of professional experience on self-reported patient education use.

A clear understanding of the competencies required for patient education within the physiotherapy context is important as it provides key information to drive curriculum design, and the development of assessment tools for this area of practice. Chapter Four establishes these competencies through a Delphi process which in turn informs later research in the thesis including the design and development of outcome measures and a training intervention.

Chapter Five explores the patient education self-efficacy of physiotherapy new-graduates. This study uses Bandura’s theory of self-efficacy to explore the influence of training experiences on new-graduates’ self-efficacy and perceived development of skills. Findings from this study help identify the influence of both explicit and implicit training experiences on new-graduate self-efficacy and skills, and informs the development of a training intervention.
Chapter Six focuses on the use of an intervention aimed to prepare physiotherapy students to engage in effective patient education. The study within this chapter evaluates the effect of a pedagogically informed training intervention on students’ self-efficacy related to patient education, and students’ performance of patient education in a clinical examination.

Chapter Seven, the final chapter, provides the summary and conclusions of the research undertaken, including implications for professional practice and training and limitations of this research. This chapter also provides avenues for further research. The linking of chapters is further illustrated in Figure 1.

Figure 1. Flow-chart of chapter linkage
CHAPTER ONE: Background and literature review

1.1 Introduction

This chapter aims to provide a foundational understanding of patient education with reference to the unique considerations for physiotherapy training and professional practice.

In covering this broad aim, this chapter is presented across five sections.

- **Section 1** provides an overview of patient education and its role within healthcare settings including physiotherapy.
- **Section 2** provides an understanding of best practice relating to patient education.
- **Section 3** explores professional competencies in this area and reviews the literature relating to patient education use in physiotherapy. This substantiates the need for further research to establish how physiotherapists practice and perceive patient education.
- **Section 4** introduces the concept of self-efficacy and outlines its role in physiotherapy training and patient education practice.
- **Section 5** provides a review of the literature relating to patient education training. As there were no studies identified that investigated the training of physiotherapy students in patient education, this section will review literature relating to the training of health professionals in general. This section establishes the need for further research into training patient education skills in physiotherapy.

Within the literature, the term ‘patient education’ is used interchangeably with several terms. These include health education, patient teaching and patient pedagogy. For the remainder of the thesis the term ‘patient education’ will be used.
1.2 SECTION 1: Patient education

1.2.1 Patient education

Patient education is 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). Tones and Tilford (1994) added to this definition by explaining that patient education is “frequently focused on tertiary levels of prevention but includes activities directed to primary and secondary prevention” (Tones & Tilford, 1994 p. 150), contending that patient education occurs across all levels of healthcare. In relation to physiotherapy, Trede (2000, p427) proposes that “education should be seen as an important part of effective physiotherapy management” and “education is much more complex than the application of technical knowledge and method”. This recognises that the process of patient education is more substantial than a simple transfer of information (Bellamy, 2004). It is rather a systematic, sequential and planned process, consisting of both teaching and learning (Bastable, 2016). A variety of methods can be employed to deliver patient education including lectures, discussions, group activities and printed materials. Despite this, the available evidence indicates that patient education is ordinarily unplanned, spontaneous and embedded informally within wider care by health professionals (Gregor, 2001; Hult et al, 2009) including physiotherapists (Gahimer & Dumholdt, 1997; Rindflesch, 2009; Breese & French, 2012). This suggests that patient education in practice may be notably different to how it is outlined within definitions or theoretical interpretations of the term.

1.2.2 Role of patient education

Patient education has an historic and highly valued place in healthcare (Hoving et al, 2010). It is widely regarded as an integral component of effective care (Burckhardt, 2005; Hoving et al, 2010), and critical to meet future healthcare needs (World Health Organisation, 2004). Patient education not only communicates important information to the patient (Hoving et al, 2010), but also promotes patient-professional cooperation (Schrieber & Colley, 2004). When patients acquire information through education, they are more able to discuss, question, and collaborate with their health professional in the decisions
required for their care (Kaplan et al, 1996; Hoffman & Worrall, 2004; Gold & McClung, 2006).

Current research validates the role of patient education in enhancing health outcomes. This has been emphasised in a literature review of over 360 studies investigating patient education in chronic disease management (Lagger et al, 2010). The majority of studies in the review (64%) demonstrated an improvement in outcomes including pain, disability, quality of life and hospital re-admission. The reviewers outline that the studies that did not demonstrate significant improvements in health outcomes often underestimated the benefits of education and failed to effectively control for information dissemination within control groups. Research within other healthcare settings has supported this view by demonstrating enhanced patient knowledge, coping, self-management skills and patient involvement with patient education (Klaber-Mofett & Richardson, 1997; Cooper et al, 2001; Pernenger et al, 2002; Rankin & Stallings, 2005), especially when it is structured, culturally appropriate and tailored to the patient’s needs (Friedman et al, 2011). Conversely, a lack of patient education in healthcare settings has been linked to adverse outcomes including hospital readmissions (Hari & Rosenzweig, 2012; Fredericks & Yau, 2013), incorrect medication use (Cumbler et al, 2009) and adverse glycaemic control (Eliis et al, 2004).

Patient education as an intervention has been identified as an increasingly important area of professional practice to meet future healthcare needs (WHO, 2004). This is pertinent considering the shift in the focus of healthcare from a disease-oriented to a health-oriented approach (Heikkinen, 2000; Reuben & Tinetti, 2012) and the increasing need to manage complex patient populations within the community (Tanner, 2010; Needleman, 2013). These contemporary changes and pressures on health professionals have implied that patient education is, and will be, an increasingly important and demanding area of future healthcare across all health professions (WHO, 2004).

1.2.3 Patient education in physiotherapy

Physiotherapists operate across a wide range of settings in urban, regional, rural and remote geographical locations (Physiotherapy Board of Australia, 2015). They work both independently and as members of healthcare teams (Cheng et al, 2016). The physiotherapy workforce is one of the largest health profession groups in Australia (Australian Physiotherapy Association, 2012) and is highly valued by both the public and
other health professionals (Turner, 2001; Potter, Gordon & Hamer, 2003; Anaf & Sheppard, 2010; Cheng et al, 2016). Physiotherapists are considered to be in a unique position to create collaborative and therapeutic relationships with patients as they have more direct contact time over a longer period compared with other health professionals (Ross & Haidet, 2011).

Patient education is widely practiced in physiotherapy and physiotherapists are considered to be well-positioned to plan and provide individualised education (Hack et al, 1999; Davis & Chesbro, 2003; Jette et al, 2005). Early research suggests that 99% of physiotherapists perceive patient education as an important skill (May, 1983) and over 90% report participating in individual patient education as part of their care (May, 1983; Chase et al, 1993; Gahimer & Domholdt, 1996; Roberts et al, 2013). These rates are similar to other health professional groups (Bergh et al, 2014). More recent research reinforces the prevalence of education within physiotherapy, suggesting that 12.5% of physiotherapist consultation time is spent directly undertaking patient education activities (Roberts et al, 2013).

Physiotherapists as part of the wider health profession are faced with an increasingly aged population, many of whom are living with, and managing, chronic health conditions within the community (Denton & Spencer, 2010). As a result, physiotherapists play a key role in supporting patients to plan and implement healthcare strategies (Kumar, 2010) by providing information, actively sharing decision making and helping them navigate the plethora of health information that is increasingly accessible and complex (Hoving et al, 2010; Lee et al, 2015). The physiotherapy profession has therefore placed an increased emphasis on the role of the physiotherapist as educator (PBA, 2015). Teaching as a function of physiotherapy is included in national practice requirements (PBA, 2015) and education is thus considered to be a primary responsibility of the profession.

Practicing as a physiotherapist in Australia requires the completion of a four-year undergraduate degree, or equivalent, from an accredited University provider (Crosbie et al, 2002; McMeeken, 2007). Education providers are required to prepare students to be autonomous professionals who are able to demonstrate competencies outlined in the Australian and New Zealand physiotherapy practice thresholds required for national registration (PBA, 2015). Practicing physiotherapists must also adhere to these standards to maintain registration with the national board (PBA, 2012; PBA, 2015). These
competencies for practice include education as one of seven overarching roles. As defined within the thresholds (PBA, 2015), physiotherapists must possess key competencies including the ability to “empower self and others through education”, “seek opportunities to lead the education of others…..as appropriate within the physiotherapy setting” (PBA, 2015 p 9), and “engage in an inclusive, collaborative, consultative, culturally responsive and client-centred model of practice” (PBA, 2015, p9).

Physiotherapists are expected to follow evidence based practice which includes adhering to clinical practice guidelines (Koes et al, 2010; APA, 2012; PBA, 2015). Patient education as an intervention features consistently in patient management guidelines across physiotherapy practice areas including musculoskeletal (Koes et al, 2010; APA, 2012; Ernstzen et al, 2016), neurological rehabilitation (Khadilkar et al, 2006; Nielsen et al, 2015) and cardiorespiratory inpatient and outpatient settings (Bott et al, 2009; Langer et al, 2009). The education role is increasingly validated in physiotherapy research which substantiates the view that purposeful patient education interventions can improve patient awareness of inappropriate beliefs and behaviours and increase self-efficacy for improved therapeutic outcomes including pain, disability and function (Clarke et al, 2011; Louw et al, 2011; Van Oosterwijck et al, 2011; Robinson et al, 2016).
1.3 SECTION 2: Patient education best practice

1.3.1 Theoretical underpinnings of patient education best practice

Educational and behavioural theories provide a framework for determining appropriate pedagogical approaches and aid in predicting the outcomes of individual patient education (Syx, 2008). These theoretical frameworks also underpin various aspects of teaching and learning and emphasise the consideration required for planning, implementing and evaluating patient education practice. Implicit in this understanding is that despite the lack of evidence to support the specific use of one or more theoretical elements, effective patient education draws on a range of theories and models (Glanz et al, 2008). These include the adult learning theory (Knowles, 1988), patient-centred model (Jette, 1994), theory of self-efficacy (Bandura, 1977), the health belief model (Rosenstock, 1974) and locus of control theory (Rotter, 1966). To contain the scope of this chapter, the adult learning theory, patient-centred model and theory of self-efficacy are outlined further as they are widely considered to reflect specific aspects of patient education best practice (Chesbro & Davis, 2002; Dandavino et al, 2007; Beagley, 2011; Friedman et al, 2011).

1.3.2 Adult learning theory

Malcolm Knowles (1988) developed the adult learning theory, often referred to as ‘andragogy’, to inform effective teaching of adults. In order to provide effective patient education, authors have emphasised that health professionals need to be familiar with basic adult learning principles (Dandavino et al, 2007; Beagley, 2011; WHO, 2013). Six key principles outlined within the theory are;

1. Adults are internally motivated and self-directed
2. Adults bring life experiences and knowledge to learning experiences
3. Adults are goal oriented
4. Adults are relevancy oriented
5. Adults are practical
6. Adult learners like to be respected

This theory relates directly to the practice of patient education as it identifies that an adult actively pursues learning based on a perceived need (Knowles et al, 2015). This implies that the adult is internally motivated and self-directed in seeking consultation regarding a
relevant problem that they are experiencing. As the experiences of the adult serve as a source of identity (Knowles, 1988), patient education practice that is centred on the goals and problems experienced by the patient is suggested to respect the needs of the adult learner. Adult learning thus often focuses on the process of learning, rather than the content being taught. These principles are therefore regarded as integral considerations in the structure, delivery and evaluation of patient education in practice (Chesbro & Davis, 2002; Breese & French, 2012).

The theory of adult leaning approaches learning from a problem-based foundation that is individualised to the patient’s needs and is therefore more consistent with a patient-centred approach (Knowles et al, 2015). Knowles (2015) postulates that the inquisitive nature of the adult implies they are likely to consider the need and value of information or skill acquisition before actually engaging in it. It is therefore expected that effective educators seek the patient’s perspective (Chesbro & Davis, 2002), explain what information is important and provide reasoning around their learning needs (Chen et al, 2009; Soever et al, 2010). This supports the assertion that adults are more receptive to learning when provided with adequate and credible explanations (Ozel & Karabacak, 2012) and emphasises the role of the educator in assessing the readiness of the patient to learn and their learning needs (Chesbro & Davis, 2002). Patient education consistent with adult learning also recognises the importance of the adult to be self-directed (Knowles et al, 2015). This assists health professionals in recognising that adult patients must be engaged as partners for an enhanced sense of control and engagement within their care (Knighton, 2009; McCarley, 2009). Conversely however, patient education itself may aid patient self-directedness. Gould (2012) noted that when patients learn, they feel empowered, and therefore can become more empowered to be self-directed throughout the process of care.

The principles of adult learning are also pertinent in health professional training. Applying these principles to training curricula is suggested to facilitate self-directedness, motivation and autonomy of the health professional (McNeil et al, 2006). Specific approaches include student-centred learning, facilitating self-reflection, providing constructive feedback and ensuring learning activities can be applied to relevant clinical settings (WHO, 2013). Although not one single approach to teaching clinical skills is suitable for all students (Kharb et al, 2013), teaching approaches that incorporate principles of adult learning such
as experiential and problem based learning are strongly supported within health educational literature (Koh et al, 2008; Dwamena et al, 2012).

1.3.3 Patient-centred care model

Two widely recognised healthcare frameworks that further inform best practice of patient education are the practitioner-centred model (Byrne & Long, 1978) and the patient-centred care model (Jette, 1994; Jensen, 1997; Mead & Bower, 2000; Roter, 2000). These emphasise the interaction between health professional and patient, and contain specific elements including the structure, content and delivery of healthcare content, and the role of the professional (Roter, 2000; Higgs, 2008). Major elements that distinguish between these models include underlying assumptions about roles and responsibilities, power and authority, and the type of relationship that is valued and supported between patient and professional (Kaba & Sooriakumaran, 2007; Trede & Higgs, 2009). Although the two models could be considered dualistic in nature, a single healthcare interaction between patient and professional will often feature both approaches (Robinson et al, 2008).

The practitioner-centred model is suggested to align with a traditional biomedical approach to communication (Byrne & Long, 1978; Levenstein et al, 1986) that focusses on illness causes and explanations, with an emphasis on decision making and management of professional-identified problems (Roter et al, 1997; Wade & Halligan, 2004). Similarly, the patient education discourse has historically centred on a mechanistic model of communication from a practitioner-centred perspective, with the premise of the patient as a passive receiver in the process of communication (Lee & Garvin, 2003). Such an approach assumes that ownership of this process lies with the professional as they initiate teaching and learning opportunities and there is little room for the patient in the receiver role to contribute (Dixon-Woods, 2001).

The patient-centred model has been identified as a means of addressing the rising demands on the healthcare system associated with an ageing population and increasing prevalence of chronic health conditions (McMillan et al, 2013). It is strongly advocated by health professionals, consumers and clinical guidelines (Epstein et al, 2011; Cheng et al, 2016) as well as professional physiotherapy standards (PBA, 2015) and is a key feature within the contemporary training of health professionals (Dwamena et al, 2012; WHO, 2013; Cheng et al, 2016). The patient-centred model draws on a view of the patient as
having a central role in knowledge sharing for effective patient education (Dixon-Woods, 2001; Hoving et al, 2010; Cheng et al, 2016) and views the dynamic partnership between the patient and professional as integral to the success of the educational process. This model gives attention to the physical, personal and social aspects of the patient (Jette, 1994; Sidani & Fox, 2014) and is considered to be strongly guided by the partnership between the engaged patient and supportive health professional for the purpose of mutually agreed care (Gould & Mitty, 2010; Hyrkas et al, 2014). Mead and Bower (2000) describe five major characteristics of the health professional in adopting a patient-centred approach:

1. Achieving a biopsychosocial perspective
2. Showing consideration and respect for the patient as an individual
3. Sharing information, decision-making, power and responsibility
4. Prioritising the patient-professional relationship and
5. Self-awareness of the practitioner.

Recent systematic and narrative reviews have provided a means of further consolidating evidence regarding the core concepts of patient-centred care which include holistic, collaborative, and responsive care facilitated through a therapeutic relationship (Sidani & Fox, 2014).

Several studies have explored patient-centred care in physiotherapy settings. Cooper and colleagues (2008) used semi-structured interviews of patients receiving physiotherapy treatment for chronic low back pain to explore patient-centredness from the perspective of the patient. Communication, individualised care, decision-making and information sharing were identified as the most important dimensions. Communication was the most prominent feature and also underpinned the other components identified. Patients reported a strong desire for information from the therapist, reflecting patient education as a key component of patient-centred care. The authors emphasised that the physiotherapist should seek to explore information that the patient is pursuing and provide credible explanations for information that they can provide. Jones et al (2014) further describes a step-wise approach to implementing patient-centred care into physiotherapy practice. The authors outline that the physiotherapist must identify issues from the patient’s perspective and collaborate with the patient in identifying potential solutions with information disclosure regarding treatment options. Solvang and Fougner (2016) later drew on the literature to
describe three major dimensions of patient-centred care relating specifically to physiotherapy practice. The authors describe the first dimension as the therapist taking a respectful stance towards the patient’s perspective including addressing the needs of the patient, giving individualised advice and offering support. The second dimension outlines the role of empowering the patient with a focus on promoting health, with the patient taking a central role to aid informed decision making and self-care. The final dimension involves the therapist providing a holistic focus on patient management, by focussing on the patient as a whole and considering their personal and social factors, including family roles and work. This emphasises that patient-centredness is a key consideration in patient education best practice, but also conversely, patient education itself is an integral part of patient-centred care from the perspective of the patient.

1.3.4 Influence of professional experience and training on patient-centred care

The influence of training and professional experience on the delivery of patient-centred care has been a focus of previous research. Experienced physiotherapists have been observed to employ a more patient-centred approach to patient care (Jones et al, 2008), demonstrating a higher use of practice behaviours that promote patient empowerment (Resnik & Jensen 2003; Jones et al, 2008) and actions to tailor treatment to the patient’s needs (Doody & McAteer 2002). Gyllensten and colleagues (1999) interviewed experienced physiotherapists and found that they place high importance on establishing a helping alliance, understanding the context of the patient’s whole situation and have a strong focus on patient participation. The researchers also demonstrated that experienced physiotherapists emphasise the importance of understanding the patient’s perception of their problems and strengthening patient responsibility through openly sharing knowledge and information. In the Australian physiotherapy and occupational therapy context, Nordholm and colleagues (1995) demonstrated a correlation between therapist age, years of practice and a patient-centred approach to practice, confirming a positive relationship between experience and patient interaction expertise. Roberts and Bucksey (2007) compared physiotherapy practice based on years of experience using observations of practice and interviews, and also confirmed that those with more professional experience demonstrate higher levels of positive affective behaviours with patients, which are recognised as important for an effective patient-therapist interaction (Dieppe et al, 2002).
Not surprisingly, formal training of health professionals and students in skills that enable effective patient-centred care has been widely supported within the literature (Makoul et al, 2001; Rider & Keefer, 2006; Levinson et al, 2010; King & Hoppe, 2013; WHO, 2013). The available evidence demonstrates consensus that health professionals and students can be trained to provide effective patient-centred care although most training and research has focussed on patient-centred communication skills only (Levinson et al, 2010; Dwamena et al, 2012; King & Hoppe, 2013). Furthermore, research has demonstrated that such training has led to more favourable outcomes including patient satisfaction and health behaviours (Brown et al, 1999; Fallowfield et al, 2002; Stein et al, 2005; Dwamena et al, 2012). A Cochrane review (Dwamena et al, 2012) of 43 trials of training interventions that aimed to promote patient-centred skills of health professionals supported these claims and established that although approaches varied, training was largely successful, and short term training (less than 10 hours) was as successful as longer interventions.

1.3.5 Patient-centred education

The patient-centred model is universally viewed as underpinning best patient education practice as it views teaching and guiding patients as being more effective than ‘doing’ for them (Martin & Fell, 1999; Jensen et al, 2000; Bauman, Fardy & Harris, 2003). Skelton (2001) suggested that in contrast to traditional models of education that focus on simple information provision, compliance and dependence, a patient-centred approach to patient education encourages autonomy through understanding the patient’s educational needs (Skelton, 2001). This approach is also suggested to allow the patient to set their own goals and learning needs to make informed choices regarding their care (Anderson & Funnell, 2010). Patient-centred approaches to education are also considered integral to the ongoing relationship between the patient and physiotherapist to promote problem solving (Barr & Threlkeld, 2000), self-management and behavioural change (Lorig &Holman, 2003; Liddle & Baxter, 2009; Anderson & Funnell, 2010), all of which may be goals or outcomes of education. Recent studies illustrate the limited effects of traditional patient educational interventions and advocate for the provision of patient-centred approaches (Solomon et al, 2002; Coulter & Ellins, 2007; Li, 2007; Bode et al, 2008; Friedman et al, 2011; Fredericks & Yau, 2017). Focussing patient education to meet patients’ preferences and learning needs have demonstrated positive effects including increasing motivation and enhancing health outcomes (Smith et al, 2007; Friedman et al, 2011; Fredericks &

Several authors have detailed the activities and actions required by health professionals to achieve patient-centred education. These involve assessing the educational needs of the patient, including their perceptions and concerns (Bergh et al, 2014; Ndosi et al, 2015) and facilitating an environment that is conducive for patients to express their needs (Costello, 2013). Redman (2004) specifies that including the patients learning needs into the design of the patient education session is a key feature in effective patient education as it more accurately reflects their experiences and allows content to be tailored to their needs. Persson and Friberg (2009) further emphasises that patient-centred communication skills and pedagogical awareness, as well as an ability to be attentive to patients’ needs in an empowering way are required for effective patient education. Authors also outline the need for health professionals to evaluate the outcomes of the educational intervention to ensure that required changes in knowledge, skill or behaviour have occurred (Kripilani, 2008; Falvo, 2011).

1.3.6 Patient view of patient education best practice

Education is an aspect of healthcare that is highly valued by both health professionals and patients (May, 1983; Trede, 2000; Cooper at, 2008). Research confirms that patients seek a dialogue about their condition and expect education to help enable them to manage health problems (Kamien, 1996; Lupton, 1997; Trede, 2000). Furthermore, skills of the professional in effectively explaining the patient’s health condition with a focus on self-management strategies are particularly valued by the patient (May, 2001; Hills & Kitchen, 2007; Cooper et al, 2008, Hush et al, 2011). Specific to physiotherapy practice, the literature indicates that communication that is centred on providing information and education is strongly related to patient satisfaction and engagement (Oliviera et al, 2012; Forbes & Nolan, 2017) and to creation of a therapeutic alliance (Pinto et al, 2012). Oliviera and colleagues (2012) undertook a systematic review to identify factors associated with patient satisfaction within physiotherapy settings. The authors identified that interaction styles related to the physiotherapist involving, facilitating and supporting patients and educational activities, such as time spent discussing prevention, were associated with
patient satisfaction. More recently, Forbes and Nolan (2017) demonstrated that active involvement of the patient through providing information regarding their care was strongly related to patient satisfaction within several physiotherapy settings.

The perspective of the patient specifically regarding effective patient education was recently explored within cardiac care settings. Patients’ view of an effective educator related to perceived trustworthiness of the professional and their ability to provide information that is individualised to their needs and easily understood (Svavarsdottir et al, 2016). Patients also judged an educator’s effectiveness by their confidence and the congruency between the information provided and the patient’s own prior knowledge and beliefs. Honesty about the patient’s condition and management, letting the patient speak, and recognising when the professional required further information from others within the team were factors also associated with perception of a ‘good’ educator (Svavarsdottir, 2016). In relation to preferences of the delivery of patient education, patients in this setting identified individualised, one-to-one education as the most effective and appropriate (Svavarsdottir, 2016). This is supported by earlier research implying that patients favour verbal approaches to education whereby the professional uses one-to-one discussion that allows them to seek explanations and ask questions (Astin et al, 2008).
1.4 SECTION 3: Patient education practice

1.4.1 Competencies for patient education practice

Health professional competencies integrate multiple components including knowledge, skills and attitudes with context or profession specific attributes such as clinical reasoning, inter-professional communication, problem solving and evidence based practice (Holmboe & Hawkins, 1998; Ilic, 2009). Determining the specific competencies for health professions is considered integral for providing a base of core knowledge and skill, reinforcing existing behaviours and skills, structuring assessment, and pinpointing future learning needs (Djonne, 2007). Gruppen and colleagues (2012), note that competencies aid in defining the standards and expectations of practice to help align professionals, students, educators, assessors and patients with standards of performance. In doing so, competencies are argued to aid in providing quality, integrity and accountability for a profession (Capwell, 1997; Gruppen et al, 2012).

The Australian and New Zealand physiotherapy practice thresholds outline the overarching competencies required for initial and continuing registration as a physiotherapist in both Australia and New Zealand (PBA, 2015). The format of the thresholds models the CanMEDS competency framework, developed by the Royal College of Physicians and Surgeons of Canada (Royal College). The CanMEDS framework “describes the abilities physicians require to effectively meet the needs of the people they serve” (Frank et al, 2014, p 1). In applying this framework, the physiotherapy practice thresholds arrange key competencies within seven integrated and thematic roles, of which one major role is referred to as “educator”. This role highlights that; “as educators, physiotherapists apply learning principles and strategies….to facilitate learning by other professionals, students, clients, relevant others….“ (PBA, 2015, p 27). The key competencies described to fulfil this role of educator are using “education to empower themselves and others” and seeking “opportunities to lead the education of others”. The corresponding “enabling components” beneath each key competency describes the essential and measurable characteristics of threshold competence. These enabling components with specific relation to patient education include:

- “apply adult learning principles to facilitate safe and effective learning and assumption of responsibility by other professionals, students, clients, relevant
others and communities, taking into account, the level of knowledge, health literacy and role of the person they are educating”

- “educate, motivate and empower the client and relevant others to take control of their health and well-being and implement effective self-management strategies”
- “use education and empowerment strategies to promote and optimise the client’s health and well-being”
- “encourage and motivate others to engage in critical reflection and self-directed learning”

With specific reference to patient education competence, Van den Borne (1998) and Wouda and van de Wiel (2015) refer to the need for effective communication skills as a competency of health professionals which includes providing appropriate information and advice. They also recognise behavioural proficiency to be able to “influence patients knowledge, opinions, and health and illness behaviour so as to ensure that the patient is able to cooperate effectively in decisions about their care” (Wouda & van de Wiel, 2015; p1084). Rather than define specific competencies, London (2009) outlines the requirements of health professionals to achieve effective patient education by describing four essential steps. Assessment is the first step and occurs through understanding the patient’s learning needs, motivation and their beliefs and knowledge relating to their condition and its management. This assists the health professional in identifying potential barriers to learning and essentially, allows education to be individualised to the patient. Planning is the second step in the patient education process; whereby the health professional can develop a teaching plan and consider outcomes relating to the needs of the patient. The third step is implementing patient education which requires the health professional to seek and apply content and delivery approaches that are relevant and engaging to meet learning needs. Lastly, the health professional needs to evaluate education through seeking whether the patient has been able to relay what they have learned or demonstrate skills they have obtained.

Applying such broad recommendations or competencies to inform patient education practice in physiotherapy settings can be problematic, considering their generalist nature and potentially limited utility to inform specific training and assessment needs. Despite the inclusion of patient education practice in many professional competency criteria, it appears that specific empirically derived competencies are beyond the scope of such standards. It has been strongly emphasised that physiotherapy curricula should reflect competencies in
patient education including those relating to health promotion (Bodner et al, 2013) and self-management strategies that include exercise, social support, activity pacing and non-pharmacological pain management (Hoeger-Bement et al, 2014). Despite calls for this, a specific set of competencies for physiotherapists in the area of patient education that have been derived from empirical processes, are not yet available. Such competencies could be used to guide the benchmarking of educational curriculum, assessment and professional practice.

1.4.2 Issues relating to patient education in physiotherapy and the health professions

Despite the role of patient education in healthcare, there are concerns relating to how patient education is being practiced. These concerns have prompted an increased call for education, training and support for patient education competency (MacDonald et al, 2008; Bergh et al, 2014; Svavarsdottir et al, 2015).

Authors have reported patient education as ‘unarticulated’ and ‘unreflective’ relying primarily on tacit knowledge (Bergh et al, 2014), often not congruent with patient expectations (Sawyer & Fardy, 2003), and didactic in nature (Dierckx et al, 2013; Bergh et al, 2014). Hack and colleagues (2005) reviewed the literature relating to patient communication needs and determined that information provided by health professionals’ is often insufficiently tailored to patient needs, which thus often remain unmet. In a study of health professionals by Kaariainen and Kyngas (2010), 93% of participants perceived themselves to be providing individualised patient education with a focus on understanding the patient’s knowledge and preferences, despite 21% of participants not explicitly demonstrating these actions. Patient education practice in physiotherapy has also been observed as primarily therapist-centred and didactic in nature, and therefore not consistent with a patient-centred approach (Kerssens et al, 1999; Trede, 2000). More recent observational studies confirm that patient involvement is rarely implemented within the physiotherapy consultation (Dierckx et al, 2013). This may have negative implications on patient outcomes. An absence of a patient-centred approach to education may result in a lack of attention to patients’ needs and may contribute to the development of barriers to positive healthcare outcomes (Barnes & Chapman, 1994; Arborelius & Osterberg, 1995; Bauman et al, 2003). Little (2001) highlights that health professionals who are unaware of
their patients’ educational needs may also contribute to poor outcomes such as ongoing symptoms, patient passivity and increasingly complex and unnecessary treatments.

Several reasons have been proposed to explain the challenges facing effective patient education provision. Health professionals may lack both the knowledge and confidence to provide effective patient education in practice (Barta & Stacy, 2005; Jallinoja et al, 2007; Macdonald et al, 2008; Darkwah et al, 2011; Svavarsdottir et al, 2015). Health professionals report difficulty in defining their role as a patient educator (Friberg et al, 2012) and most report not using professional or scientific patient education literature to inform practice (Bergh et al, 2014). Research also suggests that inadequate training and a lack of confidence, or self-efficacy, may be responsible for health professionals’ reluctance to use patient education (Lee & Chien, 2002; Porta & Trento, 2004; Macdonald et al, 2008; Ivarsson & Nilsson, 2009). Balcou-Debussche and Debussche (2008) note that few health professionals’ question their own skills or understanding of patient education nor discuss it with colleagues and have reported a need for more support in this area (Epstein et al, 2004; Goeman et al, 2005; Svavarsdottir et al, 2015). Conversely, some authors demonstrate that health professionals feel competent in their patient education role (Fitzpatrick & Hyde, 2005; Lewis, 2005). Park (2005) identified a discrepancy between health professionals’ perceived competency in patient education and their observed use, outlining that professionals likely relate their use of skills to personal experience rather than using evidence based practice. This is consistent with physiotherapy practice research where Hillier et al (2015), using observation and interviews, found that physiotherapists demonstrated a reliance on intuition and experience to evaluate patients’ needs rather than referring to theories or models of communication practice. The authors further identified that physiotherapists displayed communication practices using a predominantly practitioner-centred approach. These reports are consistent with other health professional research. Self-report research in nursing has demonstrated that both newly graduated (Lima et al, 2014) and experienced nurses (Istomina et al, 2011) rate their patient education competency as lowest of all clinical competencies. Within medicine, Woda and van de Wiel (2015) found that although physicians were deemed to be adequate in the area of patient education competency, inexperienced residents and their supervisors displayed similar levels of competence, suggesting that patient education skill may not necessarily be enhanced with experience. Conversely, a more recent qualitative study of cardiology health professionals, including physiotherapists, identified that novices
often have theoretical knowledge and can disseminate information effectively, but are not often able to select the most relevant information or individualise education to the patient (Svavarsdottir et al, 2015). Similar research has illustrated that health professionals tend to focus on their practical skills while their communicative and pedagogical skills receive less attention (Kelly & Courts, 2007; Hult et al, 2009). These results are pertinent considering that a lack of ongoing knowledge and training development in the area of patient education has been recognised and reported by various health professionals (Bergh et al, 2014; Svavarsdottir et al, 2015).

Actual or perceived barriers to patient learning are a key consideration in the success of patient education. These may include factors that are patient-specific or factors related to the health professional or environment where learning is taking place. A lack of competency in communication or patient-centred care (Carpenter & Bell, 2002; Kaariainen & Kyngas, 2010; Bergh et al, 2012), inadequate knowledge or familiarity of the content being taught (Eriksson & Nilsson, 2008; Friberg et al, 2012) and inadequate training have been identified as major perceived barriers towards effective use of patient education (Murchie et al, 2005; Conway et al, 2006; Balcou-Debussche & Debussche, 2008; Friberg et al, 2012). This is a key challenge when designing patient education training interventions for students or novice health professionals who are still developing knowledge, clinical reasoning and communication skills (Kuiper, Pesut & Kautz, 2009).

Other reported barriers include insufficient patient-centredness where professionals focus on disseminating information to patients rather than exploring patient education in a way that enacts best practice (Balcou-Debussche & Debussche, 2008; Friberg et al, 2012). Patient-specific obstacles or barriers to patient learning include health literacy issues, stress relating to their illness and a lack of motivation and social support (Beagley et al, 2011). The healthcare environment can also act as a barrier and may potentially impede the outcome of patient education endeavours. A lack of time (Tse & So, 2008) or a physical environment not conducive to learning have been identified by physiotherapists as a barrier to effective education (Chase et al, 1993) and a lack of professional support within the wider health setting from colleagues and management can lead to feelings of loss of control and isolation (Beagley et al, 2011; Qian et al, 2011). Addressing the extent of such barriers across healthcare settings and ensuring professionals have the knowledge and skill to manage such barriers has been identified as a key area for advancing patient education practice (Beagley, 2011; Inott & Kennedy, 2011).
1.4.3 Patient education practice in physiotherapy – review of literature

To understand the current knowledge of patient education use in physiotherapy, it is important to understand the existing research in this area. This literature review outlines and describes the existing research relating to:

a) the practice and perception of patient education within physiotherapy, including delivery and evaluation approaches, perceived barriers and influence of previous training, and
b) research contrasting the practice and perception of patient education between novice and experienced physiotherapists.

1.4.3.1 Patient education practice and perceptions

Practice and perception of physiotherapists regarding patient education have been reported within seven studies which include both quantitative and qualitative research designs.

Sluijs et al (1991) analysed the audio-taped patient education content of physiotherapy consultations over courses of treatments provided to 25 patients within ambulatory care in the Netherlands. The researchers reported that patient education was structured informally over the course of treatment with a decline between the first two sessions and later follow-up consultations. Most patient education statements used by physiotherapists focused on information about the patients' physical illness and exercise prescription with the least focus on general health education and addressing stress. Gahimer and Domholdt (1996) replicated this study in the United States with similar results. They investigated 37 audio-taped episodes from physiotherapy consultations across outpatient orthopaedic settings. The greatest number of educational statements used by physiotherapists related to outlining the patient's illness, followed by home exercise. Similar to Sluijs et al (1991), statements relating to health education and addressing stress were the least frequent.

Gahimer and colleagues (1997) later addressed the content of patient education practice in physiotherapy consultations by analysing therapists’ documentation compared to earlier audio-taped data (Gahimer & Domholdt, 1996). The researchers found the provision and instruction of exercise was the most documented area of patient education, with a lack of congruency between patient education audio-recorded within the consultation and that documented by the physiotherapist. The researchers described the implications for patient
education research when such treatment approaches are not recorded stating a “lack of documentation makes retrospective research at best difficult, at worst impossible” (Gahimer et al, 1997 p. 9). Both studies however recognised that audio-recorded data from identifiable participants may not accurately reflect typical practice.

Chase and colleagues (1993) used a survey to investigate the self-reported practice and perceptions of 200 North American physiotherapists regarding their use of patient education including content, use of delivery methods and evaluation. Over 90% of participants reported frequently educating patients regarding treatment rationale and home exercise. Verbal discussion and demonstration were the methods most frequently used for delivering educational content, with patient demonstration and observation being the most frequent method of evaluating outcomes. The researchers addressed the perception of respondents in relation to the importance of educational content, perceived barriers to patient learning and factors that contributed to the development of their patient education skills. Over 90% of respondents reported that providing instructions to the patient on how to perform functional activities was most important of all educational activities. Patient psychological factors were perceived to be the largest barrier to effective patient education. Patient interaction, rather than prior education, was perceived as the most important factor for developing teaching skills.

Fruth and colleagues (1998) investigated the use of patient education with a specific focus on the areas of health promotion and disease prevention. Similar to earlier research (Sluijs et al, 1991; Gahimer & Dumholdt, 1996), the authors used a checklist (Chase et al, 1993) to reference and record 96 physiotherapy sessions of 46 physiotherapists across four North American facilities. Although nearly all patient education statements related to the physical health of the patient, the results confirmed the use of health promotion and disease prevention activities by physiotherapists, in contrast to the previous studies. Similar to previous research however, the small number of participants in only orthopaedic settings within a small region limits inferences to wider physiotherapy practice and the obtrusive nature of the observational design may introduce bias and thus influence the nature of data collected. Furthermore, the checklists used within these studies were not subject to reliability assessment and thus may limit consistency of data.

Rindflesch (2009) used a qualitative approach to explore and describe the patient education practices of experienced physiotherapists. Nine physiotherapists across three
practice settings were selected via a peer nomination process. The researcher used on-site observations of practice and a focus group which generated four primary themes that described their practice: 1) patient education practice was not easily differentiated from the wider intervention, 2) practice was consistent with patient-centred care, 3) patient education was recognised as empowering the patient toward self-management; and 4) therapists evaluated their use of patient education primarily through physical demonstration. The researcher noted that adult learning principles and theory of self-efficacy were seen to strongly support the patient education practice of experienced physiotherapists.

Breese and French (2012) used a case-study survey to investigate the proposed content and features of patient education provided by physiotherapists for the management of a hypothetical patient case. The authors also contrasted these findings to current clinical recommendations and principles of adult learning theory. More than half of all respondents reported that they had at least 16 minutes available for patient education per visit. In relation to educational delivery methods, nearly all respondents reported they would use verbal instruction and individualized handouts, and more than half of the respondents had anatomical models, generic non-individualized handouts and photographs ‘available’ for use. The researchers concluded that patient education is utilised in conjunction with other interventions and therefore is viewed by physiotherapists as an integrated component of total patient treatment time rather than a stand-alone intervention. Furthermore, it was concluded that patient education programs used by the physiotherapists were consistent with adult learning principles, notably through patient-therapist collaboration, promotion of self-care and education focused on dispelling misconceptions about the patient’s condition. It must be noted however that practitioner preference and actual practice was not ascertained in this study.

1.4.3.2 Novice versus Experienced

Four studies compared the use of patient education in physiotherapy based on experience level. Two of these studies compared therapists’ use of patient education based on years of professional experience (Jensen et al, 1990; Jensen et al, 1992) and one study compared patient education between qualified therapists and students (Holmes, 1999).
The final study in the review sought to describe the communication used, including education, by therapists of different qualification levels (Roberts et al, 2013).

Two studies by Jensen and colleagues in the early 1990’s investigated the use of patient education conducted by novice and experienced therapists. To develop a coding framework that could be used to investigate therapist-patient interactions, the researchers observed a purposive sample of eight physiotherapists across four adult outpatient orthopaedic clinics (Jensen et al, 1990). Therapists who had over 13 years of clinical practice experience were defined as ‘master’, whereas the remaining participants who ranged in experience from one to seven years were defined as ‘novice’. The researchers developed five themes through qualitative analysis to describe contextual factors and communication variables specific to the patient-therapist interaction. Experienced therapists were more likely to engage in patient interactions that were therapeutic in nature, providing the patient with more information and more thorough explanations. Novice therapists used a more perfunctory manner in their questioning which contrasted to those more experienced who were more able to build effective questioning based on patient responses. When contrasting patient dialogue, the researchers established that experienced therapists spent more time in direct patient contact which included patient educational activities.

Jensen and colleagues performed an additional qualitative study in 1992 to further define attributes of an expert physiotherapist. Three ‘novice’ and three ‘master’ orthopaedic outpatient physiotherapists participated, as nominated based on experience and expertise. The experienced therapists had 13 to 23 years of clinical experience whilst the novice therapists were defined as ‘recent’ graduates. Audio-tape and interviews of physiotherapists and patients and analysis of treatment notes were used to contrast behaviours, perceptions and practice patterns. The researchers developed five attribute dimensions of the experienced therapists, one of which was referred to as ‘patient teaching’. The researchers found the experienced therapists were more focussed on patient communication, used an expanded framework for predicting patient outcomes and reported teaching patients as ‘one of their most important clinical skills’ (p. 716) which was reinforced by observational results. In contrast, the novice therapists placed more importance on their communication and psychomotor skills as requiring more development than their patient education skills. The researchers were unable to comment as to whether
the differences in perceived importance of patient education skills between the two groups were due to the differences in academic preparation or other reasons. It was theorised however that differences may be due to experienced therapists being able to take better control of the clinical interaction and recognise the importance of patient empowerment towards self-care and therefore place more importance on patient education practice than their novice colleagues.

Holmes (1999) undertook a cross-sectional self-report survey to investigate the perspectives of 154 first and second year physiotherapy students. Perspectives on educational content, delivery methods, evaluation approaches, perceived barriers, and importance of factors contributing to patient education skills were sought. Contrasting these results to practicing therapists (Chase et al, 1993), students placed less importance on discussing patients’ signs and symptoms, potentially indicating a lack of ability to adjust practice to fit the needs of an individual patient. Most practicing therapists did not consider patient characteristics as barriers, however, most first-year students and almost half of second-year students regarded demographic variables of the patient as the strongest barriers to patient education. The researchers concluded that in relation to perceived barriers, students are likely less aware of the impact of their own behaviour and beliefs on the patient, potentially aligning more with a medical model than a patient-centred approach. It must be acknowledged however that student data was compared to therapist data from a previous study, from over five years earlier (Chase et al, 1993), which grouped all practicing physiotherapists regardless of experience.

Roberts et al (2013) used a cross-sectional observational study of nine musculoskeletal physiotherapists and 27 patients in a primary care setting in the UK to investigate verbal communication between therapists and patients during initial consultations. Although this study focussed on communicative behaviours, the researchers compared novice and experienced physiotherapists’ use of giving ‘advice or suggestions’. Overall, therapists spent an average of 12.5% of the total encounter offering advice or suggestions, illustrating the prevalence of patient education practice within the consultation. The results also demonstrated that experienced therapists spent more time providing ‘advice or suggestions’ (14.8% of consultation time) than their less experienced colleagues (9.8%). Experience levels were based on UK employment promotion levels in which band 5 (entry point for qualified professionals, n=3) physiotherapists were compared to those of band 7
(advanced professional grade n=2). It was assumed that these two groups would differ in years of experience, however this could not be elucidated from the study. The small sample size, risk of bias associated with observational methods, and lack of definition of ‘advice or suggestion’ content provided by the therapists are further limitations of this study.

A more recent qualitative study explored patient education use of cardiology health professionals, including physiotherapists, through interviews with novice and experienced professionals (Svavarsdottir et al, 2015). The researchers described novice educators as ‘lacking sensitivity’ towards the patient’s needs, indicating difficulty in individualising educational content compared to their experienced colleagues. Novice educators tended to focus on specific tasks and followed standardised guidelines rather than considering the view of the patient which indicated challenges with using patient-centred approaches. The experienced professionals reported observing novice colleagues avoiding the use of patient education which they determined was related to fear of receiving unpredictable questions from patients or insecurity in new situations. Experienced professionals also reflected that encouragement of novice educators through rehearsal of education, the option to observe experienced educators and further training would help overcome such challenges.

1.4.3.3 Summary of literature review

Research to date has reported largely on the frequency, content, and documentation of patient education in physiotherapy practice settings of Europe and North America. This small and variable research base, predominantly from the 1990’s, indicates that patient education from physiotherapists focusses predominantly on content relating to the patient’s physical illness and explanations regarding treatment and exercise. Only two studies to date have investigated approaches used by physiotherapists to evaluate patient education use (Chase et al, 1993; Rindflesch, 2009) however these studies have not investigated use across levels of experience. The existing research has provided some insight into the perception of physiotherapists (Chase et al, 1993) and students (Holmes et al, 1999) in relation to barriers to practice and the perception of the physiotherapist in relation to their patient education skill development (Chase et al, 1993). Despite this, little is known about the time spent by physiotherapists in patient education practice and the content, delivery and evaluation methods used. The review also demonstrates that no
studies have explored the patient education practice patterns or perceptions of physiotherapists in Australia. There are significant limitations to making inferences from this existing research regarding patient education practice differences based on experience. Although one study (Holmes, 1999) has compared the self-reported practice and perceptions of physiotherapists, the researchers used student therapists and compared the data to all practicing therapists without considering levels of experience. Further, the comparison data was from a different study and from over five years earlier risking significant bias. The remaining studies that contrasted the practice of experienced and novice therapists (Jensen et al, 1990; Jensen et al, 1992; Roberts et al, 2013) did not consider differences in actual practice content, delivery approaches, evaluation approaches or perceptions in relation to patient education. These factors are important in determining a wider view of the self-reported practice of physiotherapists. Overall, there is insufficient research to draw firm conclusions about the practice or perception of patient education by physiotherapists. These gaps in the current literature provide specific direction for Study 1 and 2 (Chapter Two and Three).
1.5 SECTION 4: Patient education self-efficacy

This section outlines the theory of self-efficacy and the relationship between self-efficacy and clinical skills.

1.5.1 Theory of self-efficacy

Self-efficacy was introduced by Albert Bandura within the Social Cognitive Theory as an individual’s perception of his or her own ability to successfully perform a particular action or task (Bandura, 1977; 1997). It is widely suggested as a significant determinant of whether an individual will make a decision to perform an action, behaviour or task, and how much effort will be given and maintained (Resnick, 2002; Robinson-Smith & Pizzi, 2003; Barta & Stacy, 2005; Budd & Griffith, 2006). Self-efficacy is also identified as having a powerful influence on other factors such as motivation, goal setting and predicted performance outcomes (Bandura, 1997). According to Bandura (1997), there are three behavioural consequences of self-efficacy. The first consequence is the adoption of an active approach. Individuals with higher self-efficacy will be more active in their attempts to succeed at a task, whereas those with lower self-efficacy may demonstrate task avoidance. The second consequence relates to actual performance. An individual with higher self-efficacy relating to a specific task would be expected to perform it with more success, compared with an individual with lower self-efficacy who may engage in negative self-talk and thus perform poorly. The final behavioural consequence of self-efficacy is persistence at a task versus discontinuing attempts at a task prematurely (Bandura, 1997).

Applying general self-efficacy to wider motivation and performance outcomes has significant limitations. Self-efficacy is task-specific and therefore does not have stability over multiple contexts (Bandura, 1997). As a result, individuals may have high self-efficacy in relation to some tasks and low self-efficacy in relation to others, even if both tasks are required within the same setting, role or situation. This is a pertinent concept when considering self-efficacy in patient education. Effective patient education may require a student or professional to undertake several tasks across multiple occasions and potentially across several settings. The student or professional may have high self-efficacy undertaking some aspects of patient education and not others. This is an important consideration given self-efficacy across multiple tasks may be required for optimal patient education performance.
1.5.1.1 Information sources of self-efficacy

Four major information sources are proposed to contribute to an individual’s self-efficacy for performing specific tasks. These are performance mastery of a task, vicarious experience, verbal or social persuasion and physiological or emotional arousal (Bandura, 1997). Performance mastery is considered to be related to the individual’s past experiences in succeeding at a task that contributes to their judgement of likely future success or failure (Bandura, 1997). This is viewed as the strongest predictor of self-efficacy and may encourage the individual to attempt more complex tasks than the one being undertaken (Bandura, 1997; Rosen, 2000). This exemplifies the role of direct positive experiences that could be achieved through student clinical placements, clinical practice and the use of simulation or similar active learning experiences (van Dinther, Dochy & Segers, 2011; Darkwah et al, 2011). Such experiences may therefore offer the potential to appropriately support the development of self-efficacy related to patient education.

Vicarious experience refers to those where individuals are able to observe others and subsequently reflect on, interpret or model what they have observed to potentially influence self-efficacy (Bandura, 1977; 1996). Although considered to have less influence on self-efficacy than performance mastery in academic settings (Artino, 2012), vicarious experiences can provide a positive influence, particularly where individuals are able to actively model behaviours or tasks that they observe (Bandura, 1997). This is evident in patient education research where students with mentors who demonstrate patient education have reported higher patient education self-efficacy than students without the same opportunities (Tresolini & Stritter, 1994). Importantly however, the extent of the effect of the vicarious experience on self-efficacy depends on the degree that the observer identifies with the model and whether the model is deemed as competent at the task (Bandura, 1997).

The third major information source of self-efficacy is verbal or social persuasion. Within educational settings this may include verbal instruction, evaluation, motivation and other formal or implicit factors that may act to persuade the individual that they are capable or not capable of succeeding in a given task (Bandura, 1977; 1996). Work-place socialisation, feedback, encouragement and support from mentors, peers and patients are
specific persuasive factors that may enhance self-efficacy (Bandura, 1997, Bong and Skaalvik, 2003; van Dinther, Dochy & Segers, 2011). Conversely, negative feedback may have the opposite effect. This is an important consideration as healthcare students are particularly susceptible to professional socialisation and its influence towards promoting or discouraging the adoption of humanistic approaches in healthcare (Roskell, 2013). The value of feedback in communication and clinical skills training has been widely recognised for these reasons (Parry & Brown, 2009) and is reflected within educational literature to facilitate learning when used effectively (McGaghie et al, 2010).

The fourth and final information source is referred to as emotional arousal. Although this source is considered the least influential on an individual's self-efficacy, Bandura outlines that tasks that create an emotional response for an individual will influence how at ease they feel completing such a task and therefore their perceived capability (Bandura, 1997).

1.5.2 Physiotherapy student self-efficacy

Authors have emphasised self-efficacy as an important consideration in teaching and research due to its influence on educational outcomes (Lundberg, 2008; Goto & Martin, 2009; Bernadowski, Perry & Del Greco, 2013; Turan et al, 2013) and subsequent career choices (Hackett, 1995). Students with higher self-efficacy are more willing and able to take on challenging tasks, persist more in the face of barriers, better self-regulate their behaviours and manage emotional responses (Bandura, 1997; Gore, 2006). Despite self-efficacy being viewed largely as a beneficial attribute of the learner, there may be discrepancies between high self-efficacy and performance. Students with high levels of self-efficacy may lack awareness of the extent of their limitations, thus potentially hampering learning opportunities through failing to respond to feedback or failing to seek assistance (Vancouver & Kendall, 2006). Other research suggests however that those students with high self-efficacy are more likely to seek assistance than those with lower self-efficacy, who are more likely to accept failure as their own fault (Lee, 2007).

Physiotherapy educational research has demonstrated a positive relationship between physiotherapy students’ self-efficacy relating to their clinical skills and clinical performance during clinical practice, highlighting the mediating role of self-efficacy in physiotherapy training (Jones & Shepherd, 2012). Research has also demonstrated a positive association between self-efficacy, learning behaviours and learning outcomes in medical
students (Goldenberg et al, 2012; Townsend & Scanlan, 2011), pharmacy students (Dahl & Hall, 2013; Jungert & Rosander, 2010) and nursing students (Darkwah et al, 2011; Jungert & Rosander, 2010). Zulkolsky (2009) proposes that health professional students’ gain knowledge and experience from theory instruction and clinical experience to augment their self-efficacy to perform clinical tasks upon entering professional clinical practice. Self-efficacy as a significant positive predictor of clinical performance has been confirmed in medical students (Opacic, 2003), nursing students (McLaughlin et al, 2008) and physiotherapy students (Jones & Shepherd, 2011). With this potential influence on educational outcomes, authors widely promote the measurement of self-efficacy as an essential inclusion in both teaching and educational research (Lundberg, 2008; Goto & Martin, 2009; Kek & Huijer, 2011; Bernadowski, Perry & Del Greco, 2013; Turan et al, 2013). Several recent studies however have demonstrated no significant association between communication self-efficacy scores and competence based on observed performance of patient communication skills (Gulbrandsen et al, 2013; Gude et al, 2017). Despite self-efficacy and skill performance being important outcomes of training, assuming positive self-efficacy to be correlated with patient education performance may be unsubstantiated and problematic. A review of literature is undertaken to explore this further.

1.5.3 Self-efficacy related to patient education in health professional students

A search of electronic databases (Medline – via Ovid, Scopus and PubMed) was undertaken to identify all available studies up to the search date of November 2015. The inclusion criteria were; 1) all study participants were physiotherapy students, 2) participants acquired patient education skills or experiences and 3) the primary goals of the study included measurements of self-efficacy. The exclusion criteria were; 1) any study not published in English and 2) any study published before 1990. Search terms were “patient education” OR “client education” OR “counselling” OR “patient communication” OR “patient interaction” OR “consultation” AND “physiotherapy” OR “physical therapy” AND “student” AND “self-efficacy”. Keyword, title and abstract information were used as the search fields. All relevant existing reviews relating to patient education, counselling or communication of healthcare students were also reviewed and additional studies identified from this process were contrasted to the search criteria.
A total of 1,110 publications were generated. This search result was then assessed for the presence of the term “patient education” OR “patient teaching” OR “client education” AND “self-efficacy” within whole texts. This was to ensure that patient education was included as part of an intervention or as an outcome measure within the selected studies and that self-efficacy was included as an outcome. This resulted in 17 publications. All publications identified from this search were screened against the selection criteria. Most studies were excluded as they did not explicitly measure self-efficacy in relation to patient education (n=769). Another large group of publications related to student training however patient education was not included within the assessment of outcomes (n=38). The literature review revealed no research in relation to patient education self-efficacy of physiotherapy students. As such, the review was broadened to focus on patient education self-efficacy of healthcare students and two studies were identified.

Tresolini and Stritter (1994) developed and utilised a questionnaire to assess the self-efficacy of medical students (n=28) in the area of patient education for health promotion in smoking cessation, nutrition for cardio-vascular health and exercise. They also undertook interviews of the same randomly sampled participants to assess and explore the perceived influence of previous learning experiences on the use of patient education. Participants reported high levels of self-efficacy in relation to various educational tasks including smoking cessation approaches despite reporting limited formal patient education training during their studies. The researchers explored the training opportunities that each student received and contrasted these to levels of self-efficacy with health promotion education tasks. Higher levels of self-efficacy were associated with performance mastery of tasks, identified as previous training opportunities where students were able to explicitly practice education. Opportunities to observe faculty as role models were also associated with higher self-efficacy, indicating a positive influence of vicarious experience. Despite recognising Bandura’s information sources as contributing to health promotion education self-efficacy, students reported not being evaluated on the use of patient education during their training and described patient education as a ‘difficult’ topic of study.

Goldenberg and colleagues (2005) investigated the effect of role-play based simulation training on nursing students’ self-efficacy towards patient education. The researchers used Bandura’s self-efficacy model as a framework and a general rating of self-efficacy as the main outcome measure. Training involved classroom simulated patient education
experiences and also included faculty encouragement and observation of peers, thus being consistent with performance mastery, vicarious experience and verbal or social persuasion sources of information, respectively. The researchers reported a significant increase in students’ patient education self-efficacy ratings and more specifically, higher self-efficacy relating to assessing, implementing, and evaluating an education plan. Limitations to this study include the small sample size (n=66), lack of control group and low returned questionnaire rate (33%). Further, students were concurrently participating in clinical practice, potentially influencing changes in self-efficacy.

Although this research suggests a positive relationship between training experiences and patient education self-efficacy, it reflects a small and variable research base where there is a substantial limitation in applying this to wider settings, including physiotherapy training. Furthermore, general measures of self-efficacy do not reflect the multiple individual tasks that encompass a patient education interaction. An assessment of self-efficacy must be tailored to the particular domain of interest, thus there is no single, all-purpose measure of this construct (Bandura, 1997). If self-efficacy scales are designed to assess elements that have little or no impact on the domain of functioning, a relationship between self-efficacy and the function or task in question cannot be assumed. Thus, most educational research involves the development of self-efficacy scales by directly translating learning objectives or performance competencies into items for measuring self-efficacy (Plaza et al, 2002; Clark, Owen & Tholcken, 2004; Peyre et al, 2006). No existing measures for assessing self-efficacy of specific patient education skills were found during the review of literature. Thus, the development of a measure of self-efficacy using an empirical process as guided by Bandura’s theory of self-efficacy and scale construction guidelines is needed within any future research in this area (Bandura, 2006). This is further addressed in Chapter Four (Study 5).
1.6 SECTION 5: Patient education training

This section provides an overview of physiotherapy training and outlines how patient education training is reportedly provided. This section then presents a review of the literature relating to patient education training, thus providing a background and rationale for the subsequent research.

1.6.1 Physiotherapy training

Physiotherapy training programs endeavour to develop relative novices, or students, into knowledgeable, skilled and autonomous professionals (Crosbie et al, 2002; Higgs, 2008). Such programs aim to provide skills such as independent learning, patient-centred practice, clinical reasoning and inter-professional practice (Crosbie et al, 2002). Like other health professions, physiotherapy training has advanced from largely didactic teaching and learning approaches centred on biological and pathological sciences to a focus on evidence based practice, patient-centred skills and interprofessional skills using contemporary learner-centred teaching approaches (Chipchase, 2006; Rodger et al, 2008). As students’ progress through training, theoretical content, clinical skills and their applications are structured with increasing clinical complexity. In Australia, entry-level physiotherapy undergraduate programs are a four year degree that typically culminates with clinical placement opportunities and their corresponding requirements (Rodger et al, 2008). Healey (2008) used a qualitative interview approach to explore and describe physiotherapy student learning across their training. The researchers described students’ approaches to learning as being largely influenced by their experiences with patients during clinical placement experiences. Students were more likely to adopt a deeper approach to learning when they were able to integrate patient-centred perspectives into their practice during placements, and when they were provided with explicit opportunities for reflection.

1.6.2 Patient education training in the health professions

Health professionals require skills to provide effective patient education and it is essential that they receive adequate training to do so (Deccache & Aujoulat, 2001). Scheckel and Hedrick-Erickson (2009) propose that “teaching students interpretive pedagogies in patient education to promote pedagogical literacy preserves the time-honored tradition of working together with patients during teaching and learning encounters”. Dandavino et al (2007)
further outline three major reasons for teaching health professional students to be effective educators: students have future teaching roles as professionals; students who develop effective communication skills to teach may have improved interactions with patients; and students with a better understanding of teaching strategies become better learners themselves. The World Health Organisation (2005) has raised concerns relating to the inadequate preparation of health professionals as patient educators and further stresses the need for training. They advocate key areas for teaching and learning including providing skills to elicit the patient’s point of view, concerns and needs, and providing skills to tailor communication to ensure patient understanding. Training that offers professionals the skills to support and promote patient self-management and partnering with patients to provide shared decision making are also outlined as priorities (WHO, 2005; WHO, 2013). As competency is viewed as something that can increase and decrease over time (Tabari-Khomeirian et al, 2007), ongoing training and skill development in this area is recognised as an important aspect of maintaining competency in this area (Hult et al, 2009; Friberg et al, 2012).

Despite these recognised needs, health professionals and students have reported inadequate preparatory training in patient education theory and skills (Tresolini & Stritter, 1994; Dandavino et al, 2007; Bergh et al, 2014; Svavarsdottir et al, 2015) and limited or no opportunities for professional development in this area (Hult et al, 2009; Friberg et al, 2012; Bergh et al, 2014). Health professional students have reported patient education as a “difficult topic of study” and observe patient education as being an “optional shelf” with the decision to engage in it based on their own inclination. They also report receiving the implicit messages during their training that patient education is an intuitive skill that requires no specific training and any training received in this area tends to be “haphazard” (Tresolini & Stritter, 1994, p250). Health professionals have specifically reported a desire for specific training in patient education skills (Benner, 2001; Svavarsdottir et al, 2015), further reinforcing the need for training in this area (Friberg et al, 2012; Svavarsdottir et al, 2015). Health professionals have identified that professional learning opportunities such as observing others, experiential opportunities and guidance from experienced educators would enhance knowledge and skills in this area (Svavarsdottir et al, 2015). As patient education is a requirement of all physiotherapy graduates (PBA, 2015), further understanding of how best practice patient education can be facilitated and promoted is necessary for advancing knowledge and training in this area.
1.6.3 Specific content of patient education training

Training institutions and faculty appear to advocate various methods of patient education training, ranging from explicit curricula activities to more implicit approaches such as modelling from faculty and clinical educators. Explicit methods of teaching patient education skills have become more common in educational practice within health professions (Marton et al, 2015). Authors have advocated for approaches to patient education that aim to increase knowledge regarding patient education pedagogy, provides strategies to individualise and deliver patient education, and addresses perceived challenges associated with patient education (Dandavino et al, 2007; Beagley et al, 2011). Dandavino et al (2007) and Beagley et al (2011) have recommended a focus on the importance of the role of the educator, establishing ways in which educators can feel more satisfied with their patient education and how they can reduce anxiety or perceived barriers. Innot and Kennedy (2011) further emphasise the role of training in enhancing awareness of factors that may enhance or hinder patient education. This includes recognising personal beliefs about the educator role and awareness of external factors that may impact on education including the context, organisation, interdisciplinary actions and the educational activities employed.

Curricular activities included in patient education training have been explicitly proposed by several authors. Little (2006) advocates for patient education training to be designed, facilitated and implemented to promote student confidence and skill while providing opportunities to enact the role of educator. It cannot be expected that students will gain the confidence or skill to provide patient education if not given the opportunity to practice this role in a relevant setting that is conducive to their emotional safety (Higgs, 2009). It has therefore been recommended that patient education training be experiential in nature and provide a consistent, evidence based framework for patient education and evaluation of learning (Dandavino et al, 2007) with constructive feedback provided (Parry & Brown, 2009). Friberg et al (2012) recommends that to fulfil the role of patient educator, health professionals need to have the skills to assess patients’ readiness to learn, understand their existing knowledge and decide when education can be progressed in complexity (Benner, 2001; Friberg et al, 2012). The authors stress that health professionals need to be attune to patients perspectives and concerns to guide education and should therefore
be trained in assessing patients learning needs so that education can be tailored and therefore more effective in meeting patients’ needs (Friberg et al, 2012).

Understanding the patient’s perspectives and expectations in respect to learning are widely considered as important for successful patient education practice (Anderson, 2002; Saha et al, 2008) and thus has been recognised as a key opportunity for targeted patient education training (Lamiani & Furey, 2009). The ability of the patient to understand the information provided is critical (Baker, 2006), yet it has been identified as receiving little attention in health professional training (Doyle et al, 2012). Therefore, developing educational goals, tailoring patient education to the individual and evaluating the outcomes of education from the patient’s perspective are emphasised (Stewart et al, 2003; Tzeng et al, 2010). Unsurprisingly, it has also been recommended that mutual goal setting and specific training in the use of evaluation methods such as the teach back approach are included within patient education training curricula (Hatonen et al, 2010; Crumlish & Magel, 2011; Frank-Bader et al 2011; Friberg et al, 2012).

The context of training is also identified as a key consideration in the success of patient education training. Lundberg (2008) argues that learning experiences should be developed with the specific outcome of clinical self-efficacy by utilising clinical examples and providing students with the opportunity to practice skills in a realistic yet controlled environment. This is supported by research that has demonstrated improvement in patient education self-efficacy with context-based learning being provided (Darkwah et al, 2011). However, there is insufficient research to draw any firm conclusions about the effectiveness of specific approaches of patient education training. Understanding the effectiveness of pedagogically informed training approaches in the development of patient education skills is needed (Hiller et al, 2015). A literature review was therefore undertaken to specifically assess the research relating to patient education training.

1.6.4 Literature review; patient education training

A search of electronic databases (Medline – via Ovid, Scopus and PubMed) was undertaken to identify all available studies up to the search date of January 2016. The inclusion criteria were; 1) all study participants were health professionals or health professional students, 2) participants acquired patient education skills or experiences and 3) the primary goals of the study included investigation of the impact of the study
intervention. The exclusion criteria were; 1) any study not published in English and 2) any study published before 1990. Search terms were “patient education” OR “client education” OR “counselling” OR “patient communication” OR “patient interaction” OR “consultation” AND “student” AND “train*” OR “program*” OR “teaching” OR “intervention”. Keyword, title and abstract information were used as the search fields. All relevant existing reviews relating to patient education, counselling or communication skills training of healthcare students were also reviewed and additional studies identified from this process were contrasted to the search criteria. Further, the terms “communication”, “interaction” and “consultation” were used as additional search terms as studies may have used patient education as an outcome measure as part of a wider intervention or assessment, thus it was pertinent that these studies were included.

A total of 2,269 publications were generated. This search result was then assessed for the presence of the term “patient education” OR “patient teaching” OR “client education” within whole texts. This was to ensure that patient education was included as at least part of an intervention or outcome measure within the selected studies. This resulted in 249 publications. All publications identified from this search were screened against the selection criteria. Most studies were excluded as they assessed the use of clinical patient education interventions on patient outcomes (n=161). Another large group of publications related to student training however patient education was not included within the assessment of outcomes (n=38). Other identified publications were not considered as they did not assess the use of training interventions (n=33). This resulted in a final list of 3 studies relating to health professionals and 14 studies relating to health professional students (Table 1). There were no studies identified as reporting patient education training for physiotherapy students. Each study was assessed using the TIDier checklist (Hoffmann et al, 2014). The review process is outlined in Figure 2.
Figure 2. Flow-chart of literature review

Records identified through database search (n = 2,269)

Full text reviewed for presence of inclusion criteria (n = 249)

Full-text articles excluded:
- Used patient population (n = 161)
- Patient education not included as outcome measure (n = 38)
- Did not assess a training intervention (n = 33)

Studies assessed for final review (n = 17)
<table>
<thead>
<tr>
<th>Authors</th>
<th>Design</th>
<th>Student Population</th>
<th>Intervention</th>
<th>Outcome measures and results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell et al, 1996</td>
<td>Randomised controlled trial</td>
<td>Senior medical (n=88)</td>
<td>3 hr small group patient counselling workshop with written package, lecture and video of practice with peers (n=44). Control group (n=44) received usual curriculum.</td>
<td>Assessment of video performance including educational and counselling skills. Significant improvement in performance of intervention group at 3 months post intervention when compared to control group; not maintained at 12 months.</td>
</tr>
<tr>
<td>Papadakis et al, 1997</td>
<td>Randomised observational</td>
<td>First year medical (n=72)</td>
<td>2 x 1hr lectures with brief standardised patient (SP) activity (n=35) or role play (RP) activity (n=37) to teach smoking cessation skills.</td>
<td>SP’s rated performance of cessation teaching skills of both groups that included patient education items. No significant difference between SP and RP group however SP group had higher satisfaction ratings.</td>
</tr>
<tr>
<td>James et al, 2001</td>
<td>Observational</td>
<td>Third year pharmacy (n=91)</td>
<td>2 x 4hr training sessions using SP’s. Students review and simulate a patient consultation.</td>
<td>Self-reported levels of confidence and self-reported perceived difficulty in relation to consultation skills (including patient education as a general skill) significantly improved following the program.</td>
</tr>
<tr>
<td>Benbassat &amp; Baumal, 2002</td>
<td>Observational</td>
<td>Medical (n = not provided)</td>
<td>Small groups observing clinical educator and patient on hospital ward, followed by RP of patient education. Included discussion and feedback session.</td>
<td>No formal evaluation however authors described positive uptake by participants.</td>
</tr>
<tr>
<td>Goldenberg et al, 2005</td>
<td>Longitudinal observational</td>
<td>Nursing (n=22)</td>
<td>2 day small group RP, lecture and group discussion and debrief led by educator.</td>
<td>Significant increase in self-efficacy scores including specific patient education skills of assessment, implementation and evaluation.</td>
</tr>
<tr>
<td>Little, 2006</td>
<td>Longitudinal observational &amp; qualitative</td>
<td>2nd year nursing (n=not provided)</td>
<td>1 day workshop, included video-taping, feedback and reflection and peer practice of patient teaching</td>
<td>Likert scale regarding perception of workshop and written reflections. Participants had a high perception for the workshop and reported developing their personal knowledge and confidence within the open responses.</td>
</tr>
<tr>
<td>Hook &amp; Pfeiffer, 2007</td>
<td>Longitudinal observational</td>
<td>Medical (n=202)</td>
<td>Assessment of major curriculum change to 1st and 2nd year medical program with increased focus on patient education skills.</td>
<td>SP examination using multidimensional patient interaction scale including patient education items within one subscale. Participants had significantly higher scores compared to previous cohorts however only overall scale scores were provided so changes in patient education skills cannot be assumed.</td>
</tr>
<tr>
<td>Moser &amp; Stagnaro-Green, 2009</td>
<td>Observational</td>
<td>3rd year Medical (n = not provided)</td>
<td>Health beliefs and behaviour training (60 hrs over 4 weeks). Classroom based with SP and RP practice.</td>
<td>Self-reported enhanced understanding of principles of behaviour change and perceived ability to perform counselling.</td>
</tr>
<tr>
<td>Scheckel &amp; Hedrick-Erickson, 2009</td>
<td>Qualitative</td>
<td>Nursing (n=18)</td>
<td>Online course aimed at learning and applying educational pedagogies into patient education</td>
<td>Qualitative analysis of participant interview data. Participants identified that resources often impeded the patient-nurse interaction during patient education. Students recognised that reduced use of</td>
</tr>
<tr>
<td>Year</td>
<td>Study Design</td>
<td>Professional Population</td>
<td>Intervention</td>
<td>Outcome measures and results</td>
</tr>
<tr>
<td>------</td>
<td>--------------</td>
<td>--------------------------</td>
<td>--------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>2009</td>
<td>Lamiani &amp; Furey, 2009</td>
<td>Nurses (n=14)</td>
<td>2 day workshop on patient-centred education including experiential learning activities and discussion</td>
<td>Pre-/post-written patient dialogues analysed using the Roter Interaction Analysis System. Post dialogues indicated increased patient-centred communication through psychosocial exchanges (P=0.003) and process exchanges (P=0.001). Nurses reported that the workshop increased knowledge of the patient-centred model and patient...</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Participants (n)</td>
<td>Description</td>
<td>Results</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Visser &amp; Wysmans, 2010</td>
<td>Non-blinded repeated measures design</td>
<td>Nurses (22), physicians (3), other professionals (6)</td>
<td>2 hour training meeting (in-service) held fortnightly for 3 years, aimed at increasing patient education skills through learner centred workshops.</td>
<td>Surveys of health professionals and patients relating to quality and quantity of communication before, immediately after and 1 year following the intervention. Significant improvement of communication and increased patient satisfaction. No change in long term measures.</td>
</tr>
<tr>
<td>Jones et al, 2011</td>
<td>Multi-site repeated measures design</td>
<td>Nurses (40), radiation students (27), and others (38)</td>
<td>4 hour workshop including lecture on patient education and experiential learning and practice of skills with standardised patients.</td>
<td>Pre-post assessment of knowledge of patient education theory, self-assessed competencies and written case vignette skills assessment. All outcome measures significantly improved across pre-post assessment.</td>
</tr>
</tbody>
</table>
1.6.4.1 Patient education training for health professional students

The 14 studies investigating training of health professional students varied widely in relation to the health profession, location, intervention approach and outcome measures used. Seven studies used a sample of medical students, five used nursing students and two used pharmacy students (Table 1). Most studies were conducted within North America (n=10, 71%), with the remaining from Israel, Jordan, Germany and Australia. Each study’s design, assessment and interventions are outlined in Table 1.

Six studies within the review described the intervention clearly (Campbell et al, 1996; Benbassat & Baumal, 2002; Little, 2006; Bosse et al, 2012; Saba et al, 2014; Hultquist et al, 2015). These interventions varied significantly and included simulated patients and role play (Campbell et al, 1996; Benbassat & Baumal, 2002; Bosse et al, 2012), a protocol of demonstration-practice-feedback (Little, 2006) and real patient contact through phone calls (Saba et al, 2014) or home visits (Hultquist et al, 2015). Only one study directly assessed student performance of specific patient education content following the training intervention (Saba et al, 2014). The researchers’ used a training intervention that included medical students (n=41) using follow up phone calls of four patients each to practice communication and education skills. Phone calls to patients were one week after their clinical consultation and related to checking care plans and following up on clinical recommendations such as medication changes and referrals. The control group (n=185) completed their usual clerkship for comparison. The researchers assessed student performance of seven patient education skills using a checklist rating score from a blinded patient actor during an OSCE. Educational content assessed included ‘ask-teach-ask’ skills such as asking the patient about their concerns, mapping out self-management action plans and ‘closing the loop’ by asking the patient to repeat the content back in their own words. The results demonstrated that the intervention group obtained significantly higher performance scores for three of the seven educational tasks which specifically related to seeking patient concerns, providing information and checking patient understanding (Saba et al, 2014).

The remaining studies within the review referred to patient education in general terms, without defining specific patient education content, skills or competencies.
Consequently, it is problematic to assume that interventions led to an improvement in specific patient education skills when there is significant variation in outcome measures used within the studies to evaluate training interventions. Less than half of all studies within the review specifically assessed student performance following the intervention (Campbell et al, 1996; Papadakis et al, 1997; Bosse et al, 2012; Saba et al, 2014). In addition, only four studies assessed student self-efficacy in relation to patient education (James et al, 2003; Goldenberg et al, 2005; Darkwah et al, 2011; Bosse et al, 2012).

1.6.4.2 Patient education training for health professionals

Three studies within the review investigated the use of patient education training for health professionals.

Lamiani and Furey (2009) evaluated the use of a two-day workshop focusing on nurses skills of assessing, planning, practicing and evaluating the use of patient education (n=14). The workshop included a lecture, role play and use of a group based discussion. Assessment of post-intervention written patient education dialogues indicated nurses let patients’ talk nearly twice as much as during pre-intervention dialogues and provided more medical information to patients following the intervention. Participants also demonstrated more process exchanges, paraphrasing, checking for understanding, and teaching back following the intervention. Low participant numbers, use of patient written dialogues rather than actual performance and a lack of control group however minimise inferences from the study’s results (Wass et al, 2001).

Visser and Wysmans (2010) assessed the use a two-hour, fortnightly in-service on patient education skills for health professionals within a hospital oncology ward. The training consisted of meetings to allow health professionals to discuss cases and raise concerns about practice and included participation in brief learner-centred workshops. Researchers used participant questionnaires and patient satisfaction data relating to their hospital stay and overall care. The results demonstrated immediate and medium-term (one year) improvement in communication style and attitudes of the involved staff and improvement in patient satisfaction; however the benefits at one year were not maintained. The authors suggested that this may
indicate that ongoing training may be needed within the workplace to sustain both professional and patient outcomes.

Jones and colleagues (2011) evaluated the use of a 4 hour training course for oncology health professionals entitled ‘maximising your patient education skills’. The training incorporated principles of adult learning, experiential learning including active participation and skills practice through the use of standardised patients. The researchers employed two written case vignettes to assess participants’ use of patient education skills before the training session and at a 3 month follow up. The researchers found a significant improvement in participant patient education knowledge using a self-reported competence assessment. Written clinical vignette results demonstrated that nearly half of all participants improved their communication responses to patients. Similar to earlier research of health professional students (Saba et al, 2014), a limitation was the use of hypothetical patient dialogues may not reflect actual clinical skills and may not represent higher levels of competence (Jones et al, 1990; Miller, 1990; Wass et al, 2001).

1.6.4.3 Summary of literature review

Training approaches used within this research vary widely and include simulated patients, role play, workshops and actual patient care. There appears to be evidence to support experiential, learner centred approaches in improving patient education skills and self-efficacy as consistent with other clinical skills including patient consultation skills (Dwamena et al, 2012). The methodological variability, small sample sizes in several of the studies, variable reporting and range of healthcare settings, limits the inferences that can be made from the extant research. Furthermore, actual patient education performance or self-efficacy were rarely used as outcome measures to assess the impact of the intervention. Only one study within the review evaluated specific aspects of patient education, however these were assessed using written hypothetical patient dialogues (Lamiani & Furey, 2009) which may not reflect actual clinical performance (Gertiry & Earp, 1990; Wass et al, 2001). The literature review of patient education training approaches reveals two other major observations. Most research to date includes components of patient education within the wider context of patient communication skills and refers to patient
education skills in general terms, without defining educational content or specific competencies. Secondly, few studies have included direct assessment of some aspects of student performance in patient education following training (Lorenz, 1987; Campbell et al, 1996; Papadakis et al, 1997; Ahsen et al, 2010; Bosse et al, 2012). No studies to date have compared training to a matched control group or evaluated patient education competencies that are required for effective clinical practice. It is therefore problematic to assume that such interventions provide effective training in the range of competencies or skills required for effective patient education. Further, no study has investigated patient education within a physiotherapy setting. The final, and perhaps key issue with the current research is the lack of structured and applied measures or protocols to assess students’ patient education skills. Further research needs to focus on the apex of Millers pyramid, the ‘shows how’ and the ‘does’ to more accurately assess clinical competency in this area (Wass et al, 2001). Overall, there is a clear need for more rigorous research to explicitly evaluate the use of an intervention aimed at patient education of health professional students that assesses both the performance and self-efficacy of the learner. This guides the research series in this thesis.

1.6.5 Patient education content within existing physiotherapy curricula

The available electronic course profiles of all Australian entry level physiotherapy programs were reviewed for course content, learning activities and assessment in June 2016. Courses, assessments and programs were reviewed and mapped to the ‘educator’ role of the physiotherapy practice thresholds (2015) or the preceding Australian Physiotherapy graduate standards (2006) that relate to patient education skills and competencies. Despite this mapping of national standards to University program courses, no existing courses were found that use patient education as a stand-alone or integrated intervention or as an assessment. It is recognised that information relating to patient education training may not be available through publically accessible course profiles.
1.7 Chapter Summary

This chapter has introduced patient education and has explored its role within physiotherapy settings. The key areas arising from this chapter that require further research are summarised below.

First, a critical argument arising from this discussion is the need to gain a contemporary view of how patient education is practiced and perceived by physiotherapists. This will be addressed in Chapter Two (Study 1). Next, understanding how this practice and perception may vary based on levels of experience is an important step in exploring key issues in physiotherapy practice and whether training may act to mitigate these issues. This will be explored in Chapter Three (Study 2). There is a clear need to explore and define the competencies that are required to provide effective patient education specifically within physiotherapy practice. Understanding competencies is a first step to developing training approaches and constructing outcome measures to assess patient education self-efficacy and performance. This will be addressed in Chapter Four (Study 3). Currently there is no research relating to new-graduate physiotherapists’ self-efficacy with respect to patient education, nor their perspective of the effect of specific training opportunities on their patient education skills. This is the focus of Chapter Five (Study 4). Lastly, this chapter has provided an insight into patient education best practice to inform training. It advocates the need for pedagogically informed training of physiotherapy students in the area of patient education, and further research to understand the effectiveness of such training. The recommendations in the literature provide insight for the design of a training intervention for physiotherapy students to engage in patient education. This is further progressed and investigated in Chapter Six (Study 5).

1.8 Organisation of remainder of thesis

The remainder of the thesis consists of five studies. The results are displayed as manuscripts published or accepted for publication by international peer-reviewed journals. The overall thesis concludes with implications of the research and further recommendations.
CHAPTER TWO: Patient education practice and perception of Australian physiotherapists

2.1 Introduction and linkage

The background and review of literature presented in Chapter One advocates the need to identify the current practices and perceptions of Australian physiotherapists in relation to their patient education use and their perception of factors that influence their patient education skills. This chapter reports on a national survey undertaken from May to July 2015. Ethical approval and other relevant items are provided in Appendix 1-4.

2.2 Study 1: Evaluating Physiotherapists’ Practice and Perception of Patient Education; a National Survey in Australia.

The following section includes the accepted manuscript for a paper published in the International Journal of Therapy and Rehabilitation, including the text, tables and references and excluding the title page and appendices. Figure and table numbers in this chapter refer to figures and tables in this chapter unless otherwise specified.

Abstract:

**Background/Aims:** Patient education is an integral component of physiotherapy practice. Little is known about physiotherapists’ use of patient education within their practice. The purpose of this study was to describe the patient education practices and perceptions of physiotherapists.

**Methods:** A purpose-designed anonymous web-based survey was developed, piloted and distributed to 824 practicing physiotherapists throughout Australia via email.

**Results:** 305 complete surveys were returned (37.0%). Verbal and written instruction for exercise (97.0%) and information about the condition (96.7%) were the most frequently reported educational activities. Addressing patient concerns and
self-management education were reported as the most important and education regarding social support was reported the lowest in both frequency and importance. The most frequent delivery approaches reported were one-to-one discussion (97.4%) and demonstration (96.7%). Demonstration was also the most frequently reported method of evaluating the outcome of educational activities (97.0%). Characteristics relating to the patient (cognitive status, lack of trust, emotional status and attitude) were the strongest perceived barriers to effective education practice. Experience with patients and interaction with colleagues were perceived as the most important factors in the development of patient education skills.

Conclusions: Physiotherapists utilise and value a broad range of educational activities and delivery approaches in their practice. Research and training implications of physiotherapists’ perceptions of barriers and factors influencing their patient education skills should be considered. This study adds to knowledge of the professional practice and perceptions of physiotherapists in the area of patient education.

Keywords: Patient-education, physiotherapy, physical therapy, barriers.

Introduction

Patient education is 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, 1983 p. 323). Patient education is an important component of effective healthcare. It is a means for health professionals to communicate salient information, improve patient health behaviour and self-efficacy, and potentially reduce healthcare costs (Hoving et al, 2010; Nour et al, 2006; Haines et al, 2013; Ndosi et al, 2015). Furthermore, patient educational approaches within physiotherapy settings have been demonstrated to improve therapeutic outcomes including reducing pain disability and improving function (Louw et al, 2011).

Physiotherapists are involved in health prevention, wellness and maximising self-management across multiple healthcare settings thus are well-positioned to plan and provide individualised education programs (Davis and Chesbro, 2003). Early self-reported survey based research suggests that 99% of physiotherapists perceive
patient education as an important skill within their practice and 98% report participating in individual patient education as part of their patient care (May, 1983). It has been strongly recommended that patient education should be individualised or patient-centred (World Health Organisation, 1998; Falvo, 2011). Existing research suggests that physiotherapy patient education is primarily clinician-centred or didactic in nature and is often not individualised to the patient (Kerssens et al, 1999; Trede, 2000). Furthermore, physiotherapists report challenges in providing diagnostic information or explanations of cause of symptoms for some common patient populations (Slade et al, 2012) and do not practice patient education to the extent of recommended guidelines (Jette et al, 2005).

Observational research in Europe (Sluijs et al, 1991) and North America (Gahimer & Domholdt, 1996) has examined the content of physiotherapy patient education. Most patient education statements used by physiotherapists focussed on information about the patients’ physical illness and exercise provision. Physiotherapists’ statements relating to health education and stress counselling were the least frequent content used. Chase et al (1993) surveyed practicing physiotherapists in North America in relation to their patient education practices and their perceptions of various barriers to patient education practice. Over 90% of the participants reported frequently engaging in patient education of treatment rationale and home exercise, reporting verbal discussion and demonstration as the most frequent delivery approaches. Participants reported the most common barriers as patient characteristics including attitude, passiveness and expectations. The authors also investigated physiotherapists’ perception of factors that facilitated their development of patient education skills and found that experience rather than formal education as most important. Over 90% of the 200 respondents within this study reported that providing instructions to the patient on how to perform functional activities was most important of all educational activities. This research indicates that physiotherapists focus on advice about physical illness, treatment and exercise primarily relating to the physical dimension of health (Sluijs, 1991; Chase et al, 1993; Gahimer and Domholdt, 1996). Assuming that this is consistent with contemporary physiotherapy practice is problematic considering that wider healthcare (Epstein et al, 2010; AIHW, 2014) and physiotherapy training and practice (APA, 2013) have evolved considerably since this time. Physiotherapists’ attitudes in relation to patient,
therapist and context-specific factors that influence patient education practice has not been explored recently, nor in Australian practice. In addition, little is known about the time spent by physiotherapists in patient education practice and how physiotherapists practice and perceive the use of patient-centred and self-management focussed activities. Measuring and understanding current practice and the perception of patient education including barriers to practice will play a key role in the development of strategies to engage physiotherapy professionals and students in effective patient education practice.

This study aimed to
1) Investigate physiotherapists’ self-reported practice of patient education,
2) Contrast physiotherapists self-reported use of patient education content to their perceived importance
3) Investigate physiotherapists’ perceived barriers to the use of effective patient education, and
4) Investigate physiotherapists' perceived factors leading to the development of patient education skills.

Methods

Design
A cross-sectional web-based anonymous survey was designed to capture patient education practices and perceptions of physiotherapists. The survey design and subsequent items were derived from six key constructs representing physiotherapy context and patient education practice through a literature review and consultation process. Patient education literature within physiotherapy and wider health professions was reviewed to identify existing measures and identify over-arching constructs relating to professional practice and perceptions of education content and activities. The consultation process included the research team (one current practicing physiotherapist with 10 years clinical experience and three academics with over ten years clinical and educational experience), a broad range of practicing physiotherapists and academic faculty across various areas of Physiotherapy practice. Over-arching constructs for measurement were; physiotherapy context, time, educational content and structure, barrier perception and perception of skill
development. The final survey measure consisted of nine demographic questions, two multiple choice questions relating to time spent undertaking patient education and six sets of closed-ended 5 point likert scale that were displayed in a matrix style table. In each matrix participants were asked to rate patient education activities according to frequency and perceived importance. In relation to perceived barriers and factors relating to the development of patient education skills, participants were asked to rate their level of agreement. These questions also included free-text options for participants to provide further items. The survey was formatted onto the online program SurveyMonkey. A pilot was completed by a sample of eight experienced physiotherapists who are practicing in both clinical and academic roles (age 29-52 years from musculoskeletal, neurological and cardiorespiratory areas). Feedback on content, clarity, item structure and wording was sought, and the pilot was undertaken twice to assess test-retest reliability. All individual survey items had an acceptable intra-class correlation (ICC) of >0.7 (Fink, 1995). Minor changes were made to items based on pilot group feedback. This included the addition of one item relating to patient education content and one item relating to patient education barriers. Additional piloting to assess test-retest reliability of these two items generated ICC’s of >0.7. Ethical approval was obtained by the University of Queensland Behavioural and Social Sciences Ethical Review Committee on March 30, 2015.

Qualified Australian physiotherapists were recruited through direct email contact to personal email addresses via the Australian Physiotherapy Association (APA) contact search engine. This is an online publically accessible database for APA members to provide email and mailing contacts (APA, 2015). Stratified random sampling based on Australian states generated a total of 824 email addresses on April 20, 2015. Participant consent was gained through selecting the consent box on the first page of the survey. Participants were offered the option of completing a hard copy survey by responding to the email. Exclusion criteria were: not being a qualified physiotherapist or working in a primary context defined as a teaching or administration. The survey was open for four weeks and a reminder email was sent after two weeks with a link to the survey.
**Data reduction and analysis**

The quantitative data from all respondents were transferred into a Microsoft Excel spreadsheet, in which data were checked for missing responses. Only responses with >80% of data were included (Allison, 2002). Microsoft Excel and SPSS version 20.0 were used for descriptive statistics. Mann-Whitney U testing was used to compare time spent on patient education in initial and subsequent consultations and Chi Square analysis for comparing demographic data to national data available (Health Workforce Australia, 2012). Significance was set at p<0.05. Additional items provided by participants were sequentially coded into individual item themes based on the study’s objectives using NVivo version 10 (QSR International). From an initial list of 62 free-text items, 35 items were reduced, eliminated or combined by the research team based on replication or redundancy, resulting in a list of 27 items.

**Results**

A total of 305 complete survey responses (response rate; 37%) were received between April 20, 2015 and May 17, 2015. Demographic characteristics of the sample (Table 1) reflected national data in terms of gender, age and years of experience. There were no significant differences between the sample and national data in relation to gender (p=0.70) and geographical location according to state (p=0.09). Respondents had a similar distribution of primary scope of practice with musculoskeletal practice featuring slightly higher in the study sample (61.6%), however there was a significant difference between the scope of practice of the sample and existing Australian data when all scope of practice areas were compared (p=0.04).
Table 1. Demographic characteristics of participants.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
<th>Available national data *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>100 (32.8%)</td>
<td>31.2%</td>
</tr>
<tr>
<td>Female</td>
<td>205 (67.2%)</td>
<td>68.8%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>55 (18.0%)</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>78 (25.6%)</td>
<td>Mean age = 39 years</td>
</tr>
<tr>
<td>40-49</td>
<td>80 (26.2%)</td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>71 (23.3%)</td>
<td></td>
</tr>
<tr>
<td>60+</td>
<td>21 (6.9%)</td>
<td></td>
</tr>
<tr>
<td>Experience (years)</td>
<td></td>
<td>Mean experience = 13 years</td>
</tr>
<tr>
<td>&lt;1</td>
<td>7 (2.3%)</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>16 (5.2%)</td>
<td></td>
</tr>
<tr>
<td>3-5</td>
<td>29 (9.5%)</td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>45 (14.6%)</td>
<td></td>
</tr>
<tr>
<td>11-20</td>
<td>69 (22.6%)</td>
<td></td>
</tr>
<tr>
<td>21+</td>
<td>135 (44.3%)</td>
<td></td>
</tr>
<tr>
<td>Not stated</td>
<td>4 (1.3%)</td>
<td></td>
</tr>
<tr>
<td>English first language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>295 (96.7%)</td>
<td>Not Available (NA)</td>
</tr>
<tr>
<td>No</td>
<td>10 (3.3%)</td>
<td>NA</td>
</tr>
<tr>
<td>Highest Physiotherapy Qualification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry Level</td>
<td>198 (65.8%)</td>
<td>NA</td>
</tr>
<tr>
<td>Masters (Titled Physiotherapist)</td>
<td>95 (31.6%)</td>
<td>NA</td>
</tr>
<tr>
<td>Specialist</td>
<td>8 (2.7%)</td>
<td>NA</td>
</tr>
<tr>
<td>Primary Scope of Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>188 (61.6%)</td>
<td>53.0%</td>
</tr>
<tr>
<td>Neurological</td>
<td>23 (7.5%)</td>
<td>6.8%</td>
</tr>
<tr>
<td>Cardiorespiratory</td>
<td>6 (1.9%)</td>
<td>6.5%</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>5 (1.6%)</td>
<td>5.5%</td>
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<tr>
<td>Women’s Health</td>
<td>17 (5.6%)</td>
<td>2.4%</td>
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<tr>
<td>Aged Care</td>
<td>21 (6.9%)</td>
<td>13.8%</td>
</tr>
<tr>
<td>Sports</td>
<td>18 (5.9%)</td>
<td>3.4%</td>
</tr>
<tr>
<td>Other</td>
<td>18 (5.9%)</td>
<td>5.3%</td>
</tr>
<tr>
<td>Not stated</td>
<td>4 (1.3%)</td>
<td>3.2%</td>
</tr>
<tr>
<td>State</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>60 (20.1%)</td>
<td>29.2%</td>
</tr>
<tr>
<td>Queensland</td>
<td>119 (39.5%)</td>
<td>19.5%</td>
</tr>
<tr>
<td>Victoria</td>
<td>50 (16.7%)</td>
<td>25.6%</td>
</tr>
<tr>
<td>Western Australia</td>
<td>36 (12.0%)</td>
<td>12.5%</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>11 (3.7%)</td>
<td>2.0%</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>2 (0.7%)</td>
<td>0.7%</td>
</tr>
<tr>
<td>Tasmania</td>
<td>6 (2.0%)</td>
<td>1.8%</td>
</tr>
<tr>
<td>South Australia</td>
<td>17 (5.6%)</td>
<td>8.8%</td>
</tr>
<tr>
<td>Not stated</td>
<td>4 (1.3%)</td>
<td>NA</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major City</td>
<td>199 (65.2%)</td>
<td>80.3%</td>
</tr>
<tr>
<td>Inner Regional</td>
<td>61 (20.3%)</td>
<td>13.0%</td>
</tr>
<tr>
<td>Outer Regional</td>
<td>39 (13.0%)</td>
<td>5.3%</td>
</tr>
<tr>
<td>Remote</td>
<td>6 (2.0%)</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

* Health Workforce Australia data (2012)
Time undertaking patient education within the consultation

Most participants reported spending 6-10 minutes (93/305, 30.5%) or 11-20 minutes (91/305, 29.8%) of patient education within the initial consultation. The most commonly reported time spent on patient education in subsequent consultations was also 6-10 minutes (123/305, 40.3%). Less participants reported more than 10 minutes of patient education during subsequent consultations (129/305, 42.3%) than initial consultations (189/305, 62.0%). Significantly more time was reported to be spent undertaking patient education in initial consultations compared to subsequent consultations (p=0.03).

Frequency of patient education activities

The frequency of educational activities used by physiotherapists is outlined in Table 2. Four activity areas; verbal or written instruction for exercise, providing information about condition or diagnosis, advice or teaching self-management strategies and advice or teaching correct posture or movement were reported by over 90% of respondents as being used “very often” or “always”. The areas reported to be used least often were counselling about stress, emotional or psychosocial problems and advice on social support with less than 37% and 22%, respectively, of respondents engaging in these activities “very often” or “always”. Additional free text responses were ‘safe occupational practices’, ‘modifying work duties’, ‘goal setting’, ‘prevention measures’ and ‘ergonomic advice’.

Perceived importance of patient education activities

Physiotherapist perception of the importance of educational activities is outlined in Table 2. Asking and addressing patient concerns and advice or teaching self-management strategies were reported as “important” or “very important” by at least 95% of respondents. All respondents in the study reported instruction for exercise and addressing patient concerns as at least “moderately important”.

60
<table>
<thead>
<tr>
<th>Educational Activity</th>
<th>Never N (%)</th>
<th>Rarely N (%)</th>
<th>Sometimes N (%)</th>
<th>Very Often N (%)</th>
<th>Always N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing verbal or written instruction needed for basic exercise program</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>9 (3.0%)</td>
<td>100 (32.8%)</td>
<td>196 (64.2%)</td>
</tr>
<tr>
<td>Providing information about the patient's condition or diagnosis</td>
<td>0 (0%)</td>
<td>1 (0.3%)</td>
<td>9 (3.0%)</td>
<td>86 (28.2%)</td>
<td>209 (68.5%)</td>
</tr>
<tr>
<td>Advice or teaching self-management strategies</td>
<td>0 (0%)</td>
<td>2 (0.6%)</td>
<td>21 (6.9%)</td>
<td>130 (42.6%)</td>
<td>152 (49.8%)</td>
</tr>
<tr>
<td>Advice or teaching correct posture and movement</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>29 (9.5%)</td>
<td>129 (42.3%)</td>
<td>147 (48.2%)</td>
</tr>
<tr>
<td>Asking and addressing the patient’s concerns</td>
<td>0 (0%)</td>
<td>1 (0.3%)</td>
<td>35 (11.5%)</td>
<td>113 (37.2%)</td>
<td>155 (51.0%)</td>
</tr>
<tr>
<td>Providing information about the patient’s prognosis</td>
<td>0 (0%)</td>
<td>4 (1.3%)</td>
<td>44 (14.4%)</td>
<td>138 (45.2%)</td>
<td>118 (38.7%)</td>
</tr>
<tr>
<td>Advice or strategies to perform activities of daily living (ADL’s)</td>
<td>0 (0%)</td>
<td>4 (1.3%)</td>
<td>65 (21.3%)</td>
<td>164 (53.7%)</td>
<td>72 (23.6%)</td>
</tr>
<tr>
<td>Advice or teaching activity pacing</td>
<td>0 (0%)</td>
<td>6 (2.3%)</td>
<td>73 (23.8%)</td>
<td>153 (50.2%)</td>
<td>73 (23.8%)</td>
</tr>
<tr>
<td>Exploring the patient’s ideas and perceptions</td>
<td>0 (0%)</td>
<td>13 (4.3%)</td>
<td>97 (31.8%)</td>
<td>126 (41.3%)</td>
<td>67 (21.9%)</td>
</tr>
<tr>
<td>General health promotion</td>
<td>0 (0%)</td>
<td>17 (5.6%)</td>
<td>96 (31.5%)</td>
<td>135 (44.3%)</td>
<td>57 (18.7%)</td>
</tr>
<tr>
<td>Teaching problem-solving strategies</td>
<td>0 (0%)</td>
<td>29 (9.5%)</td>
<td>104 (34.1%)</td>
<td>131 (43.0%)</td>
<td>41 (13.4%)</td>
</tr>
<tr>
<td>Explaining pain neurophysiology/mind-body description of pain</td>
<td>1 (0.3%)</td>
<td>34 (11.1%)</td>
<td>126 (41.3%)</td>
<td>126 (41.3%)</td>
<td>18 (5.9%)</td>
</tr>
<tr>
<td>Advice on use of assistive devices or equipment</td>
<td>0 (0%)</td>
<td>28 (9.2%)</td>
<td>138 (45.2%)</td>
<td>118 (38.7%)</td>
<td>20 (6.6%)</td>
</tr>
<tr>
<td>Counselling about stress, emotional or psychosocial problems</td>
<td>2 (0.7%)</td>
<td>61 (20.0%)</td>
<td>129 (42.3%)</td>
<td>100 (32.8%)</td>
<td>12 (3.9%)</td>
</tr>
<tr>
<td>Advice on social support</td>
<td>7 (2.3%)</td>
<td>82 (26.9%)</td>
<td>148 (48.5%)</td>
<td>59 (19.3%)</td>
<td>8 (2.6%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational Activity</th>
<th>Not Important N (%)</th>
<th>Slightly Important N (%)</th>
<th>Moderately Important N (%)</th>
<th>Important N (%)</th>
<th>Very Important N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing verbal or written for exercise</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8 (3.7%)</td>
<td>90 (29.7%)</td>
<td>203 (66.7%)</td>
</tr>
<tr>
<td>Providing information about the patient's condition or diagnosis</td>
<td>0 (0.0%)</td>
<td>1 (0.3%)</td>
<td>19 (6.3%)</td>
<td>88 (28.8%)</td>
<td>190 (62.3%)</td>
</tr>
<tr>
<td>Advice or teaching self-management strategies</td>
<td>0 (0.0%)</td>
<td>1 (0.3%)</td>
<td>7 (2.3%)</td>
<td>103 (33.7%)</td>
<td>192 (63.1%)</td>
</tr>
<tr>
<td>Advice or teaching correct posture and movement</td>
<td>0 (0.0%)</td>
<td>4 (1.3%)</td>
<td>16 (5.3%)</td>
<td>101 (33.0%)</td>
<td>183 (60.1%)</td>
</tr>
<tr>
<td>Asking and addressing the patient’s concerns</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>9 (2.9%)</td>
<td>81 (26.5%)</td>
<td>215 (70.5%)</td>
</tr>
<tr>
<td>Providing information about the patient’s prognosis</td>
<td>0 (0.0%)</td>
<td>8 (2.6%)</td>
<td>38 (12.4%)</td>
<td>129 (42.3%)</td>
<td>130 (42.7%)</td>
</tr>
<tr>
<td>Advice or strategies to perform</td>
<td>0 (0.0%)</td>
<td>5 (1.6%)</td>
<td>45 (15.0%)</td>
<td>126 (41.7%)</td>
<td>128 (42.6%)</td>
</tr>
<tr>
<td>Activity</td>
<td>0%</td>
<td>1.7%</td>
<td>14.9%</td>
<td>41.2%</td>
<td>42.0%</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Activities of daily living (ADL's)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advice or teaching activity pacing</td>
<td>0</td>
<td>13</td>
<td>56</td>
<td>141</td>
<td>94</td>
</tr>
<tr>
<td>Exploring the patient's ideas and perceptions</td>
<td>0</td>
<td>4</td>
<td>33</td>
<td>139</td>
<td>129</td>
</tr>
<tr>
<td>General health promotion</td>
<td>1</td>
<td>16</td>
<td>80</td>
<td>122</td>
<td>81</td>
</tr>
<tr>
<td>Teaching problem solving strategies</td>
<td>1</td>
<td>20</td>
<td>67</td>
<td>119</td>
<td>97</td>
</tr>
<tr>
<td>Explaining pain neurophysiology/mind-body description of pain</td>
<td>5</td>
<td>25</td>
<td>64</td>
<td>143</td>
<td>65</td>
</tr>
<tr>
<td>Advice on use of assistive devices or equipment</td>
<td>1</td>
<td>15</td>
<td>67</td>
<td>138</td>
<td>83</td>
</tr>
<tr>
<td>Counselling about stress, emotional or psychosocial problems</td>
<td>1</td>
<td>35</td>
<td>93</td>
<td>119</td>
<td>56</td>
</tr>
<tr>
<td>Advice on social support</td>
<td>1</td>
<td>45</td>
<td>111</td>
<td>114</td>
<td>33</td>
</tr>
</tbody>
</table>

**Delivery of patient education**

Nearly all respondents reported using one-to-one discussion (297/305, 97.4%) and physical demonstration (295/305, 96.7%) “very-often” or “always” in their delivery of patient education (Table 3). No participants reported “rarely” or “never” using these two approaches. Formal group education and use of physiotherapy assistants were the least frequently rated methods. Additional free-text responses included using physiotherapy students in the delivery of patient education.

**Evaluation of patient education**

Nearly all respondents (296/305, 97.0%) reported that they ask their patients to demonstrate a movement, position or activity to evaluate the effectiveness of their patient education “very often” of “always”. Respondents also reported frequent use of interpreting patient signals to indicate understanding (256/305, 84.0%) and using objective measures (242/305, 79.3%). The three remaining evaluation methods of; getting the patient to repeat content in their own words, use of family members and analysis of video were identified by less than 50% of respondents as being used “very often” or “always” (Table 3).
### Table 3. Frequency of delivery and evaluation approaches

<table>
<thead>
<tr>
<th>Education Delivery Approach</th>
<th>Never N (%)</th>
<th>Rarely N (%)</th>
<th>Sometimes N (%)</th>
<th>Very Often N (%)</th>
<th>Always N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-to-one discussion</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>8 (2.6%)</td>
<td>106 (34.8%)</td>
<td>191 (62.6%)</td>
</tr>
<tr>
<td>Physical demonstration of exercise, movement, posture or activity</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>9 (2.9%)</td>
<td>124 (40.7%)</td>
<td>171 (56.1%)</td>
</tr>
<tr>
<td>Anatomy models or pictures</td>
<td>1 (0.3%)</td>
<td>19 (6.2%)</td>
<td>69 (22.6%)</td>
<td>164 (53.8%)</td>
<td>52 (17.0%)</td>
</tr>
<tr>
<td>Personalised handouts</td>
<td>2 (0.7%)</td>
<td>18 (5.9%)</td>
<td>74 (24.3%)</td>
<td>147 (48.2%)</td>
<td>64 (20.9%)</td>
</tr>
<tr>
<td>Photography or video</td>
<td>37 (12.1%)</td>
<td>75 (24.6%)</td>
<td>104 (34.1%)</td>
<td>79 (25.9%)</td>
<td>10 (3.3%)</td>
</tr>
<tr>
<td>Generic handouts/pamphlets</td>
<td>12 (3.9%)</td>
<td>83 (27.2%)</td>
<td>122 (40.0%)</td>
<td>71 (23.3%)</td>
<td>17 (5.6%)</td>
</tr>
<tr>
<td>Links to websites or other online content</td>
<td>27 (8.9%)</td>
<td>109 (35.8%)</td>
<td>127 (41.6%)</td>
<td>38 (12.6%)</td>
<td>3 (1.0%)</td>
</tr>
<tr>
<td>Use of biofeedback equipment</td>
<td>70 (23.1%)</td>
<td>95 (31.3%)</td>
<td>103 (33.7%)</td>
<td>30 (9.9%)</td>
<td>6 (2.0%)</td>
</tr>
<tr>
<td>Formal group education activities</td>
<td>115 (37.8%)</td>
<td>112 (36.7%)</td>
<td>53 (17.3%)</td>
<td>20 (6.5%)</td>
<td>5 (1.7%)</td>
</tr>
<tr>
<td>Use of physiotherapy assistant</td>
<td>238 (77.9%)</td>
<td>30 (9.9%)</td>
<td>25 (8.2%)</td>
<td>11 (3.7%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Evaluation of Education Approach</td>
<td>Never N (%)</td>
<td>Rarely N (%)</td>
<td>Sometimes N (%)</td>
<td>Very Often N (%)</td>
<td>Always N (%)</td>
</tr>
<tr>
<td>Ask the patient to demonstrate</td>
<td>1 (0.3%)</td>
<td>2 (0.7%)</td>
<td>6 (2.0%)</td>
<td>141 (46.3%)</td>
<td>155 (50.7%)</td>
</tr>
<tr>
<td>Interpret signals from the patient</td>
<td>2 (0.7%)</td>
<td>5 (1.7%)</td>
<td>41 (13.6%)</td>
<td>160 (52.4%)</td>
<td>96 (31.6%)</td>
</tr>
<tr>
<td>Objective measures or standards</td>
<td>1 (0.3%)</td>
<td>6 (2.0%)</td>
<td>56 (18.4%)</td>
<td>130 (42.5%)</td>
<td>112 (36.7%)</td>
</tr>
<tr>
<td>Ask the patient to repeat or discuss content in their own words</td>
<td>6 (2.0%)</td>
<td>49 (16.0%)</td>
<td>116 (38.2%)</td>
<td>102 (33.4%)</td>
<td>31 (10.2%)</td>
</tr>
<tr>
<td>Ask family members or caregivers</td>
<td>24 (7.9%)</td>
<td>68 (22.3%)</td>
<td>122 (40.1%)</td>
<td>77 (25.3%)</td>
<td>14 (4.5%)</td>
</tr>
<tr>
<td>Analyse patient tasks through video</td>
<td>123 (40.5%)</td>
<td>83 (27.2%)</td>
<td>65 (21.4%)</td>
<td>26 (8.5%)</td>
<td>7 (2.4%)</td>
</tr>
</tbody>
</table>

**Table 4 outlines responses to the perceived barriers towards patient education practice.** Nearly all respondents “agreed” or “strongly agreed” that patient specific characteristics including cognitive status (285/305, 93.4%), emotional status (266/305, 87.2%) and attitude of patient (267/305, 87.5%) are barriers to effective patient education practice. Over 90% of participants also agreed that a lack of trust
or rapport between patient and therapist is a barrier. Other barriers identified within free text responses included ‘involvement in compensable claim’ and ‘pain’.

Table 4. Perceived barriers to patient education

<table>
<thead>
<tr>
<th>Barrier item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive status of patient</td>
<td>2 (0.7%)</td>
<td>11 (3.5%)</td>
<td>7 (2.4%)</td>
<td>152 (49.7%)</td>
<td>133 (43.7%)</td>
</tr>
<tr>
<td>Lack of trust or rapport between patient and therapist</td>
<td>1 (0.3%)</td>
<td>13 (4.2%)</td>
<td>16 (5.2%)</td>
<td>137 (44.8%)</td>
<td>138 (45.5%)</td>
</tr>
<tr>
<td>Emotional status of patient</td>
<td>1 (0.3%)</td>
<td>20 (6.6%)</td>
<td>17 (5.6%)</td>
<td>182 (59.8%)</td>
<td>84 (27.6%)</td>
</tr>
<tr>
<td>Attitude of patient</td>
<td>1 (0.3%)</td>
<td>16 (5.2%)</td>
<td>21 (7.0%)</td>
<td>155 (50.7%)</td>
<td>112 (36.7%)</td>
</tr>
<tr>
<td>Patient not understanding English language</td>
<td>1 (0.3%)</td>
<td>30 (9.9%)</td>
<td>22 (7.4%)</td>
<td>166 (54.3%)</td>
<td>85 (28.0%)</td>
</tr>
<tr>
<td>Patient assuming a passive role</td>
<td>2 (0.7%)</td>
<td>33 (10.8%)</td>
<td>30 (9.9%)</td>
<td>139 (45.7%)</td>
<td>100 (32.9%)</td>
</tr>
<tr>
<td>My lack of knowledge of the topic</td>
<td>8 (2.8%)</td>
<td>44 (14.4%)</td>
<td>30 (9.9%)</td>
<td>152 (50.0%)</td>
<td>70 (22.9%)</td>
</tr>
<tr>
<td>Lack of time allocated for treatment session</td>
<td>13 (4.2%)</td>
<td>75 (24.6%)</td>
<td>31 (10.2%)</td>
<td>142 (46.7%)</td>
<td>44 (14.4%)</td>
</tr>
<tr>
<td>Knowledge or literacy of patient</td>
<td>8 (2.8%)</td>
<td>94 (30.8%)</td>
<td>30 (9.9%)</td>
<td>134 (44.0%)</td>
<td>38 (12.6%)</td>
</tr>
<tr>
<td>Lack of participation by family members</td>
<td>14 (4.5%)</td>
<td>101 (33.2%)</td>
<td>73 (24.1%)</td>
<td>96 (31.5%)</td>
<td>20 (6.6%)</td>
</tr>
<tr>
<td>Lack of privacy in clinic environment</td>
<td>37 (12.3%)</td>
<td>111 (36.3%)</td>
<td>48 (15.8%)</td>
<td>83 (27.1%)</td>
<td>26 (8.5%)</td>
</tr>
</tbody>
</table>

Perception of patient education skill development

The highest rated items for their perceived contribution to the development of patient education skills were ‘personal experience with patients’, ‘interaction with colleagues’ and ‘continuing education courses’. Training and/or experience before physiotherapy studies was rated the least important factor (Table 5). Other items identified within free text responses included ‘professional development activities outside physiotherapy’, ‘experience outside physiotherapy’ and ‘patient feedback’.
Table 5. Perceived importance of factors contributing to skill development

<table>
<thead>
<tr>
<th>Skill Development Item</th>
<th>Not Important N (%)</th>
<th>Slightly Important N (%)</th>
<th>Moderately Important N (%)</th>
<th>Important N (%)</th>
<th>Very Important N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal experience with patients'</td>
<td>0 (0.0%)</td>
<td>2 (0.7%)</td>
<td>10 (3.3%)</td>
<td>77 (25.2%)</td>
<td>216 (70.8%)</td>
</tr>
<tr>
<td>Interaction with colleagues</td>
<td>1 (0.3%)</td>
<td>8 (2.7%)</td>
<td>34 (11.1%)</td>
<td>129 (42.2%)</td>
<td>133 (43.7%)</td>
</tr>
<tr>
<td>Continuing education courses</td>
<td>1 (0.3%)</td>
<td>14 (4.5%)</td>
<td>42 (10.6%)</td>
<td>124 (40.7%)</td>
<td>134 (44.0%)</td>
</tr>
<tr>
<td>Professional in-services</td>
<td>0 (0.0%)</td>
<td>18 (5.9%)</td>
<td>48 (15.9%)</td>
<td>154 (50.4%)</td>
<td>85 (27.8%)</td>
</tr>
<tr>
<td>Post-graduate Academic/University studies</td>
<td>17 (5.7%)</td>
<td>21 (7.0%)</td>
<td>54 (17.8%)</td>
<td>109 (35.7%)</td>
<td>103 (33.8%)</td>
</tr>
<tr>
<td>(leave blank if N/A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic/University physiotherapy studies</td>
<td>5 (1.6%)</td>
<td>28 (9.1%)</td>
<td>68 (22.3%)</td>
<td>124 (40.7%)</td>
<td>80 (26.4%)</td>
</tr>
<tr>
<td>Training and/or experience before physiotherapy</td>
<td>42 (13.9%)</td>
<td>78 (25.5%)</td>
<td>62 (20.4%)</td>
<td>77 (25.2%)</td>
<td>46 (15.0%)</td>
</tr>
<tr>
<td>studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

This study explored the self-reported use of patient education among practicing physiotherapists in Australia. It also sought to understand the perception of physiotherapists towards educational activities, barriers to effective patient education use and factors contributing to their development of patient education skills. The results demonstrate that physiotherapists engage in a variety of patient education activities, and furthermore, consider a wide range of educational activities as important. The use of verbal or written instruction for exercise and providing information about the patient's condition or diagnosis as the highest reported patient education activities, support earlier research where these two activities are the most frequently used by physiotherapists within Europe and North America (Sluijs, 1991; Chase et al, 1993; Gahimer and Domholdt, 1996).

Generally, the most frequent educational activities reported by physiotherapists were also those that were perceived as being the most important. Similarly, the items reported to be least important, most notably advice on social support, were used least frequently. An exception to this observation is that whilst over half of all respondents rated counselling about stress, emotional and psychosocial issues as important or very important, less than 40% reported using this approach frequently in
their patient education practice. Chase and colleagues (1993) also found that only 34% of physiotherapists report frequently providing counselling and Sluijs (1991) found counselling about stress related problems to be reported within only 27% of sessions and was the least frequent educational activity reported by respondents within their study. Additionally, despite 68% of respondents identifying pain neurophysiology education as very important or important, less than half of all respondents reported using this patient education content very often or always. This may indicate that physiotherapists are aware of the evidence supporting pain neurophysiology education (Louw et al, 2011) but do not have the training or the skills to use this in practice (Foster & Delitto, 2011). These findings relating to pain education and stress management may also indicate that although most physiotherapists recognise the need to address these needs, most prioritise addressing the presenting physical problems (NICE, 2009). Lack of training or confidence in psychosocial areas of patient education may result in inadequate preparation to engage in such interventions despite awareness of its importance (Jeffrey and Foster, 2012; Alexanders et al, 2015). These findings are therefore not surprising given the continued focus on the biomedical curriculum within entry-level physiotherapy programs (Foster & Delitto, 2011). Education providers should be aware of the impact that training has on patient education skills, particularly in light of recent research indicating that health professionals who lack self-efficacy to educate patients tend to avoid it (Svavarsdottir et al, 2015).

Previous research describing patient education within physiotherapy has identified central themes of promoting patient self-care and empowerment of the patient towards self-management (Rindflesch, 2009). Our results support these concepts where nearly all respondents in our study reported frequently teaching self-management strategies and reported this activity to be important. Self-management education is important considering its value within physiotherapy and wider healthcare for promoting the individual’s ability to effectively manage aspects of their own health through effective problem solving, decision making and appropriate resource utilisation (Lorig and Holman, 2003; Hoeger-Bement et al, 2014; Richardson et al, 2014). These findings may also reflect physiotherapists’ response to societal changes such as population ageing and increased prevalence of chronic conditions,
diseases and risk factors require patients to self-manage complex conditions within the community (AIHW, 2014).

Providing patients with online or web based information was one of the least frequently used information delivery approaches. Nearly half of all respondents reported that they rarely or never provide links to websites or online content, less than the use of generic handouts or pamphlets. This was interesting considering the high use of internet-based health information by patients (Miller & Bell, 2012). Patient education provided by sources separate to the physiotherapist was outside the scope of this study. Further research into how physiotherapists navigate patients’ use of self-sourced or internet based health information and how they determine the credibility of such sources is warranted considering the role of the internet in providing health information (McMullen, 2006).

It is strongly suggested that patient education should employ a collaborative, patient-centred approach that takes into account the patient’s desire for information and considers education from the perspective of the patient (NICE, 2009; Falvo, 2011). Such a patient-centred approach would include assessing patients' perceptions and needs and may influence health-related behaviour and contribute to a more favourable evaluation of the therapeutic experience (Hills and Kitchen, 2007). Over 80% of physiotherapists within the study rated the activity of exploring patient's ideas and perceptions as important or very important, however only 63% of respondents reported frequently using this activity. Despite this perceived importance, many physiotherapists may be simply giving advice without seeking the existing knowledge and perceptions of the patient. This omission may result in the provision of non-patient-centred information that may therefore not address the patients’ needs or expectations (Trede, 2000; Levinson et al, 2010). This finding is an important consideration for physiotherapy patient education practice as seeking the patient perspective is pertinent in collaborative practice, patient empowerment and providing effective self-management interventions (Lorig and Holman, 2007; Levinson et al, 2010). One-to-one discussion, demonstration and personalised handouts were the most highly rated delivery approaches, suggesting that physiotherapists favour individualised approaches when providing patient education. The high frequency of use of one-to-one discussion and personalised handouts is in line with research and
guidelines that recommend this approach as enhancing patient understanding, recall, compliance and therapeutic outcomes (Oliver et al, 2001; Di Marco et al, 2006; Gold and McClung, 2006; Friedman et al, 2011). We are however not able to elucidate from our study whether physiotherapists accompany verbal educational content with written material. Patient education delivery using a group-based format has been found to be efficacious, through use of group support, questions, problem solving and modelling particularly for individuals with chronic health conditions (Hammond and Freeman, 2004; Carnes et al, 2012). The results demonstrated a low use of formal group education, with three quarters of respondents rarely or never using this approach. This finding is similar to that from early research and may be attributed to the structure of individualised patient care within physiotherapy and wider healthcare settings within Australia, rather than the preferences or perceptions of the individual physiotherapist (Chase et al, 1993).

Of particular interest is the methods used by physiotherapists to evaluate patient learning. Chase and colleagues (1993) reported that 59% of physiotherapists frequently ask the patient to explain what has been taught. Less than half of physiotherapists in our study reported frequently asking the patient to repeat or discuss content. In contrast, over 80% of respondents reported frequently interpreting signals from the patient that demonstrate understanding and over 90% ask the patient to demonstrate a posture or movement to seek understanding. These findings suggest that more than half of all physiotherapists frequently assume patient understanding of verbal content rather than explicitly confirming understanding. Explicitly seeking patient understanding is strongly recommended for health professionals to address potential literacy issues, enhance understanding and improve patient self-management (Tamura-Lis, 2013). Asking the patient to repeat content in their own words offers not only an approach that checks for lapses in understanding but may also uncover health beliefs, generate dialogue between patient and health professional and improve patient recall (Schillinger et al, 2003; Kripilani, 2008).

Insight into the barriers to patient education practice is an important consideration when assessing the advantages and costs of a planned action such as a physiotherapy intervention (Glanz et al, 2008). One of the highest rated barriers
within the study was a lack of trust or rapport between the therapist and patient. This is consistent with previous research and indicates that physiotherapists recognise the importance of the therapeutic relationship in the success of patient education and its outcomes (Slujs, 1991; Chase et al, 1993; Lagger et al, 2010). Within our study, five of the six highest rated barriers to patient education practice related to patient characteristics. This suggests that the patient and their presentation are perceived by the physiotherapist as being more influential to the success or failure of education than aspects that may be controlled by the therapist such as their own knowledge, time available or the clinical environment. Barrier perception relating to patient characteristics has also been identified in previous physiotherapy patient education research and other physiotherapy studies (Slujs, 1991; Chase et al, 1993; Jack et al, 2010; Sanders et al, 2013). Recognising barriers to practice may have implications for health professional training in this area. Authors highlight that patient education training should create an awareness of the health professional towards factors and influences that may hinder or enable successful patient education (Innot & Kennedy, 2011). Providing professionals with strategies and skills to assess and manage barriers and providing training aimed at improving self-efficacy in this area of practice is warranted. Further research is also warranted to assess how professionals identify barriers, what strategies are used to minimise barriers to patient education and their subsequent effect on educational approaches.

This study demonstrates that the two most important factors perceived by physiotherapists in their development of patient education skills are direct patient experience and interaction with colleagues, both consistent with previous research (Chase et al, 1993; Hiller et al, 2015). Our study demonstrates a higher perceived importance of professional in-services than previous research (Chase et al, 1993) which may highlight the importance of ongoing professional development for patient education skill development within the Australian setting. The relatively low rating of importance of formal academic physiotherapy preparation compared to other factors is important considering the requirement of patient education as a major competency for graduate-entry physiotherapists (Physiotherapy Board of Australia, 2015). Although health professional education literature supports the use of experiential based learning and professional practice in the development of patient education and patient-centred skills, the actual impact of activities leading to patient education
skill development is outside the scope of this study (Jones et al, 2011). Our study did not explore physiotherapists’ perceived ability to educate patients, however in light of advances in physiotherapy practice and education, research into readiness for patient education practice is recommended.

**Limitations**

This study measured only self-reported practices and perceptions of the physiotherapist and we are therefore unable to report actual clinical behaviours that may be captured through other research methods. To contain the scope of our study, we did not seek responses from patients, families, educators or administrators or physiotherapists outside Australia. Only APA members were contacted for participation within the study. Although the vast majority of Australian physiotherapists are members of the APA, this sampling approach may have influenced the final data. This was apparent within the representation of the final study sample that varied significantly in scope of practice area from National data (HWA, 2012). This likely skewed data towards the view of physiotherapists who work in a musculoskeletal and sports physiotherapy scope of practice as this group had a higher proportion than what the national data suggests. As most musculoskeletal and sports physiotherapists work in private practice settings (HWA, 2012), data in the current study may also be skewed towards physiotherapists working privately rather than in public health settings.

A convenience sample of academic and practicing physiotherapists was used to pilot the survey measure, rather than experts in the field of study, potentially influencing the final survey design. As with any self-administered research approach, respondents to the invitation to this survey may be those with particular interest or strong opinion in the area of patient education, whereas those who do not use patient education may be less likely to participate and social desirability bias may have led to the over-reporting of actual practices.
Conclusions

The findings from this study were derived from a large cohort of physiotherapists across a diverse range of geographic locations, providing a snapshot of current patient education practices in Australian settings. This study highlights the wide range of educational activities and approaches that physiotherapists report to frequently provide and their perception of the importance of such activities. Healthcare literature and clinical guidelines focus on the importance of educational interventions aimed at patient self-management (Lorig and Holman, 2003; Hochberg et al, 2012). As physiotherapists report a high use and perceived importance of self-management education, the role of the physiotherapist in this area of healthcare is highlighted. These findings also demonstrate the low reported rates of education addressing stress, emotional and psychosocial issues and explicitly seeking patient understanding by physiotherapists compared to the high perceived importance by physiotherapists. This discrepancy between perceived importance and reported practice may warrant further investigation into these educational activities. The high perception of patient characteristics as barriers also warrants further research and consideration in patient education training approaches.

Key Points

Physiotherapists frequently provide a variety of patient education activities and delivery approaches and consider a wide range of educational activities as important.

Physiotherapists report a high use of self-management education with their patients, and consider this content as important.

Physiotherapists perceive that direct patient experience and interaction with colleagues are the most important factors in their development of patient education skills.

Health professionals should consider explicitly evaluating patient learning through asking the patient to repeat or discuss content in their own words.

Training of health professionals in patient education should consider creating awareness of factors perceived as barriers and how such barriers can be managed.
References


2.3 Chapter summary and linkage

The results from this study provide a snapshot of current patient education practices and perceptions of physiotherapists in Australia. In doing so, it validates the view that physiotherapists utilise a broad range of educational content and delivery approaches, and perceive patient education as being of high importance within their practice. Potential issues in the use of patient education were identified. Less than half of all participants in this study reported frequently asking the patient to repeat or discuss content, despite this practice being recognised as an important patient education skill (Schillinger et al, 2003; Kripilani, 2008; Tamura-Lis, 2013). Furthermore, there were low reported rates of education addressing stress, emotional and psychosocial issues compared to a high perceived importance. This study also explored physiotherapists' perceptions of the impact of training experiences on their patient education skills. Most participants reported professional experience including patient care, interaction with colleagues and continuing education as having the most significant influence on their skill development, rather than their pre-professional training. Whether this indicates that physiotherapy training could be more effective at preparing professionals for patient education practice is a consideration for subsequent studies within this thesis.
CHAPTER THREE: Differences between novice and experienced physiotherapists

3.1 Introduction and linkage

Within Chapter One, the research relating to differences in patient education practices and perceptions of experienced and novice health professionals were reviewed. The wider literature suggests that experienced therapists employ a more patient-centred approach to patient care and are better able to tailor care to patients' needs (Resnik and Jensen 2003; Wainwright et al, 2011). While it may be assumed that patient education skills, behaviours and practices are enhanced as a therapist gains experience, there is a gap in knowledge about the differences in patient education practice and perceptions of novice and experienced physiotherapists. The purpose of this study is to investigate the influence of physiotherapist experience on self-reported patient education practices, perceptions of the importance of educational content and delivery, and their perceived barriers to patient education practice. Ethical approval and other relevant items are provided in Appendix 1-5.

3.2 Study 2: A comparison of patient education practices of novice and experienced physiotherapists in Australia

The following section includes the accepted manuscript for a paper published in the journal *Musculoskeletal Science and Practice*, including the text, tables and references and excluding the title page and appendices. Figure and table numbers in this chapter refer to figures and tables in this chapter unless otherwise specified.

Abstract:

Background: Patient education is an integral component of physiotherapy practice. Little is known about the differences in reported use and perception of patient education between experienced and novice physiotherapists. Understanding these differences has important implications for training approaches and physiotherapy practice.
Objectives: To compare how experienced and novice physiotherapists report frequency of patient education practices and their perceptions of the importance of these practices.

Design and Methods: A web-based purpose-designed survey was developed, piloted and administered to practicing physiotherapists through direct email. Of 305 complete responses, two subgroups were explored for comparative analysis: ‘novice’ (≤5 years’ experience, n=52); and ‘experienced’ (≥11 years’ experience, n=204).

Results: The experienced group rated 14 of 15 educational items higher than the novice group in relation to frequency of use and perceived importance. Experienced physiotherapists reported a significantly higher frequency of using one-to-one discussion, personalised handouts and explicitly seeking patient understanding (p<0.05). Novice physiotherapists perceived more barriers to patient education, particularly those related to characteristics of the patient (p<0.05).

Conclusion: Experienced physiotherapists report higher use of self-management education and education content that is patient-centred. Experienced therapists report a higher frequency of seeking explicit patient understanding to evaluate their teaching than novice physiotherapists and perceive fewer patient-related barriers to their practice. These findings are important when considering teaching and learning of patient education skills. Students or novice physiotherapists may benefit from strategies to facilitate patient-centred education, self-management education, evaluation approaches and strategies to manage barriers.

Keywords: Physiotherapy, Patient Education, Novice, Experienced, Teaching, Barriers

Background

Patient education is widely recognised as an integral component of effective patient care across healthcare settings (Hoving et al, 2010). It provides a means for health professionals to communicate salient information (Hoving et al, 2010), enhance patient self-efficacy (Schreiber and Colley, 2004; Nour et al, 2006; Ndosi et al, 2015) and self-management skills (Nunez et al, 2006; Ndosi et al, 2015) and improve clinical outcomes including pain, disability and function within physiotherapy settings (Alston and O’Sullivan, 2005; Albadejo et al, 2010; Louw et al, 2011).
Physiotherapists have been described as well-positioned to plan and provide individualised education (Davis and Chesbro, 2003). Early survey-based research reports that 99% of physiotherapists perceive patient education as an important skill within their practice and 98% report participating in individual patient education as part of their patient care (May, 1983). More recent studies exploring patient education report that physiotherapists frequently engage in patient education centred on the principles of adult learning (Bresse and French, 2012) and self-efficacy (Rindflesch, 2009). Despite this, reports suggest physiotherapists do not routinely engage in education relating to health promotion and stress reduction (Sluijs et al., 1991; Fruth et al., 1998; Rindflesch, 2009), and find it challenging to provide explanations of cause of symptoms for common patient populations (Slade et al., 2012). Further, patient education within physiotherapy has been described as being primarily clinician-centred or didactic in nature (Trede, 2000) and often not individualised to the patient (Kerssens et al., 1999).

The effective provision of patient education by a health professional is centred on skills and behaviours encompassing effective communication, patient-centredness (WHO, 1998), patient-therapist collaboration (Cooper et al., 2009), a focus on self-management (Lorig and Holman, 2003) and empowering the patient towards self-efficacy (Bodenheimer et al., 2002; Koehn & Esdaile, 2008). Studies of novice and experienced physiotherapists illustrate several distinguishing characteristics in cognition, reasoning and behaviours that are central to patient education practice (Jensen et al., 1990; Jensen et al., 1992; Jensen et al., 2000; Resnick and Jensen, 2003; Holmes, 1999; Doody and McAteer, 2003; Wainwright et al., 2011).

Experienced physiotherapists are reportedly more able to use information for decision making more rapidly (Wainwright et al., 2011), utilise more effective social interaction skills and provide more information to patients with higher levels of encouragement (Jensen et al., 1990; Jensen et al., 1992; Jensen et al., 2000; Resnick and Jensen, 2003). Experienced physiotherapists also employ a more patient-centred approach to care, promoting patient empowerment (Resnik and Jensen 2003) and tailoring treatment to the patient’s needs (Doody and McAteer 2002). Novice therapists tend to rely more on professional and personal experience within their clinical decision making (Wainwright et al., 2011) and are described as placing
more importance on their communication and psychomotor skills rather than their teaching skills (Jensen et al, 1992). Further, student therapists place less importance on discussing patient signs and symptoms within the consultation (Holmes, 1999). Gyllensten and colleagues (1999) also found that experienced physiotherapists placed higher importance on establishing a helping alliance, understanding the patients’ perception of their condition and openly sharing information with a focus on patient participation.

Identifying perceived barriers to practice is considered integral to understanding the behaviour and motivations of the clinician (Glanz et al, 2002). Chase et al (1993) surveyed practicing physiotherapists in North America regarding their perceptions of various patient educational content and barriers to practice. The respondents indicated that the most highly perceived barriers to patient education were psychological factors of the patient. Holmes (1999) used the same survey measure to compare practicing and student physiotherapists. Students consistently reported inherent characteristics of the patient, such as cognitive, emotional and physical status to be barriers to patient education, whereas practicing therapists did not (Chase et al, 1993; Holmes, 1999). The author concluded that students were likely less aware of the impact of their own behaviour and beliefs on the patient, potentially aligning their beliefs more with the medical model than a biopsychosocial approach (Holmes, 1999).

While it may be assumed that patient education skills, behaviours and practices change as a therapist gains experience, a review of the literature demonstrates a gap in our understanding about how experienced and novice physiotherapists differ in the way they perceive patient education and their use of patient education content, delivery approaches and evaluation methods in their practice. Much of the existing research is over a decade old and regardless, no studies to date have specifically addressed differences based on experience. The purpose of this study, therefore, is to investigate the influence of physiotherapist experience on the self-reported patient education practice and the perceived importance of educational content and delivery, and perceived barriers to practice.
Purpose and aims

This study seeks to compare novice and experienced physiotherapists’ reported patient education practices and perceptions according to five key areas:

1. Frequency of patient education activities
2. Perceived importance of patient education activities
3. Approaches to delivery of patient education
4. Approaches to evaluate patient education practice
5. Perceived barriers to effective patient education practice

Methodology

The survey instrument

A cross-sectional survey was formatted using the online program SurveyMonkey. The measure was developed by the research team using a framework derived from five constructs representing physiotherapy context and patient education practice through a comprehensive review of the literature. The final survey consisted of nine demographic questions and five sets of closed-ended five point likert scale questions which rated a total of 57 individual items according to frequency, perceived importance or level of agreement. Individual survey items were derived from the over-arching constructs based on a review of the literature, and a consultation process that included the research team (one current practicing physiotherapist with 10 years clinical experience and three academics with over ten years clinical and educational experience), a broad range of practicing physiotherapists and academic faculty across various areas of Physiotherapy practice. A final pilot was completed by eight physiotherapists practicing in both clinical and academic roles (age 29-52 years from musculoskeletal, neurological and cardiorespiratory areas). Feedback on content, clarity, item structure and wording was sought, and the pilot was undertaken twice to assess test-retest reliability. All individual survey items had an acceptable intra-class correlation of >0.7 (Fink, 1995). Six minor changes were made based on feedback.

Sample and recruitment

Qualified Australian physiotherapists were recruited through direct email contact to personal email addresses via the Australian Physiotherapy Association (APA)
contact search engine. This is an online, publically accessible database for APA members to provide email and mailing contacts (APA, 2015). Stratified random sampling based on Australian states generated a total of 824 email addresses on April 28, 2015. The emails sent to each participant described the study and provided a link to the survey. Participant consent was gained through selecting the consent box on the first page of the survey. Exclusion criteria were; not being a qualified physiotherapist or working in a primary context of teaching or administration. The survey was open for four weeks and a reminder email was sent after two weeks with a link to the survey. Ethical approval was obtained by the institutional human research ethics committee on March 30, 2015.

In order to compare data for experienced and novice physiotherapists, two subgroups were created. Previous research has defined ‘experienced’ healthcare practitioners in a number of ways, such as seven (Smith et al, 2010) or ten years of practice (Jensen et al, 1990; Jensen et al, 1992; King and Bithell, 1998; Rivett and Higgs, 1997; Doody and McAteer, 2002), having post-graduate training (King and Bithell, 1998; Higgs and Bithell, 2001) or a knowledge base over multiple dimensions of practice (Jensen et al, 2000). Defining a ‘novice’ healthcare practitioner is less clear with researchers using cut offs of two or four years (Smith et al, 2010). In light of these previous definitions, the novice group was defined as ≤5 years of practice and the experienced group was defined as ≥11 years of practice. These definitions yielded two subgroups large enough to optimise between-group comparisons.

**Data Analysis**

Data were transferred into a Microsoft Excel spread sheet and checked for missing responses. Only responses with >80% of data were included. Excel and SPSS version 20.0 were used for descriptive statistics. Non-parametric testing through a Mann-Whitney U test was used to compare all Likert scale responses for each item across groups (experienced and novice). Chi Square analysis was used for demographic data. Significance testing was calculated by comparing all likert scale responses between groups. Significance was set at p<0.05.
Results

A total of 311 responses were received (response rate: 38.3%). Of 305 complete data sets (>80% complete), 52 respondents identified as having ≤5 years’ of experience, and 204 respondents identified as having ≥11 years’ of experience. The remaining data sets (n=49) were excluded from the analyses.

Table 1 illustrates the demographic characteristics of the respondents from each group and contrasts this to available national data (HWA, 2012). The experienced group had a higher proportion of respondents identifying as practicing in the area of musculoskeletal (60.5%) compared to the novice group (53.8%) which was closer to the national average (53.0%). Although both groups had a higher proportion of respondents from Queensland than national statistics, both groups had a similar spread of respondents across Australian states. Between group differences based on gender, state and location were not significant at p<0.05. Groups were significantly different in age (p<0.001) as age and experience were expected to correlate.
Table 1. Participant Demographics and comparison with national data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experienced N (%)</th>
<th>Novice N (%)</th>
<th>Available national data (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>64 (31.4)</td>
<td>20 (38.5)</td>
<td>31.2</td>
</tr>
<tr>
<td>Female</td>
<td>140 (68.6)</td>
<td>32 (61.5)</td>
<td>68.8</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>0 (0.0)</td>
<td>39 (75.0)</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>28 (14.4)</td>
<td>9 (17.3)</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>75 (38.7)</td>
<td>4 (7.7)</td>
<td>Mean age = 39 years</td>
</tr>
<tr>
<td>50-59</td>
<td>70 (36.1)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>60+</td>
<td>21 (10.8)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Experience (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
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</tr>
<tr>
<td>1-2</td>
<td>0</td>
<td>16 (30.4)</td>
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</tr>
<tr>
<td>3-5</td>
<td>0</td>
<td>29 (56.5)</td>
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</tr>
<tr>
<td>6-10</td>
<td>0</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>11-20</td>
<td>69 (33.8)</td>
<td>0</td>
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</tr>
<tr>
<td>21+</td>
<td>135 (66.2)</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td><strong>English first language</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>198 (97.1)</td>
<td>49 (94.2)</td>
<td>NA</td>
</tr>
<tr>
<td>No</td>
<td>6 (2.9)</td>
<td>3 (5.8)</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Highest Physiotherapy Qualification</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry Level</td>
<td>115 (56.4)</td>
<td>48 (90.4)</td>
<td>NA</td>
</tr>
<tr>
<td>Masters (Titled Physiotherapist)</td>
<td>81 (39.7)</td>
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<td>Specialist</td>
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</tr>
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<td>1 (1.9)</td>
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<td><strong>Primary Area of Practice</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>124 (60.5)</td>
<td>29 (55.8)</td>
<td>53.0</td>
</tr>
<tr>
<td>Neurological</td>
<td>16 (7.8)</td>
<td>5 (9.6)</td>
<td>6.8</td>
</tr>
<tr>
<td>Cardiorespiratory</td>
<td>1 (0.5)</td>
<td>1 (1.9)</td>
<td>6.5</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>4 (2.0)</td>
<td>1 (1.9)</td>
<td>5.5</td>
</tr>
<tr>
<td>Women’s Health</td>
<td>15 (7.3)</td>
<td>1 (1.9)</td>
<td>2.4</td>
</tr>
<tr>
<td>Aged Care</td>
<td>16 (7.8)</td>
<td>7 (13.5)</td>
<td>13.8</td>
</tr>
<tr>
<td>Sports</td>
<td>11 (5.4)</td>
<td>4 (7.7)</td>
<td>3.4</td>
</tr>
<tr>
<td>Other</td>
<td>14 (6.8)</td>
<td>2 (3.8)</td>
<td>5.3</td>
</tr>
<tr>
<td>Not stated</td>
<td>3 (1.5)</td>
<td>1 (2.0)</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>44 (21.6)</td>
<td>8 (15.4)</td>
<td>29.2</td>
</tr>
<tr>
<td>Queensland</td>
<td>74 (36.2)</td>
<td>20 (38.4)</td>
<td>19.5</td>
</tr>
<tr>
<td>Victoria</td>
<td>33 (16.2)</td>
<td>9 (17.3)</td>
<td>25.6</td>
</tr>
<tr>
<td>Western Australia</td>
<td>24 (11.8)</td>
<td>7 (13.5)</td>
<td>12.5</td>
</tr>
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<td>Australian Capital Territory</td>
<td>9 (4.4)</td>
<td>2 (3.8)</td>
<td>2.0</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>1 (0.5)</td>
<td>0 (0.0)</td>
<td>0.7</td>
</tr>
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<td>Tasmania</td>
<td>4 (2.0)</td>
<td>2 (3.8)</td>
<td>1.8</td>
</tr>
<tr>
<td>South Australia</td>
<td>14 (6.7)</td>
<td>3 (5.8)</td>
<td>8.8</td>
</tr>
<tr>
<td>Not stated</td>
<td>1 (0.5)</td>
<td>1 (1.9)</td>
<td>NA</td>
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<tr>
<td><strong>Location</strong></td>
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<tr>
<td>Major City</td>
<td>133 (65.2)</td>
<td>34 (65.3)</td>
<td>80.3</td>
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<tr>
<td>Inner Regional</td>
<td>25 (17.2)</td>
<td>12 (23.1)</td>
<td>13.0</td>
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<tr>
<td>Outer Regional</td>
<td>26 (12.7)</td>
<td>6 (11.5)</td>
<td>5.3</td>
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<tr>
<td>Remote</td>
<td>6 (2.9)</td>
<td>0 (0.0)</td>
<td>1.2</td>
</tr>
</tbody>
</table>

* Health Workforce Australia (HWA) data (2012)
**Frequency of patient education content**

The educational content employed most frequently by both groups was “using verbal or written instructions for exercise” and “providing information about the patient’s condition or diagnosis” (Table 2), with over 90% of respondents from each group selecting “very often” or “always”. The lowest rated items by both groups were “counselling about stress, emotional or psychosocial problems” and “advice on social support”. Six items, as indicated within table 2, had a significantly higher frequency rating by the experienced group (p<0.05).

**Perceived importance of patient education content**

The experienced group had a significantly higher importance rating for three educational items (Table 3): “providing information about the patient’s condition or diagnosis”; “exploring patient’s ideas and perceptions about their condition”; and “advice or teaching problem solving strategies” (p<0.05).
Table 2. Self-reported ratings of frequency of educational content by experienced and novice physiotherapists.

<table>
<thead>
<tr>
<th>Item</th>
<th>Experienced</th>
<th>Novice</th>
<th>Difference (p value - two tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing verbal or written instruction needed to perform basic exercise program</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.07</td>
</tr>
<tr>
<td>Providing information about the patient's condition or diagnosis</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.06</td>
</tr>
<tr>
<td>Advice or teaching self-management strategies</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.02 *</td>
</tr>
<tr>
<td>Advice or teaching correct posture and movement</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>&lt;0.001 *</td>
</tr>
<tr>
<td>Asking and addressing patient's concerns</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>&lt;0.001 *</td>
</tr>
<tr>
<td>Providing information about the patient's prognosis</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>&lt;0.001 *</td>
</tr>
<tr>
<td>Advice or strategies to perform activities of daily living</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.09</td>
</tr>
<tr>
<td>Advice or teaching activity pacing</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.07</td>
</tr>
<tr>
<td>Exploring patient ideas and perceptions</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>&lt;0.001 *</td>
</tr>
<tr>
<td>General health promotion</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.06</td>
</tr>
<tr>
<td>Advice or teaching problem-solving strategies</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.04 *</td>
</tr>
<tr>
<td>Explaining pain neurophysiology/mind-body description of pain</td>
<td>Experienced 1 (0.5)</td>
<td>23 (11.4)</td>
<td>0.34</td>
</tr>
<tr>
<td>Advice on use of assistive devices or equipment</td>
<td>Experienced 0 (0)</td>
<td>0 (0)</td>
<td>0.05</td>
</tr>
<tr>
<td>Counselling about stress, emotional or psychosocial problems</td>
<td>Experienced 4 (2.0)</td>
<td>39 (19.4)</td>
<td>0.07</td>
</tr>
<tr>
<td>Advice on social support</td>
<td>Experienced 8 (4.0)</td>
<td>42 (21.1)</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*significant difference (p<0.05)
Table 3. Self-reported ratings of importance of educational content by experienced and novice physiotherapists

<table>
<thead>
<tr>
<th>Item</th>
<th>Not Important N (%)</th>
<th>Slightly Important N (%)</th>
<th>Moderately Important N (%)</th>
<th>Important N (%)</th>
<th>Very Important N (%)</th>
<th>Difference (p value - two tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing verbal or written instruction needed to perform basic exercise program</td>
<td>Experienced 0 (0.0) 0 (0.0) 5 (2.6) 49 (25.8) 136 (71.6)</td>
<td>Novice 0 (0.0) 0 (0.0) 3 (5.9) 15 (29.4) 33 (64.7)</td>
<td></td>
<td></td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>Providing information about the patient’s condition or diagnosis</td>
<td>Experienced 0 (0.0) 0 (0.0) 10 (5.0) 48 (23.9) 143 (71.1)</td>
<td>Novice 0 (0.0) 0 (0.0) 8 (15.4) 20 (38.5) 24 (46.2)</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Advice or teaching self-management strategies</td>
<td>Experienced 0 (0.0) 1 (0.5) 3 (1.5) 71 (36.0) 122 (61.9)</td>
<td>Novice 0 (0.0) 0 (0.0) 3 (5.9) 19 (37.3) 29 (56.9)</td>
<td></td>
<td></td>
<td></td>
<td>0.41</td>
</tr>
<tr>
<td>Advice or teaching correct posture and movement</td>
<td>Experienced 0 (0.0) 3 (1.5) 8 (4.1) 69 (35.2) 116 (59.2)</td>
<td>Novice 0 (0.0) 0 (0.0) 5 (9.8) 16 (31.4) 30 (58.8)</td>
<td></td>
<td></td>
<td></td>
<td>0.81</td>
</tr>
<tr>
<td>Asking and addressing patient’s concerns</td>
<td>Experienced 0 (0.0) 0 (0.0) 12 (6.0) 50 (24.9) 138 (68.7)</td>
<td>Novice 0 (0.0) 1 (2.0) 4 (7.8) 18 (35.3) 28 (54.9)</td>
<td></td>
<td></td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>Providing information about the patient’s prognosis</td>
<td>Experienced 0 (0.0) 8 (4.0) 22 (10.9) 86 (42.8) 85 (42.3)</td>
<td>Novice 0 (0.0) 3 (5.9) 12 (23.5) 19 (37.3) 17 (33.3)</td>
<td></td>
<td></td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>Advice or strategies to perform activities of daily living</td>
<td>Experienced 0 (0.0) 1 (0.5) 25 (13.0) 83 (43.0) 84 (43.5)</td>
<td>Novice 0 (0.0) 5 (9.8) 10 (19.6) 17 (33.3) 19 (37.3)</td>
<td></td>
<td></td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>Advice or teaching activity pacing</td>
<td>Experienced 0 (0.0) 6 (3.0) 37 (18.7) 85 (42.9) 70 (35.4)</td>
<td>Novice 0 (0.0) 5 (9.8) 10 (19.6) 24 (47.1) 12 (23.5)</td>
<td></td>
<td></td>
<td></td>
<td>0.07</td>
</tr>
<tr>
<td>Exploring patient ideas and perceptions</td>
<td>Experienced 0 (0.0) 2 (1.0) 17 (8.5) 86 (42.8) 96 (47.8)</td>
<td>Novice 0 (0.0) 5 (9.6) 8 (15.4) 26 (50.0) 13 (25.0)</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>General health promotion</td>
<td>Experienced 1 (0.5) 9 (4.5) 55 (27.6) 73 (36.7) 61 (30.7)</td>
<td>Novice 0 (0.0) 8 (15.7) 12 (23.5) 19 (37.3) 12 (23.5)</td>
<td></td>
<td></td>
<td></td>
<td>0.15</td>
</tr>
<tr>
<td>Advice or teaching problem-solving strategies</td>
<td>Experienced 1 (0.5) 6 (3.0) 37 (18.4) 80 (39.8) 77 (38.3)</td>
<td>Novice 5 (9.8) 9 (17.6) 10 (19.6) 18 (35.3) 9 (17.6)</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Explaining pain neurophysiology/mind-body description of pain</td>
<td>Experienced 5 (2.5) 15 (7.5) 50 (24.9) 88 (43.8) 43 (21.4)</td>
<td>Novice 0 (0.0) 4 (7.8) 13 (25.5) 25 (49.0) 9 (17.6)</td>
<td></td>
<td></td>
<td></td>
<td>0.95</td>
</tr>
<tr>
<td>Advice on use of assistive devices or equipment</td>
<td>Experienced 1 (0.5) 8 (4.1) 42 (21.8) 86 (44.6) 56 (29.0)</td>
<td>Novice 0 (0.0) 7 (13.7) 8 (15.7) 19 (37.3) 17 (33.3)</td>
<td></td>
<td></td>
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<td>0.89</td>
</tr>
<tr>
<td>Counselling about stress, emotional or psychosocial problems</td>
<td>Experienced 1 (0.5) 21 (10.9) 59 (30.6) 75 (38.9) 37 (19.2)</td>
<td>Novice 0 (0.0) 9 (17.6) 13 (25.5) 20 (39.2) 9 (17.6)</td>
<td></td>
<td></td>
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<td>0.63</td>
</tr>
<tr>
<td>Advice on social support</td>
<td>Experienced 1 (0.5) 23 (11.8) 70 (35.9) 74 (37.9) 27 (52.9)</td>
<td>Novice 0 (0.0) 12 (23.5) 16 (31.4) 17 (33.3) 6 (11.8)</td>
<td></td>
<td></td>
<td></td>
<td>0.19</td>
</tr>
</tbody>
</table>

*significant difference (p<0.05)
**Frequency of patient education delivery approaches and evaluation methods**

Frequency ratings for both groups in relation to their approaches to delivering patient education are outlined in Table 4. “One-to-one discussion” and “physical demonstration” were the methods rated the most frequent by both groups. The experienced group had a significantly higher self-reported frequency of using “one-to-one discussion” and “personalised handouts” than the novice group (p<0.05).

**Frequency of patient education evaluation methods**

As outlined in Table 4, asking the patient to demonstrate was the highest rated approach to evaluating patient education for both groups, with over 94% of respondents selecting “very often” or “always” in relation to its use. Experienced physiotherapists reported that they more frequently asked the patient to repeat or discuss content in their own words to confirm understanding (p<0.05).
Table 4. Self-reported frequency of educational delivery approaches and evaluation approaches by experienced and novice physiotherapists

<table>
<thead>
<tr>
<th>Education Delivery Approach</th>
<th>Never N (%)</th>
<th>Rarely N (%)</th>
<th>Sometimes N (%)</th>
<th>Very Often N (%)</th>
<th>Always N (%)</th>
<th>Difference (p value - two tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-to-one discussion</td>
<td>Experienced 0 (0.0)</td>
<td>0 (0.0)</td>
<td>4 (2.0)</td>
<td>61 (30.3)</td>
<td>136 (67.7)</td>
<td>0.02*</td>
</tr>
<tr>
<td></td>
<td>Novice      0 (0.0)</td>
<td>0 (0.0)</td>
<td>2 (3.8)</td>
<td>27 (51.9)</td>
<td>23 (44.2)</td>
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</tr>
<tr>
<td>Physical demonstration</td>
<td>Experienced 0 (0.0)</td>
<td>0 (0.0)</td>
<td>7 (3.5)</td>
<td>76 (37.8)</td>
<td>118 (58.7)</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>Novice      0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>29 (55.8)</td>
<td>23 (44.2)</td>
<td></td>
</tr>
<tr>
<td>Anatomy models or pictures</td>
<td>Experienced 1 (0.5)</td>
<td>11 (5.5)</td>
<td>44 (21.9)</td>
<td>100 (49.8)</td>
<td>45 (22.4)</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>Novice      0 (0.0)</td>
<td>3 (6.0)</td>
<td>12 (24.0)</td>
<td>32 (64.0)</td>
<td>3 (6.0)</td>
<td></td>
</tr>
<tr>
<td>Personalised handouts</td>
<td>Experienced 1 (0.5)</td>
<td>11 (5.5)</td>
<td>32 (15.8)</td>
<td>92 (45.5)</td>
<td>66 (32.7)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Novice      0 (0.0)</td>
<td>4 (7.7)</td>
<td>21 (40.4)</td>
<td>23 (44.2)</td>
<td>4 (7.7)</td>
<td></td>
</tr>
<tr>
<td>Photography or video</td>
<td>Experienced 27 (13.4)</td>
<td>45 (22.4)</td>
<td>64 (31.8)</td>
<td>60 (30.0)</td>
<td>5 (2.5)</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>Novice      8 (15.7)</td>
<td>12 (23.5)</td>
<td>20 (39.2)</td>
<td>9 (17.6)</td>
<td>2 (3.9)</td>
<td></td>
</tr>
<tr>
<td>Generic handouts/pamphlets</td>
<td>Experienced 8 (4.0)</td>
<td>53 (26.5)</td>
<td>72 (36.0)</td>
<td>49 (24.5)</td>
<td>18 (9.0)</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Novice      3 (6.0)</td>
<td>10 (20.0)</td>
<td>25 (50.0)</td>
<td>11 (22.0)</td>
<td>1 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Links to websites or other online content</td>
<td>Experienced 18 (9.0)</td>
<td>65 (32.3)</td>
<td>89 (44.3)</td>
<td>27 (13.4)</td>
<td>2 (1.0)</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>Novice      6 (11.8)</td>
<td>26 (51.0)</td>
<td>10 (19.6)</td>
<td>9 (17.6)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Formal group education activities</td>
<td>Experienced 75 (37.3)</td>
<td>65 (32.3)</td>
<td>35 (17.4)</td>
<td>22 (10.9)</td>
<td>4 (2.0)</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Novice      20 (40.0)</td>
<td>21 (42.0)</td>
<td>7 (14.0)</td>
<td>1 (2.0)</td>
<td>1 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Use of Physiotherapy Assistant</td>
<td>Experienced 154 (76.6)</td>
<td>16 (8.0)</td>
<td>23 (11.4)</td>
<td>7 (3.5)</td>
<td>1 (0.5)</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>Novice      36 (70.6)</td>
<td>8 (15.7)</td>
<td>4 (7.8)</td>
<td>3 (5.9)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Evaluation of Education Approach</td>
<td>Never N (%)</td>
<td>Rarely N (%)</td>
<td>Sometimes N (%)</td>
<td>Very Often N (%)</td>
<td>Always N (%)</td>
<td>Difference (p value - two tailed)</td>
</tr>
<tr>
<td>Ask the patient to demonstrate</td>
<td>Experienced 1 (0.5)</td>
<td>1 (0.5)</td>
<td>4 (2.0)</td>
<td>90 (44.8)</td>
<td>105 (52.2)</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Novice      0 (0.0)</td>
<td>1 (1.9)</td>
<td>2 (3.8)</td>
<td>24 (46.2)</td>
<td>25 (48.1)</td>
<td></td>
</tr>
<tr>
<td>Interpret signals from the patient</td>
<td>Experienced 1 (0.5)</td>
<td>3 (1.5)</td>
<td>24 (11.9)</td>
<td>105 (52.2)</td>
<td>68 (33.8)</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td>Novice      1 (2.0)</td>
<td>2 (3.9)</td>
<td>7 (13.7)</td>
<td>23 (45.1)</td>
<td>18 (35.3)</td>
<td></td>
</tr>
<tr>
<td>Objective measures or standards</td>
<td>Experienced 1 (0.5)</td>
<td>3 (1.5)</td>
<td>37 (18.4)</td>
<td>79 (39.3)</td>
<td>81 (40.3)</td>
<td>0.58</td>
</tr>
<tr>
<td></td>
<td>Novice      0 (0.0)</td>
<td>10 (18.4)</td>
<td>24 (40.3)</td>
<td>17 (31.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant difference.
<table>
<thead>
<tr>
<th></th>
<th>Experienced</th>
<th>Novice</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask patient to repeat or discuss content in own words</td>
<td>4 (2.0) 72 (35.8) 76 (37.8) 28 (13.9) &lt;0.001*</td>
<td>8 (15.7) 7 (13.7) 20 (39.2) 11 (21.6) 5 (9.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask family members or care-givers</td>
<td>18 (9.0) 44 (22.1) 78 (39.2) 51 (25.6) 8 (4.0) 0.47</td>
<td>4 (7.8) 12 (23.5) 16 (31.4) 15 (29.4) 4 (7.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyse patient tasks through video</td>
<td>85 (42.3) 53 (26.4) 39 (19.4) 20 (10.0) 4 (2.0) 0.55</td>
<td>19 (37.2) 14 (27.5) 12 (23.5) 5 (9.8) 1 (2.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* significant difference (p<0.05)

**Barriers to patient education**

Table 5 outlines participants’ self-reported agreement with barriers to the use of effective patient education. The novice group had a significantly higher rating of agreement than the experienced group relating to the cognitive status of the patient and the patient assuming a passive role (p<0.05) being barriers to effective education.
Table 5. Self-reported agreement of barriers to effective patient education by experienced and novice physiotherapists

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Strongly Disagree N (%)</th>
<th>Disagree N (%)</th>
<th>Neutral N (%)</th>
<th>Agree N (%)</th>
<th>Strongly Agree N (%)</th>
<th>Difference (p value - two tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive status of patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>2 (1.0)</td>
<td>9 (4.5)</td>
<td>4 (2.0)</td>
<td>102 (51.0)</td>
<td>83 (41.5)</td>
<td>0.03*</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1 (2.0)</td>
<td>17 (34.0)</td>
<td>32 (64.0)</td>
<td></td>
</tr>
<tr>
<td>Lack of trust or rapport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>1 (0.5)</td>
<td>9 (4.6)</td>
<td>10 (5.1)</td>
<td>86 (43.7)</td>
<td>91 (46.2)</td>
<td>0.57</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>1 (2.0)</td>
<td>2 (4.1)</td>
<td>22 (44.9)</td>
<td>24 (49.0)</td>
<td></td>
</tr>
<tr>
<td>Emotional status of patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>2 (1.0)</td>
<td>16 (8.0)</td>
<td>9 (4.5)</td>
<td>116 (58.0)</td>
<td>57 (28.5)</td>
<td>0.21</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>1 (2.0)</td>
<td>5 (10.0)</td>
<td>25 (50.0)</td>
<td>19 (38.0)</td>
<td></td>
</tr>
<tr>
<td>Attitude of patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>1 (0.5)</td>
<td>10 (49.6)</td>
<td>15 (7.5)</td>
<td>109 (54.2)</td>
<td>66 (32.8)</td>
<td>0.07</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>2 (4.0)</td>
<td>6 (12.0)</td>
<td>17 (34.0)</td>
<td>25 (50.0)</td>
<td></td>
</tr>
<tr>
<td>Patient not understanding English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>2 (1.0)</td>
<td>21 (10.7)</td>
<td>16 (8.2)</td>
<td>100 (50.0)</td>
<td>57 (29.1)</td>
<td>0.40</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>2 (4.0)</td>
<td>4 (8.0)</td>
<td>29 (58.0)</td>
<td>15 (30.0)</td>
<td></td>
</tr>
<tr>
<td>Patient assuming a passive role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>2 (1.0)</td>
<td>26 (13.2)</td>
<td>16 (8.1)</td>
<td>93 (47.2)</td>
<td>60 (30.5)</td>
<td>0.04*</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>1 (2.0)</td>
<td>3 (6.0)</td>
<td>22 (44.0)</td>
<td>24 (48.0)</td>
<td></td>
</tr>
<tr>
<td>My lack of knowledge on topic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>8 (4.1)</td>
<td>27 (13.8)</td>
<td>16 (8.2)</td>
<td>96 (47.2)</td>
<td>49 (25.0)</td>
<td>0.78</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>6 (2.0)</td>
<td>6 (11.8)</td>
<td>27 (52.9)</td>
<td>12 (23.5)</td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>11 (5.6)</td>
<td>44 (22.3)</td>
<td>16 (8.1)</td>
<td>90 (45.7)</td>
<td>36 (18.3)</td>
<td>0.69</td>
</tr>
<tr>
<td>Novice</td>
<td>0 (0.0)</td>
<td>12 (24.0)</td>
<td>8 (16.0)</td>
<td>24 (48.0)</td>
<td>6 (12.0)</td>
<td></td>
</tr>
<tr>
<td>Literacy of patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>4 (2.0)</td>
<td>62 (31.5)</td>
<td>18 (9.1)</td>
<td>82 (41.6)</td>
<td>31 (15.7)</td>
<td>0.67</td>
</tr>
<tr>
<td>Novice</td>
<td>2 (3.9)</td>
<td>10 (19.6)</td>
<td>5 (9.8)</td>
<td>30 (58.8)</td>
<td>4 (7.8)</td>
<td></td>
</tr>
<tr>
<td>Lack of family participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>9 (4.6)</td>
<td>66 (33.7)</td>
<td>43 (21.9)</td>
<td>57 (29.1)</td>
<td>21 (10.7)</td>
<td>0.92</td>
</tr>
<tr>
<td>Novice</td>
<td>1 (2.0)</td>
<td>15 (30.6)</td>
<td>14 (28.6)</td>
<td>17 (34.7)</td>
<td>2 (4.1)</td>
<td></td>
</tr>
<tr>
<td>Lack of privacy in clinic environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced</td>
<td>24 (12.2)</td>
<td>68 (34.7)</td>
<td>29 (14.8)</td>
<td>52 (26.5)</td>
<td>23 (11.7)</td>
<td>0.64</td>
</tr>
<tr>
<td>Novice</td>
<td>6 (12.0)</td>
<td>17 (34.0)</td>
<td>11 (22.0)</td>
<td>13 (26.0)</td>
<td>3 (6.0)</td>
<td></td>
</tr>
</tbody>
</table>

*significant difference (p<0.05)
Discussion

This is the first study to explore and contrast novice and experienced physiotherapists regarding patient education practices and perceived importance of educational content and barriers to patient education practice. The results of this study demonstrate that experienced physiotherapists report more frequent use of approaches to address patient concerns, teach correct posture or movement, teach self-management strategies, explore patient perceptions and teach problem-solving strategies. In addition, experienced physiotherapists rated providing information about the patient’s condition or diagnosis, exploring patient’s ideas and perceptions, and advice on problem solving strategies as more important than their novice peers (p<0.05). Consistent with early research by Jensen and colleagues (1992), these findings may suggest that experienced physiotherapists place more emphasis on patient teaching within their wider practice.

The results demonstrated a significantly higher frequency of self-management education, and significantly higher frequency of discussing problem solving strategies by experienced physiotherapists. This indicates that experienced physiotherapists may be more focused on empowering the patient toward self-management and may be better able to recognise the importance of self-management skills within patient care and health outcomes (Gold and McClung, 2006; Hoeger-Bement et al, 2014; Richardson et al, 2014) compared to their novice peers. This is consistent with previous qualitative reports in which experienced physiotherapists were identified as actively empowering the patient toward self-management and promoting patient self-efficacy (Rindflesch, 2009). Further research into specific self-management educational approaches in these settings may be warranted considering the range of activities that may be employed and their impact on patient outcomes (Richardson et al, 2014).

The findings from this study suggest that experienced physiotherapists more frequently explore patient’s ideas and perceptions and address patient concerns, educational activities which are highlighted as integral to patient-centred education within patient education literature (Klaber Moffett et al, 2002; Barron et al, 2007; Levinson, 2010; Ndosi and Adebajo, 2015). Similarly, a recent qualitative study exploring novice and expert cardiology health professionals in the area of patient
education suggests that experienced educators possess a stronger ability to tailor education to the patient’s needs and the context of their situation (Svavarsdottir et al, 2015). Such a patient-centred approach to education takes into account the patient’s desire for information and considers education from the perspective of the patient (Little et al, 2001; Sanders et al, 2013). This is particularly important considering that determining and addressing patients’ needs for their care may not only influence their health-related behaviour, but may also contribute to a more favourable patient experience (Holm, 2005; Hills and Kitchen 2007; Ndosi and Adebajo, 2015).

The significantly higher reported frequency of one-to-one discussion as well as personalised handouts by experienced physiotherapists compared to the novice therapist may suggest that experienced physiotherapists place more emphasis on personalised approaches to education delivery. This may also indicate that experienced physiotherapists more frequently accompany or reinforce their verbal content with written information, an approach advocated within patient education literature to enhance patient understanding, recall and adherence (Gannon and Hildebrandt, 2002; Freda, 2004; Cutilli, 2006; Gold and McClung, 2006; Friedman et al, 2011). Similarly, seeking patient understanding of educational content through asking the patient to repeat information (i.e. ‘teach back method’) is recommended to address potential literacy issues, ensure understanding of self-management and promote recall (Schillinger et al, 2002; Freda, 2004; Coleman and Newton, 2005). Our findings demonstrated that experienced physiotherapists are explicitly seeking understanding of verbal content more frequently and are therefore less likely to be making assumptions regarding patient understanding than their novice peers.

This study is the first to investigate and compare the perspectives of novice and experienced practicing physiotherapists in relation to patient education barriers. Understanding the barriers and facilitators to patient education practice is an important consideration when assessing the advantages and costs of a planned action (Locke and Latham, 2002; Glanz et al, 2008) such as a physiotherapy intervention. The results demonstrate that novice therapists perceived factors relating to the patient as more of a barrier to effective education, with the patient’s cognitive status and the patient assuming a passive role rated significantly higher.
This suggests that novice therapists may view the patient’s presentation as more of a determinant to the success of their patient education than the experienced therapist who may have better skills or insight to cope with potential barriers. This is supported by research demonstrating that experienced physiotherapists (Jensen et al, 1992; Shepard et al, 1999) and other experienced health professionals (Svavarsdottir et al, 2015) are better able to control the clinical setting and minimise distractions to focus on the patient and their teaching skills. Another potential explanation for these findings is that novice physiotherapists may be more aligned with a medical model of practice as they place fewer onuses on factors within their control, including their attitude, beliefs, knowledge and environment (Holmes, 1999). Our findings support this argument as experienced physiotherapists rated contextual or more controllable barriers including lack of time, lack of privacy and lack of participation by family members as higher barriers than the novice group, although these findings were not significant. Lastly, it should be recognised that both groups rated 'lack of trust or rapport between the therapist and patient' as one of the strongest barriers. This suggests that both novice and experienced therapists recognise the importance of the therapeutic relationship in the success of patient education and its outcomes (Roter, 2000; Barr and Threlkeld, 2000; Lagger et al, 2010). Further research is needed to understand how such barriers impact on patient education activities and the skills or strategies used by physiotherapists to minimise the influence of these barriers.

Limitations

It is recognised that the self-report methodology used in this study may not accurately reflect actual clinical practice (Boynton and Greenhalgh, 2004). To contain the scope of our study, we did not seek responses from patients, families, educators or administrators. The self-reported nature of the study may have led to social-desirability bias, however this risk was minimised by ensuring anonymity of the responses. Physiotherapists who responded to the invitation to complete this survey may be those with particular interest or strong opinion in the area of patient education, whereas those who do not use patient education may have been less likely to participate.
As we defined our groups by years of clinical experience, it cannot be assumed that these findings constitute ‘expertise’ as other variables not used in the selection of groups may also contribute. The experienced group had a higher proportion of respondents with post-graduate qualifications within their area and this additional training may have been a contributing factor in reported practice patterns and perceptions.

**Implications**

This study provides a first and crucial step in understanding the practice and perception of physiotherapists regarding patient education. Considering the critical role of self-management education to both patient satisfaction and health outcomes in physiotherapy (Hoeger-Bement et al, 2014; Richardson et al, 2014) and the link between patient-centred care and patient outcomes (Mead and Bower, 2000; Smith et al, 2007; Levinson et al, 2010), the lower self-reported use of several important educational content areas by novice therapists may have negative implications for patient care.

Results of this study may have implications for existing curricula, specifically the inclusion of programs related to patient education training in physiotherapy education. The feasibility of integrating specific patient education skills into existing courses such as communication skills training or through stand-alone approaches should be explored. Training should focus on addressing patient concerns, self-management education and how to evaluate patient learning in addition to identifying and managing barriers to patient learning. This is critical as the attitude and perceptions displayed by students may be a major barrier to the patient-therapist interaction and subsequent patient outcomes. The need for training of health professionals to provide high quality patient education has been strongly identified within the literature (Kaariainen & Kyngas, 2010). Expert health professional patient educators cite peer support networks, observation of others, inter-professional cooperation, mentoring and more contact and discussion with other professionals in the area of patient education as key to developing expertise (Svavarsdottir et al, 2015). Although this highlights the range of educational and professional training opportunities, research is needed to determine the extent to which such approaches enhance patient education skills of students and professionals. This is particularly
important considering that novice patient educators have been observed to avoid providing patient education due to fear of receiving unpredictable questions or insecurity in a new situation (Svavarsdottir et al, 2015). Future research should therefore also focus on determining factors and contributors to the differences between novice and experienced therapists and what can be done to close this gap, or to accelerate the acquisition of experience, self-efficacy and skill in this area. In addition, a focus on the impact of training initiatives on novice or student physiotherapists’ skills and self-efficacy in this area could enhance understanding and inform curricular aimed to improve practice in this area and ultimately patient care and outcomes.
References


3.3 Chapter summary and linkage

The results of this study identify several key differences between novice and experienced physiotherapists’ practices and perceptions related to patient education. Several key issues relating to patient education practice are identified. Novice physiotherapists had significantly lower self-reported use of self-management education and educational content that are consistent with patient-centred practice, or patient education best practice. Novice physiotherapists also had a significantly lower self-reported use of explicitly evaluating their use of patient education and had a higher perception of patient-related factors as being barriers to effective patient education. These findings reinforce existing literature which suggests that patient education training should aim to address key issues relating to health professional practice. These include strategies to facilitate patient-centred education, self-management education, evaluation approaches and strategies to manage perceived barriers. Further consideration of physiotherapy training and practice in the area of patient education and knowledge of the competencies required to be an effective educator is needed, as outlined in Chapter One.

Despite patient education being a requirement for practice competence within national practice thresholds (Physiotherapy Board of Australia, 2015), there is a lack of knowledge of the competencies required for effective patient education. Chapter Three presents the research undertaken to understand the physiotherapy competencies in this area of practice.
CHAPTER FOUR: Competencies for effective patient education practice in physiotherapy

4.1 Introduction and linkage

As reviewed in Chapter One, the competencies that are required for patient education in physiotherapy practice are currently unknown. Determining these competencies is essential for informing the purposeful design of assessment and outcome measures, benchmarking curricula and developing professional practice standards. It has been suggested that without knowledge of specific competencies for practice, the education of physiotherapy students remains ‘haphazard’ (Panzarella & Manyon, 2008). Understanding competencies in relation to healthcare interventions, including patient education, is also important to reinforce core knowledge and skills, and determine future learning and practice needs (Gruppen et al, 2012). With reference to the overall aims of the thesis, undertaking this study was also essential to establish outcome measures to assess patient education self-efficacy and performance, as well as to design and implement an effective training intervention. As this has not been explored within physiotherapy or for other healthcare professionals, a Delphi study design was selected.

The following section includes the accepted manuscript of the study entitled “Identification of competencies for patient education in physiotherapy using a Delphi approach”. Ethical approval and other relevant items are provided in Appendix 6-10.
4.2 Study 3: Identification of competencies for patient education in physical therapy using a modified Delphi approach.

The following section includes the accepted manuscript for a paper published in the journal *Physiotherapy*, including the text, tables and references and excluding the title page and appendices. Figure and table numbers in this chapter refer to figures and tables in this chapter unless otherwise specified.

Abstract:

**Objectives:** Patient education is a critical part of physiotherapy practice however an empirically derived set of competencies for its use does not exist. This study aimed to generate a set of competencies for patient education in physiotherapy using a consensus approach.

**Design and Participants:** A Delphi study with two rounds using a panel of expert physiotherapists within Australia was undertaken. In the first round, the panel of 12 specialist physiotherapists identified competencies required for patient education in the physiotherapy setting. Framework analysis was applied to develop a set of competencies that were assessed in the second round where ≥80% agreement of importance from the panel indicated consensus.

**Results:** Response rates of specialist physiotherapists agreeing to participate were 67% for the first round and 100% for the second round. Analysis following the first round produced 25 competencies. The second round resulted in agreement on a final set of 22 competencies.

**Conclusions:** This study developed a concise list of competencies for patient education with a high level of expert agreement. By identifying the key competencies in this area, there is potential to benchmark patient education training and assessment of physiotherapists for improved educational and professional outcomes.

Keywords: Physiotherapy, Patient Education, Physical Therapy, Physiotherapy Education
Introduction

Patient education is 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). With reference to physiotherapy, Jason emphasizes that effective treatment and prevention require that patients gain “understanding, skills and commitment” (Jason, 1997, p. 178).

Patient education provides a means for health professionals to communicate salient information (Hoving et al, 2010), enhance patient self-efficacy and self-management skills (Nunez et al, 2006; Ndosi et al, 2015). It is widely accepted as an integral component of effective patient care (Cooper et al, 2008) and an inherent part of practice (Davis & Chesbro, 2003) where specific approaches have demonstrated positive outcomes in relation to pain, disability and function within physiotherapy (Albaladejo et al, 2010; Louw et al, 2011).

Patient education has historically centered on a mechanistic model of communication with the premise of the patient as a passive receiver (Lee & Garvin, 2003). This out-dated perspective assumes clinician ownership of the educational process, leaving little room for the patient to contribute. Within the last two decades, healthcare literature has strongly supported a patient-centered approach to education (Pinto et al, 2012), where the patient has a central role in knowledge sharing (Jason, 1997; Coulter & Ellins, 2007). This has largely been driven by research that highlights the limited effects of traditional patient educational interventions, and thus advocate the provision of a patient-centered approach (Coulter & Ellins, 2007; Bode et al, 2008). A patient-centered approach to education includes using focused teaching strategies to meet patients' educational needs and preferences which have been shown to have positive effects on patient motivation, retention of information, health outcomes and treatment adherence (Hyrkas et al, 2014).

There are concerns relating to how patient education is provided within physiotherapy settings. Early reports suggest that patient education is primarily therapist-centered in nature (Trede, 2000) and often not individualized to the patient (Kerssens et al, 1999). Authors suggest that the potential for an absence of a patient-
centered approach may result in a lack of attention to patient needs and contribute to the development of barriers that impact on patient education outcomes and care (Saha et al, 2008). These issues are further highlighted in the reported practice of novice physiotherapists (Jensen et al, 1990; Gyllensten et al, 1999; Jensen et al, 2000) who place less importance on patient education than other clinical skills (Jensen et al, 1990) and often fail to engage in educational approaches that promote patient responsibility (Gyllensten et al, 1999). Similarly, compared to experienced physiotherapists, student therapists place less importance on the use of educational activities that are considered patient-centered and report less ability to adjust their educational skills to the needs of the individual (Holmes, 1999). The need to address these issues and prepare students as patient-centered providers is consistently highlighted within the literature (Levinson et al, 2010; Sanders et al, 2013).

Improving the education of physiotherapy students and focusing training towards the needs of the profession requires knowledge of specific professional competencies (Physiotherapy Board of Australia, 2015). Competence is a generic term referring to a person’s overall capacity, while competency refers to specific capabilities. Thus, one can refer to how competent an individual is overall or their level of competency in one specific area (Ilic, 2009). Competencies integrate multiple components such as knowledge, skills and attitudes with more context or profession specific attributes such as clinical reasoning, inter-professional communication, problem solving and evidence based practice (Ilic, 2009). Competencies have the potential to provide a framework and standard that can be applied to specific teaching approaches throughout training curriculum, professional practice and assessment (Hoeger-Bement et al, 2014). They also provide credibility and accountability for a profession by providing professionals, students, educators, assessors and consumers with defined standards of practice (Gruppen et al, 2012) and underpin professional occupation descriptions, specific work tasks and performance criteria (Gruppen et al, 2012).

National accreditation requirements and graduate standards of entry level, doctoral, and advanced practice within the USA (American Physical Therapy Association, 2011), United Kingdom (Chartered Society of Physiotherapists, 2013), Australia and New Zealand (PBA, 2015) include patient education as a broad competency for pre-
professional and professional programs and graduates. Despite the inclusion of patient education practice, specific empirically derived competencies required for professional practice is beyond the scope of such broad professional guidelines.

Previous research has contributed to understanding the educational content activities used by physiotherapists within clinical settings (Sluijs, 1991). Such ‘checklists’ are over two decades old and have been formed through observations of activities that therapists use in specific settings rather than through seeking consensus on competencies that physiotherapists should possess or acquire. The establishment of specific competencies in the area of patient education would serve several purposes: advancing physiotherapy professional preparation; providing standards for assessment; providing a foundation for curricula in the area of patient education skills training; and stimulating further research in this area. The development of a key set of competencies would align student and educator expectations for the performance, teaching and evaluation of this construct (Hoeger-Bement et al, 2014). Given the wide use of patient education across primary healthcare settings, these competencies may also be adapted to other health professions.

We sought to develop a competency list for physiotherapists in the area of patient education using a Delphi consensus approach. The specific research question was: What do a panel of experts in physiotherapy clinical practice perceive as competencies required in the area of patient education?

**Methods**

*Research design*

Consensus methods, including Delphi, are useful in synthesizing information about a specific issue. The Delphi method uses sequential ‘rounds’, interspersed by controlled feedback that seeks to gain consensus of opinion of a group of identified experts (Hsu & Sandford, 2007). It is an approach that is useful for situations where individual judgements need to be considered in order to address an incomplete state of knowledge (Keeney et al, 2011). The Delphi method is used widely and successfully to identify and clarify roles and practice competencies in both healthcare and education (Keeney et al, 2011). Within the Australian healthcare
setting, physiotherapists are autonomous, first contact practitioners who operate within a vast spectrum of public and private health services and are dispersed over a wide geographic area (Health Workforce Australia, 2014). This approach allows for participation from diverse groups while avoiding potentially destructive group dynamics (Keeney et al, 2011).

Panel selection and composition

For consensus studies of a clinical nature, Jones and Hunter (1995) advocate that it is appropriate to draw on specialists in the area. We defined an ‘expert’ as a specialist physiotherapists conferred through the Australian Physiotherapy Association (APA). This specialization recognizes therapists with advanced and specialized knowledge and clinical skills in a sub-discipline of physiotherapy. The award is conferred to members who have undertaken a rigorous selection and clinical examination process, have contributed to the professional education of colleagues and are involved in research activities (APA, 2015). By the wider community, specialist physiotherapists would be deemed as a relatively homogenous group and are also considered to be ‘experts’ in the area of physiotherapy. Following ethical approval, the APA public database was queried for a purposive sample of 18 specialist physiotherapists distributed across all Australian states and core physiotherapy practice areas. Representation based on Australian states and practice areas were sought, however the database revealed that there were no specialist physiotherapists within two states (Northern Territory and Tasmania) and no specialists within the practice areas of cardiorespiratory, pediatrics or aged care. Eighteen prospective participants who met the inclusion criteria for the expert panel were sent an introductory invitation to participate in the study from the lead researcher via email. Potential participants were advised that their responses would be viewed only by the lead researcher but assured of anonymity and the confidentiality of their de-identified responses. Of the 18 invited to participate, twelve specialist physiotherapists provided informed consent to participate, a response rate of 67%. The majority of participants were male (8/12, 67%) and most participants were based in metropolitan areas (11/12, 92%) with one participant from an inner regional location (1/12, 8%). The majority (9/12, 75%) identified as working in a ‘musculoskeletal’ setting. The remaining three participants identified as working in the area of neurological physiotherapy (1/12, 8%), women’s
health (1/12, 8%) and occupational health (1/12, 8%). The largest group by state were those from Queensland (4/12, 33%). Further demographic data are outlined in Table 1.

Table 1. Demographic characteristics of the Delphi panel

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8 (67%)</td>
</tr>
<tr>
<td>Female</td>
<td>4 (33%)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>30-39</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>40-49</td>
<td>5 (42%)</td>
</tr>
<tr>
<td>50-59</td>
<td>5 (42%)</td>
</tr>
<tr>
<td>60+</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>Experience (years)</td>
<td></td>
</tr>
<tr>
<td>11-15</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>16-20</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>21+</td>
<td>10 (83%)</td>
</tr>
<tr>
<td>Primary Scope of Practice</td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>9 (75%)</td>
</tr>
<tr>
<td>Neurological</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>Women’s Health</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>Occupational health</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>State</td>
<td></td>
</tr>
<tr>
<td>Queensland</td>
<td>4 (33%)</td>
</tr>
<tr>
<td>South Australia</td>
<td>3 (25%)</td>
</tr>
<tr>
<td>Victoria</td>
<td>2 (17%)</td>
</tr>
<tr>
<td>Western Australia</td>
<td>2 (17%)</td>
</tr>
<tr>
<td>New South Wales</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
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</tr>
<tr>
<td>Northern Territory</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Tasmania</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Location</td>
<td></td>
</tr>
<tr>
<td>Major City</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>Inner Regional</td>
<td>1 (8%)</td>
</tr>
<tr>
<td>Outer Regional</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Remote</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
Consensus

The study incorporated two rounds of online questionnaires (described below), as reported to be sufficient to elicit adequate feedback and establish a broad consensus of opinion (Keeney et al, 2011). Further rounds were planned if additional competencies or other issues were raised from round two that warranted investigation. A priori, consensus was considered to be achieved when at least 80% of the panel agreed on inclusion of the identified competency (Keeney et al, 2011).

First Round Procedure

The first round questions were formatted onto the online program SurveyMonkey and sent via a link within the email sent to each participant. The first round of the Delphi consisted of two sections. The open question of the Delphi was developed by the study authors (including experienced researchers, academics and clinicians across core areas of physiotherapy) with specific intention to generate sufficient themes embedded within panelists’ responses, as consistent with a Delphi approach (Keeney et al, 2011). The initial question was designed to direct panelists towards the consideration of multiple competencies and the consideration of competencies that physiotherapists may or may not already possess. The following question was used for section 1: ‘What specific knowledge, skills, abilities, attributes or other characteristics do physiotherapists need to possess or learn to provide effective patient education?’

Operational definitions were also provided to the panel to assist with section 1 responses however these definitions were broad as to not steer panelists’ responses. These were:

Patient education is 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).

Patient education competencies are behaviours, knowledge, skills, abilities, attributes or other characteristics that positively impact patients’ knowledge, skills and health behaviours.

Section 2 sought demographic information from the panelists including age, area of practice and geographical location.
The first round questionnaire underwent several revisions and was piloted using a convenience sample of eight physiotherapists (age range 29 to 59) from musculoskeletal (n=4), cardiorespiratory (n=1) and neurology (n=3) areas who did not participate within the study. This was used to gain feedback on the structure, content and flow of the survey and to ensure an adequate number of items could be generated from the questionnaire for data analysis. Feedback resulted in minor wording changes and editing for clarity only.

Second Round Procedure and Analysis

Open responses from round one were subjected to framework analysis as is recommended for the Delphi approach (Krippendorf, 2013) using NVivo version 10 (QSR International; 2012). The principle researcher, trained in the use of qualitative research methods and NVivo, read through all data multiple times to sensitize to the meanings ascribed to practice competencies. Complete open responses to the round one question ranged from 230 words to 1243 word responses. Each potential theme generated from the open responses was discussed by the research team. From an initial list of 110 items, 81 were repeated and thus combined and reduced by the research team. Furthermore, 4 items were eliminated as they were not related to the patient education construct. These were “biomechanical analysis skills”, “making diagnoses”, “clinical reasoning skills” and “seeking advice from other professionals”. The final 25 items were summarized into present tense verb statements as consistent with competency design (Spector et al, 2013) and presented in a table format for verification by the panel.

Each panel member from round one was sent an email directly from the lead researcher with a link to the second round questionnaire. The first section of the questionnaire contained a summary of that individual’s responses from round one for their reference and provided the table of 25 competencies for panelists to respond to. Panelists were asked to select whether they felt each item within the table was a competency that was ‘important for all physiotherapists’, a competency ‘only important for expert physiotherapists’ or ‘not an important patient education competency for physiotherapy’ using a self-select box formatted within SurveyMonkey. The second section provided panelists with an open text box to
identify additional competencies they felt were not already included or to raise any issues with the competencies provided.

Frequencies from round two were calculated based on participant ratings of whether or not the item was an important competency for all physiotherapists. Based on recommendations in the literature, each survey round was open for two weeks (Fan & Yan, 2010) and a reminder email was sent to all participants who had not responded two days before the two week closure.

**Results**

All 12 panelists responded to the second round (12/12, 100%). Of the 25 competencies presented in the second round, the panel reached consensus on 22 competencies that were considered important for ‘all physiotherapists’ (Table 2). The three competencies that did not achieve agreement by the panel were; ‘Cognitive behavioral therapy skills’, ‘Socratic dialogue/method’, and ‘Providing advice regarding other members of the healthcare team’ (Figure 1). Twelve competencies achieved 100% agreement by the panel (Table 2). No free text responses were provided to indicate additional items or issues with any items during round two.
**Figure 1. Data analysis round one and two**

**Table 2. Patient education competency list following round two**

<table>
<thead>
<tr>
<th>Competency</th>
<th>Agreement N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Understand the role of patient education</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>2. Understand the impact of social, cultural and behavioral variables on patient learning</td>
<td>10 (83%)</td>
</tr>
<tr>
<td>3. Understand the principles of adult learning</td>
<td>10 (83%)</td>
</tr>
<tr>
<td>4. Integrate evidence based practice into patient education</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>5. Seek patient perceptions and concerns using appropriate questioning</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>6. Obtain information from the patient assessment to understand learning needs</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>7. Utilize reflective questioning</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>8. Use shared decision making</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>9. Select and use a range of appropriate learning content tailored to the patient</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>10. Provide content that is in the best interests of the patient</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>11. Use communication styles, language and materials that are tailored to the patient</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>12. Effectively explain the patient’s condition</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>13. Provide self-management education and reinforce patients ability to manage</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>14. Provide family or care-givers with information (where present)</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>15. Control attention and engagement throughout the educational intervention</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>16. Effectively summarize information</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>17. Consistently and regularly review progress of patient learning</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>18. Use the “teach back” method to evaluate understanding</td>
<td>10 (83%)</td>
</tr>
<tr>
<td>19. Identify when educational needs have been met</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>20. Recognize and manage barriers to effective education</td>
<td>10 (83%)</td>
</tr>
<tr>
<td>21. Continue to develop patient education skills</td>
<td>12 (100%)</td>
</tr>
<tr>
<td>22. Provide education within limits of practice, seeking advice or referring to another professional where appropriate</td>
<td>12 (100%)</td>
</tr>
</tbody>
</table>
Discussion

This study developed a set of patient education competencies for the field of physiotherapy, determined by an expert panel using an empirical approach to gain consensus. A total of 22 competencies were generated through a two-round Delphi method using Australian specialist physiotherapists. This study provides an important foundation for knowledge of the roles and competencies of physiotherapists in the area of patient education. An explicit set of competencies in this area provides a common language for physiotherapy training, and for faculty to have a shared understanding of outcomes for professional practice standards, to pursue competency based curricula design and develop relevant student and professional performance assessment measures.

Several themes are prominent throughout the competency list and are relevant across patient interview, assessment and management aspects of the patient consultation. The competencies include tasks related to the assessment of the patient, such as “seek patient perceptions and concerns using appropriate questioning”, direct educational activities such as “effectively explain the patient’s condition” and also encompass the evaluation of education, including “identify when educational needs have been met”. The spread of competencies across the consultation are consistent with the view of physiotherapy as an educational endeavor consisting of teaching throughout and across the continuum of care (Sluijs, 1991).

Competencies consistent with patient-centered practice are evident throughout the final competency list. Competencies specific to patient-centered practice included tailoring educational content, language and materials and seeking the patient’s perceptions and concerns (Saha et al, 2008). These competencies were not unexpected considering the support for addressing patient concerns within clinical settings (Levinson et al, 2010) and considering tailoring of communication and content has a tangible impact on patient satisfaction and health outcomes (Noar et al, 2007). Furthermore, these findings support the role of training physiotherapy
students and professionals toward patient-centered competencies for the provision of patient education.

Several patient-centered competencies represented behavioral or counselling approaches and were not anticipated as final competencies expected for all physiotherapists. This included the ‘use of reflective questioning’. Health professionals’ use reflective questioning to aid patient collaboration and as an empowerment approach to encourage the patient to analyse their own actions and behaviour in order to promote behavioral change, problem solving skills and facilitate decision making (Trummer et al, 2006). Although the importance of such empowerment strategies have been highlighted within recent years for their role in improving clinical outcomes (Green et al, 2008), reports suggest that such questioning is under-utilized by most physiotherapists (Foster & Delitto, 2011). Inclusion of this as a final competency demonstrates recognition of the role of psychosocial approaches within physiotherapy patient education (Gold & McClung, 2006).

Communication is highlighted as another major theme throughout the final competency list. Items specifically relating to communication factors include the use of questioning, effectively explaining the patient’s condition and effectively summarizing information. This supports the view that patients who receive accurate and easily-digestible information about their condition are better able to understand and follow health care instructions (Shoeb et al, 2012). This finding was not surprising given that communication is considered the cornerstone of effective patient education (Saha et al, 2008) and when used effectively, it has a positive impact on important outcomes including patient adherence, satisfaction and effective self-management (Chewning et al, 2012).

Limitations

Firstly, the panel in this study included only those in Australian practice. Thus, external validity of the findings may be limited as physiotherapists from other countries were not represented. Secondly, three-quarters of the panel identified as practicing in the area of musculoskeletal physiotherapy practice. Although this represents specialist physiotherapist rates in Australia, it is much higher than the
national musculoskeletal practice rate of 53% (Krippendorf, 2013). Due to this higher representation, the final competency list may be more musculoskeletal-centric. The panel represented four of the six largest practice scope areas in Australia (HWA, 2014), however it did not include physiotherapists from the areas of cardiorespiratory, aged care or pediatrics which may have provided different results. This is of particular consideration as the Delphi method relies on panelists’ opinions. The use of different panel members from other areas such as academia or clinical education may have also yielded different results. The Delphi approach to develop a set of competencies is in itself a potential limitation of the research. The use of a qualitative approach to generate themes from round one has the potential to introduce researcher bias, even unintentionally (Linstone & Turoff, 2002). Although it is deemed a valuable method to generate knowledge in an area that lacks empirical evidence (Gruppen et al, 2012), the competencies generated from our study should be subject to further research to investigate their usefulness across clinical settings and within assessment measures. Further research should also explore how individual competencies may be grouped or categorised based on the clinical setting or stage of the patient consultation. This should be validated through consensus or observational based research to further develop a competency model that is consistent with relevant frameworks for physiotherapists (PBA, 2015; American Physical Therapy Association, 2015) and aid in practical application (Frank et al, 2014).

Finally, as strongly advised by Ten Cate and Scheele, formulating competencies for practice has the potential to be confusing for users who can get lost in the complexities of such lists (Ten Cate & Scheele, 2007). These authors recognize that a competency list does not necessarily provide the impetus for better training and patient care and argue that competencies should be defined as general attributes which are confined to a limited set of qualities or professional activities. We recognize the limitations in competency development and its subsequent applications. We have made attempts to address this issue by including expert practitioners to reflect the actual professional activities of patient education required of physiotherapists.

**Implications**
The practice competencies for physiotherapy patient education generated in this study may be utilized in several ways. Firstly, the set provides a common language in the field of physiotherapy training for educators and faculty to have a shared understanding of outcomes for professional practice standards and assessment. The results of this study may have implications for informing existing curricula or the potential for targeted training related to patient education in physiotherapy education. This may be challenging considering the amount of content already in entry-level physiotherapy program curriculum (Crosbie et al, 2002). Investigation of the feasibility of integrating specific patient education training into existing courses or through stand-alone approaches is warranted.

Secondly, the findings from this study should be of interest to physiotherapists who have a role in supervising others in this area. Assessing the patient’s needs and tailoring approaches to the patient are the hallmark of effective, collaborative clinical reasoning in physiotherapy (Pinto et al, 2012) and patients engaged in learning are more able to openly discuss and collaborate with their health professional regarding their care (Shoeb et al, 2012). The competencies may guide practice patterns by reminding physiotherapists about the importance of patient-centered approaches to patient education and the role of effective communication in practice. Physiotherapist awareness in this area may also stimulate interest for professional practice activities and improved personal practice.

Translating competencies into practice are a key challenge in competency based teaching and assessment. Evaluating the use of these competencies and in particular, developing performance attributes or more specific enabling competencies that facilitate observable assessment of these competencies across settings are required.

Finally, the competency list provides a basis for future research which may include exploring student and new-graduate self-efficacy and identity in this area, and developing and testing specific training approaches. Additionally, replication of the study with other panels, such as practitioners in specialized areas of physiotherapy, educational experts the area of patient education pedagogy and other health professional groups may provide further insight into different competencies across settings and the potential for shared competencies across professions, or provide a
contrast to compare to the current competencies generated by expert physiotherapists.

References


NVivo qualitative data analysis software; QSR International Pty Ltd. Version 10, 2012.


4.3 Chapter summary and linkage:

This study provides a stand-alone set of competencies for patient education in physiotherapy that has been derived empirically with a high level of expert agreement. This aids the subsequent research in this thesis by providing a benchmark for training and assessment of physiotherapists for educational and professional consideration. These competencies provide a basis for the following study which seeks to explore the self-efficacy of physiotherapy new-graduates in relation to patient education practice, and the perceived influence of training experience on their patient education self-efficacy and skills.
CHAPTER FIVE: Patient education self-efficacy of physiotherapy new-graduates

5.1 Introduction and Linkage:

This chapter presents Study 4 which aims to evaluate and explore new-graduate physiotherapists’ self-efficacy and perceived influence of training in patient education. This study also aims to determine the relationship between physiotherapy student training experiences and patient education self-efficacy. Self-efficacy is an integral concept to understand how individuals engage in professional roles (Bandura, 1997; Manojlovich, 2005), including patient education (Darkwah et al, 2011; Svavarsdottir et al, 2015). The literature review in Chapter One determined that there is no published research investigating the self-efficacy of physiotherapy students or new-graduates in relation to patient education. Knowledge in this area is critical to understand preparedness for the role of becoming a patient educator and to facilitate curriculum development in this area.

This includes the accepted manuscript of the study entitled “new-graduate physical therapists’ self-efficacy to perform patient education is influenced by entry-level training experiences”. This study utilises Bandura’s Theory of Self-Efficacy as an overarching framework. An important consideration in this framework and subsequent design is that self-efficacy must be tailored to the particular domain of interest. No existing measures for assessing self-efficacy of patient education skills were identified. Therefore, the competencies generated within the previous study (Study 3) were used to develop aet al self-efficacy measure. Ethical approval and survey items are provided in Appendix 11-14.
5.2 Study 4: Patient education in physiotherapy: the relationship between training experiences and self-efficacy in new-graduates.

The following section includes the accepted manuscript for a paper published in the *Journal of Physical Therapy Education*, including the text, tables and references and excluding the title page and appendices. Figure and table numbers in this chapter refer to figures and tables in this chapter unless otherwise specified.

**Abstract:**

**Introduction and Purpose:** Patient education is an integral component of physical therapy practice. Little is known about the factors that influence new-graduate physical therapists’ preparedness to perform patient education. Self-efficacy is an important construct in understanding how graduates will engage in this professional role. The purpose of this study was to investigate new-graduate physical therapists’ self-efficacy across patient education competencies and to explore the relationship between self-efficacy and entry-level training experiences.

**Methods:** New-graduate physical therapists completed a survey with four components: 1) a self-efficacy scale derived from patient education competencies; 2) questions about their training experiences; 3) an open response question relating to their perception of their patient education ability and 4) demographic questions. Self-efficacy data was compared between groups based on training experiences and demographic groups. Open response data was subject to qualitative framework analysis.

**Results:** A total of 121 new-graduate physical therapists (84.6%) completed the survey. One third of new-graduates reported having high self-efficacy in relation to all patient education competencies. Nearly all respondents perceived that performing patient education during clinical placements (96%) and receiving feedback (93%) had a significant influence on their confidence to perform patient education. Most respondents (89.3%) reported having previous experiences representing all sources of self-efficacy during their entry-level training. These respondents had significantly higher self-efficacy scores than those who were lacking one or more experiences (p=0.045). Half of all respondents (52%) reported all training experiences as ‘significant’ in contributing to their confidence and had significantly higher self-
efficacy scores than those who did not perceive all experiences as ‘significant’ (p<0.001). Emerging themes relating to the most meaningful influences on ability to perform patient education were (i) direct clinical practice, (ii) observation of others, (iii) feedback and (iv) rehearsal.

**Conclusion:** These findings support the mediating effects of Bandura’s main sources of self-efficacy on new-graduates’ self-efficacy regarding patient education. Considerations for physical therapy curricular aimed at enhancing development of self-efficacy related to patient education is outlined.

**Introduction**

Patient education is an integral component of effective healthcare (Hoving et al, 2010). It is a means for health professionals to communicate salient information (Hoving et al., 2010), improve patient health behaviour, self-efficacy (Schrieber and Colley., 2004; Nour et al, 2006; Ndosi et al, 2015) and self-management skills (Hammond et al, 2004; Nunez et al, 2006; Ndosi et al, 2015). Furthermore, patient education approaches have been demonstrated to improve therapeutic outcomes including pain, disability and function within physical therapy settings (Alston and O’Sullivan, 2005; Albaladejo et al, 2010; Louw et al, 2011). Despite these benefits, there are concerns relating to how physical therapists practice patient education (Kerssens et al, 1999; Trede, 2000; Jette et al, 2005; Cooper et al, 2009). Physical therapists report challenges in providing diagnostic information or explanations of symptoms for common patient conditions (Slade et al, 2012) and provide less patient education than guidelines suggest (Jette et al, 2005). Earlier reports suggest that within physical therapy, patient education is primarily clinician-centred in nature (Trede, 2000) and often not individualised to the patient (Kerssens et al, 1999). This is particularly prominent in patient education provided by novice therapists (Jensen et al, 1990; Jensen et al, 1992; Jensen et al, 2000; Resnick and Jensen, 2003), who reportedly place less importance on their teaching skills than other clinical skills (Jensen et al, 1990) and often fail to engage in education that promotes patient responsibility (Gyllensten et al, 1999). Holmes (1999) found that compared to experienced therapists, student physical therapists identified a higher number of potential barriers and a stronger effect of these barriers to their use of effective patient education. Students within this study also reported less frequent use of
educational activities that are considered patient-centred and reported being less able to adjust their instructional skills to fit the needs of the individual patient.

The primary goal of physical therapy education is to provide students with the competencies needed to work independently as a physical therapist following graduation (Higgs & Hunt., 1999; Physiotherapy Board of Australia., 2015). Self-efficacy is an important construct in understanding how these graduates will engage in this professional role (Bandura, 1997; Manojlovich, 2005). Bandura (1977) introduced the concept of self-efficacy as an individual’s perception of his or her own ability to successfully perform a particular task or behaviour. Bandura later noted that self-efficacy strongly influences an individual’s decisions about the activities in which they engage in or avoid, their emotional responses and their subsequent effort in performing tasks (Bandura, 1997). An individual’s self-efficacy may be influenced positively or negatively by a variety of factors, summarised as three main sources: 1) performance mastery, 2) vicarious experiences and 3) verbal or social persuasion (Bandura, 1997). Performance mastery is the strongest source of self-efficacy for an individual. This usually relates to the direct practice and successful completion of a task where individuals are more likely to believe they can do something if they have done it well in the past. Vicarious experiences relate to observation and modelling of others, especially when observing someone similar to themselves, such as peers. The third major source of self-efficacy comes from verbal or social persuasion from others. This is widely used in academic settings to aid students’ beliefs regarding their ability to cope with challenging tasks or situations (Artino, 2012).

Within physical therapy, self-efficacy is important for understanding the psychological, cognitive and physical functioning of the patient and their perseverance despite actual or perceived difficulties (Barlow, 2010). Greater levels of patient self-efficacy are associated with less psychological distress, greater tolerance of symptoms, increased ability to cope, better self-management and enhanced physical functioning in a range of conditions (Brekke et al, 2001; Gallagher et al, 2008; Motl & Snook, 2008). Similarly, the self-efficacy of the therapist mediates thought patterns, behaviours, courses of action and efforts made in the face of stress or barriers in varying clinical situations (Bandura, 1977).
Health professionals may not effectively engage in patient education when they lack self-efficacy to use it in practice (Barta & Stacy, 2005; Jallinoja et al, 2007; Macdonald et al, 2008; Darkwah et al, 2011; Svavarsdottir et al, 2015). Health professionals who have significant patient education experience identify that a lack of patient education self-efficacy of novice professionals leads to a reluctance to use these skills in practice, avoidance of patient education and furthermore, hinders professional development in this area (Svavarsdottir et al, 2015).

Self-efficacy has been 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 attainment, clinical performance and career development (van Dinther, Dochy & Segers, 2011; Jones & Sheppard, 2012; Turan et al, 2013; Svavarsdottir et al, 2015). Self-efficacy is widely used to evaluate the effectiveness of training for development of communication and clinical skills, where it has a predictive ability in relation to the clinical performance of students in medicine (Mavis, 2001; Opacic, 2003), nursing (Tholcken, 2004; Cheraghi et al, 2009), physical therapy (Jones & Sheppard, 2011) and other health professions (Bobo et al, 2012). Although not specific to patient education, Jones and Sheppard (2012) developed a self-efficacy measure relating to physical therapy clinical practice and demonstrated a positive correlation between student self-efficacy, pre-clinical scores (Jones & Sheppard, 2012) and total clinical performance scores (Jones & Sheppard, 2011).

To our knowledge, there is no published research investigating the self-efficacy of physical therapy students or new-graduates in relation to patient education. Knowledge in this area will provide insight into the preparedness of new-graduates to successfully transition into their professional role as patient educators. Identifying gaps within new-graduate self-efficacy may also provide a focus for curriculum development in this area. The purpose of this study was threefold: 1) to examine self-efficacy of new-graduate physical therapists in relation to patient education competencies; 2) to investigate the perceptions of new-graduates relating to patient education learning experiences they engaged with throughout their studies, according to Bandura’s three major self-efficacy information sources (performance
mastery, vicarious experiences and verbal or social persuasion) and 3) to explore the relationship between these experiences and self-efficacy.

**Methods**

**Subjects**

A cohort of new-graduate physical therapists (n=140) was recruited at the completion of their entry-level program. All participants were invited to complete a 10-15 minute hardcopy survey with one open reflective question. Surveys were distributed and collected by an independent administrative staff member not related to the study. All data collected were confidential and anonymous. Participants provided informed consent and the study was approved by the institutional ethics committee.

**Measure**

A thorough search of the literature yielded no existing instruments to measure self-efficacy related to patient education in health professionals or students. For measurement design, we were guided by Bandura's theory of self-efficacy (1997) and scale construction guidelines (Bandura, 2006). The survey consisted of four main components, outlined below.

1. **Self-efficacy scale**

As an individual's self-efficacy is task-specific, its measurement must be tailored to the task that is of interest rather than be general in nature (Bandura, 1996). Task-specific competencies should therefore be used to allow respondents to indicate their perceived level of “confidence” (Tholcken, 2004; Bandura, 2006; Peyre et al, 2006; Jones & Sheppard, 2012). As we were not aware of the existence of empirically-derived competencies specific to patient education practice in physical therapy, we generated a set of competencies using a consensus approach. A two round, online Delphi study using a panel of 12 specialist Australian physical therapists was undertaken to identify and reach consensus (defined as ≥80% agreement) on the competencies required for effective patient education in the physical therapy setting. A final set of 20 competencies reached consensus and was used for the initial self-efficacy items. This set of competencies underwent further iterations by the research team to ensure each item reflected relevant and realistic
competencies for a new-graduate physical therapist and represented tasks and behaviours that would challenge successful performance (Bandura, 2006). A 5-point Likert scale ranging from 1 = completely disagree to 5 = completely agree was used to measure the level of agreement for each of the competency items which were ordered randomly (Table 1). The term ‘confidence’ was used alongside each competency as consistent with self-efficacy measurement design (Bandura, 2006).

2. Patient education experiences and rating of self-efficacy sources
Participants were asked to identify whether they had previously undertaken up to six specified patient education training experiences, including performing patient education during clinical placements, observing a peer, clinician or teacher or receiving feedback. Each training experience represented one of Bandura’s three main sources of self-efficacy (Table 2). Participants were then asked to rate how these experiences contributed to their “confidence” to perform patient education, described as ‘significant’, ‘not significant’ or ‘no opinion’.

3. Open reflective question
Participants were asked to identify and explain what factors they felt had the most influence on their ability to perform patient education.

4. Demographic questions
The final section collected demographic data including age, gender, whether respondents spoke English as their first language, the program studied (undergraduate entry or graduate entry masters) and their experience with patients prior to beginning their physical therapy training.

Pilot

The survey was piloted in October 2015 with 11 final year physical therapy students (Female 63.6%; mean age 23; range 20-28). Face validity was determined via feedback on content, clarity, item structure and wording (Bowling, 2005). Test-retest reliability was determined by repeating the survey two weeks later, and demonstrated an acceptable intra-class correlation of >0.7 for all items (Fink, 1997).
**Analysis**

Responses to self-efficacy items were tabulated as frequency distributions. Statistical analysis of all quantitative data was performed using SPSS version 20 (SPSS Inc, Chicago). A Mann-Whitney U test was used to compare self-efficacy scores between a) participants who identified as having each of the six experience types during their training versus those who had not, b) experience groups based on Bandura’s three main sources of self-efficacy which were determined a priori using Bandura’s theory of self-efficacy as a framework (Table 1), and c) participants who rated their experiences as significant in influencing their confidence versus those who rated these experiences as insignificant or indicated ‘no opinion’. A Mann-Whitney U test was also used to compare self-efficacy scores of participants according to demographic groups (age, gender, language, program, and experience with patients prior to study).

Open responses were subjected to framework analysis using NVivo version 10 (QSR International). The principle researcher read through data multiple times to sensitise to the meanings ascribed to training experiences (Creswell, 2013). Passages were coded to reflect experiences and were subject to continued comparison and differentiation. Similar concepts were clustered to form subcategories. Each subcategory was refined as new data emerged. Final coding involved identifying inter-relationships between subcategories and identifying main themes that encompassed these subcategories (Table 3). Coding was verified by the research team. Triangulation of survey data was intended to enhance the credibility of the study (Mays & Pope, 2000).

**Results**

A total of 121 surveys were completed (response rate 86.4%). Respondents had a mean age of 23 years (SD; 2.9, range 20 to 36 years); the majority were female (n=76, 62.8%) and undergraduate entry (n=88, 72.7%), and 20.1% identified as having English as their second language. Less than half of all respondents (n=52, 43.1%) indicated having experience with patients prior to their physical therapy training.
**Self-efficacy scores:**

One third of respondents (33%, n=40) agreed or strongly agreed that they were confident in relation to all 20 patient education competency items, whereas 15.7% (n=19) disagreed or strongly disagreed that they were confident in relation to at least one item. The item with the highest self-efficacy score was ‘understanding the role of patient education’ with most participants (62%, n=75) selecting ‘strongly agree’. Items relating to ‘using reflective questioning’ and ‘recognising and managing barriers’ were rated the lowest, with the largest group of participants also selecting ‘undecided’ for this item (Table 1). There were no significant differences in total self-efficacy scores between respondents based on demographic groups (p>0.05) including those with previous experiences with patients prior to their physical therapy training (p=0.12).
Table 1. Frequencies of self-efficacy responses to individual competency items

<table>
<thead>
<tr>
<th>Patient Education Competency Item</th>
<th>Strongly Disagree N (%)</th>
<th>Disagree N (%)</th>
<th>Undecided N (%)</th>
<th>Agree N (%)</th>
<th>Strongly Agree N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I understand the role of patient education</td>
<td>1 (0.8)</td>
<td>0 (0.0)</td>
<td>2 (1.7)</td>
<td>43 (35.5)</td>
<td>75 (62.0)</td>
</tr>
<tr>
<td>I understand the impact of social, cultural and behavioural variables on patient learning</td>
<td>1 (0.8)</td>
<td>1 (0.8)</td>
<td>4 (3.3)</td>
<td>57 (47.1)</td>
<td>58 (47.9)</td>
</tr>
<tr>
<td>I understand the principles of adult learning</td>
<td>1 (0.8)</td>
<td>3 (2.5)</td>
<td>26 (21.5)</td>
<td>64 (53.0)</td>
<td>27 (22.3)</td>
</tr>
<tr>
<td>I feel confident to use questioning to seek the patient’s perceptions and concerns about their condition</td>
<td>1 (0.8)</td>
<td>3 (2.5)</td>
<td>3 (2.5)</td>
<td>78 (64.5)</td>
<td>36 (29.8)</td>
</tr>
<tr>
<td>I feel confident to obtain information from the patient assessment to understand their learning needs</td>
<td>1 (0.8)</td>
<td>8 (6.6)</td>
<td>11 (9.1)</td>
<td>72 (59.5)</td>
<td>29 (24.0)</td>
</tr>
<tr>
<td>I feel confident to use reflective questioning (questions that allow the patient to reflect out loud)</td>
<td>1 (0.8)</td>
<td>11 (9.2)</td>
<td>45 (37.5)</td>
<td>43 (35.8)</td>
<td>20 (16.7)</td>
</tr>
<tr>
<td>I feel confident to select and use a range of appropriate learning content tailored to the patient</td>
<td>0 (0.0)</td>
<td>6 (5.0)</td>
<td>19 (7.4)</td>
<td>72 (59.5)</td>
<td>24 (19.8)</td>
</tr>
<tr>
<td>I feel confident to explain the patient’s condition to them</td>
<td>1 (0.8)</td>
<td>5 (4.1)</td>
<td>9 (7.4)</td>
<td>79 (65.3)</td>
<td>27 (22.3)</td>
</tr>
<tr>
<td>I feel confident to use shared decision making</td>
<td>0 (0.0)</td>
<td>5 (4.1)</td>
<td>17 (14.0)</td>
<td>66 (54.5)</td>
<td>33 (27.3)</td>
</tr>
<tr>
<td>I feel confident to provide self-management strategies to the patient and reinforce their ability to manage</td>
<td>0 (0.0)</td>
<td>6 (5.0)</td>
<td>13 (10.7)</td>
<td>64 (52.9)</td>
<td>38 (31.4)</td>
</tr>
<tr>
<td>I feel confident to provide family or caregivers with information (where they are present)</td>
<td>1 (0.8)</td>
<td>3 (2.5)</td>
<td>5 (4.1)</td>
<td>81 (66.9)</td>
<td>31 (25.6)</td>
</tr>
<tr>
<td>I feel confident to tailor communication styles, language and materials to the patient</td>
<td>1 (0.8)</td>
<td>1 (0.8)</td>
<td>8 (6.6)</td>
<td>74 (61.2)</td>
<td>37 (30.6)</td>
</tr>
<tr>
<td>I feel confident to control attention and engagement when educating the patient</td>
<td>1 (0.8)</td>
<td>2 (1.7)</td>
<td>11 (9.1)</td>
<td>72 (59.5)</td>
<td>35 (28.9)</td>
</tr>
<tr>
<td>I feel confident to provide education content that is in the best interests of the patient</td>
<td>1 (0.8)</td>
<td>1 (0.8)</td>
<td>13 (10.7)</td>
<td>75 (62.0)</td>
<td>31 (25.6)</td>
</tr>
<tr>
<td>I feel confident to recognise and effectively manage barriers to effective education</td>
<td>1 (0.8)</td>
<td>5 (4.1)</td>
<td>49 (40.5)</td>
<td>47 (38.8)</td>
<td>19 (15.7)</td>
</tr>
<tr>
<td>I feel confident to summarise information for the patient</td>
<td>1 (0.8)</td>
<td>1 (0.8)</td>
<td>7 (5.8)</td>
<td>73 (60.3)</td>
<td>39 (32.2)</td>
</tr>
<tr>
<td>I feel confident to integrate evidence based practice into patient education</td>
<td>1 (0.8)</td>
<td>3 (2.5)</td>
<td>21 (17.4)</td>
<td>74 (61.2)</td>
<td>22 (18.2)</td>
</tr>
<tr>
<td>I feel confident to identify when patient learning has been achieved through evaluation</td>
<td>0 (0.0)</td>
<td>6 (5.0)</td>
<td>24 (19.8)</td>
<td>71 (58.7)</td>
<td>20 (16.5)</td>
</tr>
<tr>
<td>I feel confident to review progress of the patient’s learning</td>
<td>1 (0.8)</td>
<td>7 (5.8)</td>
<td>21 (17.4)</td>
<td>71 (58.7)</td>
<td>22 (18.2)</td>
</tr>
<tr>
<td>I feel confident to provide patient education within the limits of my practice and refer on to another professional where appropriate</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>3 (2.5)</td>
<td>44 (36.3)</td>
<td>74 (61.2)</td>
</tr>
<tr>
<td>I feel confident to take action to continue to develop my patient education skills (professional development)</td>
<td>0 (0.0)</td>
<td>2 (1.7)</td>
<td>9 (7.4)</td>
<td>72 (59.5)</td>
<td>38 (31.4)</td>
</tr>
</tbody>
</table>
Self-efficacy scores based on experiences:

Most respondents (89.3%, n=108) reported having all six of the patient education experiences during their physical therapy entry-level training and all respondents reported having participated in at least four of these six experiences (Table 2). Respondents who reported having all six experiences had a significantly higher total self-efficacy score across all items (mean 87.8) than those who identified as not having all six experiences (mean 81.4; p=0.045). Respondents who identified having experienced practicing successful patient education with peers (representative of the ‘performance mastery’ source; 95.0%, n=115) had a significantly higher self-efficacy score (mean 86.9) than respondents without this experience (mean 76.7; p=0.008). There was no significant difference in self-efficacy between respondents who reported having the vicarious experience of observing a clinician or teacher performing patient education (95.0%, n=115; mean 85.6) and those without this experience (mean 83.3; p=0.29). The remaining four experience groups had three or less participants identifying that they ‘did not have’ this experience (Table 2), therefore insufficient data was obtained to analyse self-efficacy scores between participants who did or did not have these experiences.

Perceived influence of experiences:

Nearly all respondents indicated that successfully performing patient education during clinical placements (96%, n=116) and receiving feedback from clinical educators or teachers (93.4%, n=113) had a significant influence on their confidence to perform patient education (Table 2). Over half of respondents (52.1%, n=63) selected all six experiences as being ‘significant’. These respondents had a significantly higher overall self-efficacy score (mean 88.6) than those who did not rate all experiences as significant (mean 82.0; p<0.001). Respondents who perceived the following experiences as significant had higher self-efficacy scores than those who did not identify these experiences as being significant: successfully performing patient education during clinical placements (p=0.003) and during simulation activities (p>0.001); successfully practicing patient education with peers (p=0.001) and receiving feedback (p=0.04).
Table 2. Frequencies and perceived significance of entry-level training experiences towards self-efficacy of patient education use

<table>
<thead>
<tr>
<th>Patient education experiences during training</th>
<th>Source of self-efficacy</th>
<th>‘Did not have’ N (%)</th>
<th>‘Not significant’ N (%)</th>
<th>‘No Opinion’ N (%)</th>
<th>‘Significant’ N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully performing patient education during clinical placements</td>
<td>Performance mastery</td>
<td>0 (0.0)</td>
<td>1 (0.1)</td>
<td>4 (3.3)</td>
<td>116 (95.9)</td>
</tr>
<tr>
<td>Successfully performing patient education during simulation or standardised patient activities</td>
<td>Performance mastery</td>
<td>3 (2.5)</td>
<td>6 (5.0)</td>
<td>17 (14.0)</td>
<td>95 (78.5)</td>
</tr>
<tr>
<td>Successfully practicing patient education with peers</td>
<td>Performance mastery</td>
<td>6 (5.0)</td>
<td>19 (15.7)</td>
<td>12 (9.9)</td>
<td>84 (69.4)</td>
</tr>
<tr>
<td>Observing a peer, clinician or teacher performing patient education</td>
<td>Vicarious experience</td>
<td>6 (5.0)</td>
<td>1 (0.1)</td>
<td>5 (4.1)</td>
<td>109 (90.1)</td>
</tr>
<tr>
<td>Receiving feedback from clinicians or teachers regarding my patient education skills</td>
<td>Social persuasion</td>
<td>0 (0.0)</td>
<td>3 (2.5)</td>
<td>5 (4.1)</td>
<td>113 (93.4)</td>
</tr>
<tr>
<td>Clinical educators or teachers emphasising that patient education is an important part of physical therapy practice</td>
<td>Social persuasion</td>
<td>0 (0.0)</td>
<td>5 (4.1)</td>
<td>16 (13.2)</td>
<td>100 (82.6)</td>
</tr>
</tbody>
</table>

**Open question responses:**

Over 80% (n=98) of participants responded to the open question about factors that influenced their ability to perform patient education. Eleven subcategories and four over-arching main themes were generated (Table 3). The final themes were: direct practice during patient placements, observational opportunities, feedback, and rehearsal.
Table 3. New-graduates’ views on most meaningful training experiences for patient education skills

<table>
<thead>
<tr>
<th>Main Themes</th>
<th>Subcategories</th>
<th>Number of Passages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct practice during clinical placements</td>
<td>Practicing patient education on placement</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Practicing with a variety of patients</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Tailoring patient education to various patients</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Repeating patient education on placement</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Patients responses</td>
<td>3</td>
</tr>
<tr>
<td>Observational opportunities</td>
<td>Observing Clinical Educator</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Observing other physical therapist</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Modelling behaviours or practice</td>
<td>3</td>
</tr>
<tr>
<td>Feedback</td>
<td>Feedback from Clinical Educator</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Feedback from Peers</td>
<td>3</td>
</tr>
<tr>
<td>Rehearsal</td>
<td>Rehearsal with Clinical Educator</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Rehearsal with Peers</td>
<td>5</td>
</tr>
</tbody>
</table>

Theme 1) Direct practice during clinical placements

This was the largest theme from the open responses and reflected the influence of direct practice and repetition of patient education with patients during final year clinical placements:

“confidence came through….having the opportunity to practice on placement and then repeat this practice” (subject 119)

“…..actual practice with real patients improves my ability to react to real situations” (subject 6)

Respondents reflected on these experiences as ‘gaining confidence’ and also feeling ‘responsible’ and that they felt like they had an ‘important teaching role’. They also described how they developed their ability to perform patient education:

“……with more experiences through clinical placements my confidence grew, as did my ability to clearly educate the patient” (subject 65)

“……impacting some of my knowledge was positively influencing the patient…. ”(subject 119)

Some recognised that patients with different backgrounds and conditions required different means of delivering education:

“…..exposure to different patient groups and types over different placements allowed practice at adopting different ways to focus the patient” (subject 43)
“You soon realise everyone is so different. Some people need to really get taught things from the most basic level, others just need one or two things explained” (subject 30)

Theme 2) Observation of others

Observational opportunities were identified within 34 passages. Respondents identified the value of observing patient education skills from their clinical educators, other experienced clinicians or their peers. They also indicated that this provided them with an opportunity to reflect on their use of skills:

“…..going through all of my clinical placements where I was able to observe my clinical educators perform patient education with real patients” (subject 6)

“A clinical educator demonstrated to us the use of patient education for different types of scenarios” (subject 41)

Respondents also reflected on modelling as a result of observations:

“….. watching my clinical educator doing patient education a couple of times prior to me doing it was effective as it gave me some ways to structure how I was going to educate patients” (subject 102)

“observing the educator….observation allows for picking up of techniques” (subject 112)

Theme 3) Feedback

This theme encompassed direct and indirect feedback activities, identified by 19 respondents. Reflections related to patient education during clinical placements where the clinical educator observed the student and provided feedback. Others reported feedback from peers during classwork or simulation or role-play activities.

“…..the opportunity to practice in a safe environment and (get) feedback with positives and where improvements could be made” (subject 6)

“…..having the opportunity to practice………..whilst receiving feedback” (subject 21)

“…..clinical educators specifically observing me to then (being) able to provide immediate feedback”

Theme 4) Rehearsal

This theme reflected opportunities and experiences that allowed for the rehearsal or simulation of patient education with a clinical educator or peer, immediately before using the skill with the patient. Fourteen passages specifically identified that these opportunities to rehearse significantly influenced their ability to perform patient education:
“…..discussing what I will say with the patient regarding education with my Clinical Educator before going in there…” (subject 14)
“……workshopping the use of patient education with the clinical educator before using it” (subject 114)

Discussion

This study achieved its aims of investigating new-graduate physical therapists’ self-efficacy in the area of patient education. Further, we explored the influence of six specific physical therapy entry-level training experiences and Bandura’s main information sources (performance mastery, vicarious experiences and verbal or social persuasion) on new-graduates’ self-efficacy related to patient education competencies. These findings demonstrate the influence of a wide range of training experiences on new-graduate patient education self-efficacy and highlight the importance of successful practice of patient education skills in fostering physical therapist self-efficacy in this important area of practice.

Despite most new-graduates’ in our study reporting a high level of self-efficacy in relation to most competencies, nearly half indicated that they were not confident in their ability to identify and manage barriers to patient education. This finding is of particular importance as the perception of barriers directly relates to an individual’s opinion of the costs and benefits of a planned or advised action (Janz & Becker, 1984). This may impact physical therapy clinical practice as therapists who perceive barriers to patient education spend less time on engaging in patient education than therapists who do not perceive such barriers (Sluijs et al, 1993). Our finding is also consistent with research indicating that physical therapists perceive they lack the skills required to effectively identify and address presenting psychosocial issues (Sanders et al, 2013), a commonly perceived barrier to physical therapists’ use of patient education (Chase et al, 1993; Holmes, 1999). Further research should aim to investigate new-graduates’ specific perceived barriers to patient education and the subsequent influence of such barriers on new-graduates’ practice.

Nearly half of all respondents also indicated that they were not confident in their ability to use reflective questioning. Health professionals use reflective questioning to aid patient collaboration (Adams, 1997) and to empower behavioural change, problem solving and decision making (Poskiparta et al, 2001), which is consistent
with a patient-centred approach to care. The importance of such empowerment strategies have been highlighted more recently for their role in improving clinical outcomes (Trummer et al, 2006). Sanders et al (2013) stressed the importance of physical therapy training that focusses on communication and empowerment skills for a patient-centred approach, rather than a traditional clinical focus on illness and physical injury. Our data, and previous work indicating that these strategies are under-utilised by most physical therapists (Green et al, 2008), may emphasise the need for specific training of skills in this area. These findings may help to inform clinical education and other curricular approaches to help students and new-graduates’ develop self-efficacy and skills to identify and manage potential barriers to patient education practice, as well as the use of patient empowerment skills.

Experiences consistent with Bandura’s sources of self-efficacy had a strong influence on self-efficacy in our study. New-graduate physical therapists who reported having all three of these major sources of experiences during their entry-level training had significantly higher patient education self-efficacy scores than those who did not undertake all six experiences. These findings suggest that opportunities to practice and perform patient education during training, in addition to observation, feedback and experiencing a social emphasis on these skills are all important in the training of physical therapy students. Through reflective responses, new-graduates’ emphasised meaningfulness of training experiences consistent with all three main sources of self-efficacy, most notably those specific to performance mastery during clinical placement experiences. Clinical placements are a major element of entry-level physical therapy training where students are provided the opportunity to directly practice skills in clinical settings under the supervision of experienced therapists (Skoien et al, 2009). These experiences facilitate student application of knowledge and skills into practice (Spencer, 2003; Higgs, 2009), aid the achievement of communication competencies (Duffy et al, 2004) and provide professional development through workplace socialisation (Korpi et al, 2014).

Physical therapy literature demonstrates that students consistently rate patient contact during clinical placements as one of the most important learning experiences during training (Healey, 2008; Ernstzen et al, 2009) as they perceive it promotes clinical reasoning, communication and self-evaluation skills (Ernstzen et al, 2010). Over 95% of new-graduates’ in our study rated successful use of patient education
during clinical placements as a significant influence on their confidence, and it emerged as the most dominant theme within the open responses.

Other clinical education elements, such as encouragement and feedback from mentors and supervisors, also impact self-efficacy (Bandura, 1997, Bong and Skaalvik, 2003; van Dinther et al, 2011) and patient education skills (Svavarsdottir et al, 2015). This was strongly reflected within our findings where over 80% of new-graduates’ indicated that clinical educators or teachers who emphasise the importance of patient education were a significant contributor to their confidence relating to patient education. Nearly all new-graduates’ rated feedback as a significant influence, also emphasising the role of verbal or social persuasion in this domain. This highlights the importance of the ‘hidden curriculum’ whereby educators and teachers may shape student values, roles and subsequent professional identity as patient educators both positively and negatively (Gaufberg et al, 2010; Monrouxe et al, 2011). These findings are consistent with earlier patient education research with medical students; Tresolini and Stritter (1994) found that students who practiced educational tasks had the highest self-efficacy scores, followed by those who were exposed to vicarious learning sources, such as observing a practitioner. The authors found verbal persuasion to be a weaker, yet still important, facilitator of self-efficacy. More recent research also supports these findings where health professionals experienced in the area of patient education strongly identified work-based practice, rehearsal and mentoring as important in the development of patient education expertise, including perceived confidence (Svavarsdottir et al, 2015).

Vicarious experience through observation was rated as a significant contributor by most participants and the role of observational experiences, including modelling, emerged as a major theme within the open responses. Self-efficacy scores however did not differ between those who reported having observational experiences and those who did not. Tresolini and Stritter (1994) demonstrated that medical students who had mentors demonstrating or modelling patient education had significantly higher self-efficacy scores in relation to these skills than those without these experiences (Tresolini & Stritter, 1994). Their study however used demonstration as a controlled intervention whereas our study relied on retrospective self-reported data where respondents may have had one or more observational experiences but may not have been able to readily recall them.
The importance of peer-based experiences on self-reported patient education self-efficacy and skills are apparent within the results. Most respondents rated practicing patient education with peers as a significant influence on their patient education self-efficacy and observation, feedback and rehearsal experiences that included peers constituted major themes from the open responses. The use of peer-based learning, both formal and informal, is reported to promote shared responsibility and information sharing between students, in addition to providing a means for feedback activities (Secomb, 2007). Peer-based learning has also been demonstrated to facilitate observation and reflective practice for improved clinical skills and self-efficacy (Lindquist et al, 2006; Ten Cate, 2007; Rashid et al, 2011; Skoien et al, 2009; Mandrusiak et al, 2014), including patient education (Svavarsdottir et al, 2015). These findings support the role of peer-based learning on development of patient education self-efficacy however further investigation is warranted to determine the effectiveness of peer-based interventions on patient education self-efficacy and skills.

Patient education is an increasingly important area of healthcare (WHO, 2010) and physical therapy entry-level curricula needs to prepare physical therapists for this role. Studies recognise the challenge of transferring patient-centred attitudes and skills from healthcare education into clinical practice (Hook & Pfeiffer, 2007; Hojat et al, 2009). Moreover, healthcare student transition to practice may be constrained if training is vastly different to that in real clinical practice (Bombeke et al, 2012). As highlighted by other authors, authentic pre-clinical training can be achieved through realistic activities and tasks (Higgs, 2009) and addressing students' attitudes towards patient-centred skills (Bombeke et al, 2012). To develop self-efficacy related to patient education practices, authors recommend educational strategies such as student exposure to appropriate role modelling, providing explicit opportunities to practice skills in realistic environments and opportunities for performance feedback (Tresolini & Stritter, 1994; Benbassat & Baumal, 2002; Bosse et al, 2012; Svavarsdottir et al, 2015). Our findings support these recommendations by demonstrating a link between these experiences and higher self-efficacy and the significance of these experiences from the perspective of the new-graduate. Lundburg (2008) argues that student learning experiences should be developed with the outcome of clinical self-efficacy in mind, through methods that provide realistic
clinical settings for teaching using clinical examples and allow students to practice clinical skills in a controlled environment. Simulation offers these advantages, and has demonstrated efficacy in improving student performance and self-efficacy in communication and clinical skills (May, Park & Lee, 2009; Bosse et al, 2012; Blackford, McAllister & Alison, 2015). These approaches may allow opportunities for direct experience, observation and feedback to enhance patient education self-efficacy and skills. Further research is warranted to establish the effectiveness of simulation in training physical therapy patient education skills.

**Strengths and Limitations**

This study utilised a purpose designed scale that related to task-specific competencies in the domain of patient education within physical therapy. This approach strengthens our study by addressing limitations related to general measures of self-efficacy which can vary widely in the interpretation of the skills in question (Bandura, 1996). The patient education competencies used within the self-efficacy scale were generated through an expert-consensus approach that reflects competencies for physical therapists within Australian practice. It must be recognised however that these competencies are not formally recognised within national practicing standards or student assessment criteria. Although we endeavoured to maintain validity through using empirically derived items and piloting of the assessment measure, respondents within our study may have lacked familiarity with scale items. This may contribute to the low self-efficacy scores for the competency ‘reflective questioning’ as new-graduates’ may have lacked familiarity with the terminology in this item. Importantly the survey was constructed in a way where by new-graduates were able to identify having particular experience during their training, however we were not able to elucidate whether all experiences contributed positively or negatively towards self-efficacy. For example, negative verbal or social persuasion may undermine an individual’s self-efficacy whereas effective approaches, such as feedback that is given in a realistic way for example, may enhance self-efficacy (Bandura, 1997). However, as Bandura outlines, “it is more difficult to instil high beliefs of personal efficacy by social persuasion alone than to undermine it [since] unrealistic boosts in efficacy are quickly disconfirmed by disappointing results of one’s efforts” (Bandura, 1994, p. 3). The survey asked
participants to rate their perceived confidence in relation to each patient education competency. Although consistent with self-efficacy scale design (Bandura, 2006), the terms are not synonymous as self-efficacy may be present without perceived or explicit confidence of the individual (Hemmings & Kay, 2009). Subsequently, there is a risk that participants may have provided falsely elevated scores based on high confidence rather than self-efficacy, which is recognised as a confounding variable within most self-efficacy scale based research (Bandura, 1996). Lastly, the findings of our study can be considered to relate to the specific context of the new-graduate physical therapist from our institution. However, the results of our study may be applicable to other new-graduate physical therapists within Australia due to the similar curricula and clinical practice protocol of entry-level training programs.

**Conclusion**

The results of this study highlight the role of experience in the development of patient education self-efficacy for new-graduate physical therapists. Furthermore, most new-graduates reflect on these experiences as being significant influences on their confidence and ability to perform patient education. The findings from this study also reinforce the role of training experiences that encompass Bandura’s three main sources or self-efficacy; direct practice (performance mastery), observation (vicarious experience) and feedback (verbal or social persuasion) in providing meaningful experience toward the development of patient education self-efficacy.
References


NVivo qualitative data analysis software; QSR International Pty Ltd. Version 10, 2012.


5.3 Chapter summary and linkage

Results from this study demonstrate that new-graduates have high self-efficacy relating to most competencies required for effective patient education in physiotherapy. The study has also identified and discussed key areas where new-graduates lack self-efficacy in relation to patient education practice. These include using reflective questioning and identifying and managing barriers to patient education. These findings are important in considering how training experiences can be developed to enhance self-efficacy in relation to these important skills. This study demonstrated how specific training experiences within the physiotherapy curriculum influence patient education self-efficacy. Finally, through seeking the perception of the physiotherapy new-graduate, this study was able to explore the perceived influence of training experiences on patient education skills. These findings, as consistent with previous research, support the inclusion of training approaches including experiential learning and vicarious experiences in the development of patient education skills. These findings inform the next and final study in this thesis, in which a training intervention was developed and evaluated through a randomised controlled trial.
CHAPTER SIX: Patient education training of physiotherapy students

6.1 Introduction and linkage

This chapter presents Study 5 which outlines the development, implementation and evaluation of an evidence based intervention that aims to improve the patient education skills and self-efficacy of physiotherapy students. As outlined within the previous chapters, there is a gap in research investigating the efficacy of evidence-based pedagogical approaches that address performance and self-efficacy of physiotherapy students in the area of patient education.

This chapter includes the accepted manuscript of the study entitled “Training physiotherapy students to educate patients; a randomised controlled trial”. This study evaluates the effect of a patient education intervention for physiotherapy students. In doing so, it will provide strategies that can influence curricular development for the future training of patient education skills. Ethical approval and relevant items are provided in Appendix 15-18.

6.2 Training physiotherapy students to educate patients; a randomised controlled trial

This following section includes the accepted manuscript for a paper accepted for publication in the journal Patient Education and Counselling including the text, tables and references, excluding the title page. Figure and table numbers refer to figures and tables in this chapter unless otherwise specified.

Abstract:

Objective: To determine the effect of a training intervention on physiotherapy students’ self-efficacy and skills in the area of patient education.

Methods: Final year physiotherapy students were randomised to an intervention group or a wait-list control group. The intervention group participated in a 3.5h training intervention about patient education that included video observation, simulated patient practice and structured feedback. The control group did not receive any training. Self-efficacy was assessed at baseline (T1) and after the intervention
(or no intervention for the control group) (T2). Patient education performance was assessed by a blinded rater from a video-recorded standardised clinical examination. **Results:** 83 students were randomised to the intervention group and 81 students to the control group. There were no differences in demographic variables or self-efficacy between groups at baseline. There was significant improvement in self-efficacy for the intervention group, but no change for the control group. The intervention group performed significantly better than the control group for nine of the eleven performance items, with significantly higher scores overall. **Conclusion:** A training intervention enhances physiotherapy student self-efficacy and performance in patient education. **Practice implication:** Use of patient education training is recommended to enhance student self-efficacy and performance.

**Introduction**

Patient education is 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, p. 323). It is an integral component of effective healthcare (Hoving et al, 2010) and a required competency for entry-level physiotherapists in Australia and New Zealand (Physiotherapy Board of Australia, 2015). Patient education helps improve patient self-efficacy (Schreiber & Colley, 2004; Nour et al, 2006; Ndosi et al, 2016) and self-management (Nunez et al, 2006; Ndosi et al, 2016), and enhances physiotherapy outcomes in the areas of pain, disability and function (Albaladejo et al, 2010; Louw et al, 2011).

In order for health professionals to attain the knowledge and skills to deliver effective patient education, appropriate training is required (Lee & Chein, 2002; Macdonald et al, 2008; Ivarsson & Nilsson, 2009; Friberg et al, 2012). Health professionals without formal training in this area tend to rely on simple information dissemination based on personal experience (Porta & Trento, 2004; Macdonald et al, 2008) or inherent skills rather than approaches that are embedded in patient educational theory or evidence based practice (Ivarsson & Nilsson, 2009; Leino-Kilpi & Luoto, 2001; Jette et al, 2005; Kaariainen & Kyngas, 2010; Svavarsdottir et al, 2015). Furthermore, research has highlighted concerns that patient education practiced by physiotherapists fails to
meet the requirements of specific practice guidelines (Jette et al, 2005) and when provided, is primarily therapist-centred in nature (Kerssens et al, 1999; Gyllensten et al, 1999; Trede, 2000; Forbes et al, 2017).

In contrast to traditional models of patient education that focus on simple information provision, compliance and dependence, a patient-centred approach to education encourages autonomy through understanding the patient’s specific educational needs (termed ‘patient education’ herein) (Anderson & Funnell, 2010; Saha et al, 2008). Effective patient education has a focus on assessing the patient’s motivation, beliefs and concerns allowing potential barriers to be identified and education to be individualised to the patient’s needs (London, 2009; Forbes et al, 2017; Forbes et al, 2017). It also requires the physiotherapist to seek and apply content and delivery approaches that are relevant to these needs (Ndosi et al, 2015) and to evaluate learning through strategies such as checking patient learning or to demonstrate skills they have obtained (Lamiani & Furey, 2009; Hatonen et al, 2010; Crumlish & Magel, 2011; Frank-Bader et al, 2011; Tamura-Lis, 2013; Forbes et al, 2017). These components of best practice have been strongly recommended within patient education training (Dandavino et al, 2007; Forbes et al, 2017).

Self-efficacy has been highlighted within healthcare education literature as an area for specific attention for training of health professionals including physiotherapists, given its impact on student engagement, motivation, skill attainment and clinical performance (Jones & Sheppard, 2011; Turan et al, 2013). Research suggests that health professionals, including physiotherapists, may be reluctant to use patient education in practice when there is a perceived lack of training or low self-efficacy (Macdonald et al, 2008; Ivarsson & Nilsson, 2009; Svavarsdottir et al, 2015). Low self-efficacy has been shown to be a key factor that limits student and new-graduates’ from effectively engaging in patient education (Macdonald et al, 2008; Barta & Stacy, 2005; Jallinoja et al, 2007; Darkwah et al, 2011; Svavarsdottir et al, 2015), which in turn may hinder professional development in this area (Svavarsdottir et al, 2015). Health professionals acknowledge that more support in developing skills in patient education is needed (Epstein et al, 2005; Goeman et al, 2005; Svavarsdottir et al, 2015).
Recent research demonstrates that physiotherapists identify direct experience with patients and professional in-service training as the most important factors contributing to their development of patient education skills, rather than their pre-professional training (Forbes et al, 2017). Another study investigated the self-efficacy of physiotherapy new-graduates relating to their patient education skills and demonstrated that the most influential training experience was direct clinical practice, in addition to observation, feedback and rehearsal (Forbes et al, 2017).

Understanding how to educate physiotherapy students to develop patient education skills is fundamental to ensuring graduates meet required competencies (PBA, 2015; Forbes et al, 2017). Although no one single approach to training is suitable for all students (Kharb et al, 2013), teaching approaches that incorporate principles of adult learning such as experiential and problem based learning are supported within health educational literature (Koh et al, 2008; Dwamena et al, 2012). Simulation approaches using patient actors (Okuda et al, 2009; Bosse et al, 2012; Dwamena et al, 2012; Mandrusiak et al, 2014; Gartmeier et al, 2015) and video-based examples (Gartmeier et al, 2015; Schmitz et al, 2016) in particular, have yielded positive results for clinical and communication competencies of health professional students (Dwamena et al, 2012; Bosse et al, 2012; Okuda et al, 2009; Mandrusiak et al, 2014). Furthermore, previous research demonstrates that brief, high intensity, active approaches using multiple teaching and learning strategies enhance knowledge, self-efficacy and performance of patient-centred care (Dwamena et al, 2012). There is no known research in the area of training patient education skills in physiotherapy students. The effect of different types of training on other health professional students’ performance of patient education is promising but evidence is limited by methodological weakness. No studies to date have used a matched control group to demonstrate the effectiveness of training and no objective assessment of patient education skills have been employed to assess outcomes. Furthermore, the effect of specific training on patient education skills or self-efficacy of physiotherapy students has not been investigated.

It is important to consider how to integrate such a training intervention into the existing physiotherapy curriculum. Physiotherapy training providers are under increasing pressure to fit all required content and face resource constraints [50]. Emphasis should be on innovative, efficient, evidence based pedagogies that equip
learners to become effective patient educators. Numerous studies support the use of simulated patient pedagogy to provide learners with interactive opportunities to enhance clinical knowledge, communication and patient-centred skills, while also producing high teaching and learning satisfaction for staff and students (Ahsen et al, 2010; Shawler et al, 2011; Dwamena et al, 2012; Lin et al, 2013; Gartmeier et al, 2015).

We hypothesised that the patient education training intervention would yield i) higher ratings of patient education self-efficacy compared to a control group, and ii) better performance of patient education skills compared to a control group.

Methods

Design
The study was a parallel group randomised controlled trial conducted at The University of Queensland. The study was approved by the institutional research ethics committee and participants provided informed consent prior to participation. A wait-list control design was selected to ensure control participants were not disadvantaged in their subsequent course examinations. An independent researcher generated a random number list to determine participant group allocation (intervention or control). This was implemented via concealed randomization whereby the intervention facilitator assigned each student to either an intervention group that participated in the intervention before the practical assessment or to a wait-list control group that received the intervention after completion of all study evaluations. All participants completed baseline questions (demographics and self-efficacy). All participants undertook an objective standardised clinical examination (OSCE) immediately after the intervention that was video recorded and later evaluated by an independent assessor who was blinded to group allocation.

Sample
Physiotherapy students from University of Queensland who were undertaking their final year of the program were recruited for participation. The intervention was embedded into the existing course timetable. By this stage in the program, students had not yet participated in clinical placements but had undertaken courses that utilised simulated patients (actors trained to portray patients in simulated clinical...
settings) and role play. All students were informed that their participation and performance within the study would not influence their final course grades. Attendance to the intervention was compulsory, however involvement in the evaluation components was voluntary and students provided informed consent to participate.

**Description of Experimental Intervention**

Skill components reflected in the intervention framework consisted of (Table 1):

a) assessing the educational needs of the patient
b) delivering education content (verbal, written and skill based) that is tailored to the patient and
c) evaluating patient learning.

Specific learning objectives for the intervention were drawn from an extensive review of the literature and consultation with academic and practicing physiotherapists and curriculum designers. The intervention drew on aspects of patient education consistent with a therapeutic alliance (Pinto et al, 2012) and patients' perspective of patient-centeredness in physiotherapy (Kidd et al, 2011) (Table 1).

Table 1. Outline of workshop learning objectives

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Understand the relationship between patient-centred care and patient education</td>
</tr>
<tr>
<td>2.</td>
<td>Demonstrate an understanding of the principles of adult learning and how they apply to patient education</td>
</tr>
<tr>
<td>3.</td>
<td>Demonstrate an understanding of health literacy and its application to patient education</td>
</tr>
<tr>
<td>4.</td>
<td>Determine the patient's learning needs, existing knowledge, concerns and preferences</td>
</tr>
<tr>
<td>5.</td>
<td>Develop and prioritise tailored educational content and delivery approaches based on the educational needs of the patient</td>
</tr>
<tr>
<td>6.</td>
<td>Demonstrate patient education consistent with principles of adult learning</td>
</tr>
<tr>
<td>7.</td>
<td>Identify and manage barriers to effective learning</td>
</tr>
<tr>
<td>8.</td>
<td>Select and demonstrate methods to evaluate the outcomes of patient education</td>
</tr>
</tbody>
</table>

Designing a training intervention for students to develop their patient education skills required consideration of several factors. These included development of training objectives that reflected the underlying framework of patient-centred education, and creation of a simulated clinical environment where skills could be actively applied and reflected upon.
The training intervention focused on the theoretical underpinnings of effective patient education with video examples, as well as the application of practical skills through interaction with simulated patients, peer work, feedback and group-based debriefing. The training intervention was 3.5h in duration. Components are outlined in Table 2.

Table 2. Workshop components

<table>
<thead>
<tr>
<th>Component</th>
<th>Content</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorial</td>
<td>• Overview of patient education theory and evidence.</td>
<td>60 minutes</td>
</tr>
<tr>
<td></td>
<td>• How to assess educational needs of the learner (patient), tailor patient education and evaluate patient learning.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Video examples of patient education in practice and discussion.</td>
<td></td>
</tr>
<tr>
<td>Simulation Practice</td>
<td>• Rotation of three clinical cases with actors portraying various patient cases.</td>
<td>90 minutes</td>
</tr>
<tr>
<td></td>
<td>• Students worked in groups of three to plan and perform each component of the education with the patient (actor): assessment, implementation or evaluation of patient education, as well as observation of peers</td>
<td></td>
</tr>
<tr>
<td>Structured feedback</td>
<td>• Actors and peers provided structured feedback to each student performing role of therapist for each case rotation.</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Group debrief</td>
<td>• Debrief and discussion relating to cases, challenges encountered and how to overcome barriers</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>
assigned to the wait-list control group received the workshop following the study evaluation. This ensured that all students were able to participate in the intervention as part of their physiotherapy program.

The simulated patient actors received 2h of training delivered by the lead facilitator. Training included the goals and objectives of the intervention, how to portray the cases, and precise instructions for providing student feedback. The same actors and staff facilitator were used for each of the eight replications of the workshop to ensure standardisation of delivery.

**Outcome Measures**

*Self-efficacy measure and demographic information:*  
Participants completed a 20-item patient education self-efficacy assessment (Forbes et al, 2017) before (T1) and following the intervention (or following no intervention for the control group) (T2). Participants were assigned a unique code for pre and post self-efficacy measures and OSCE performance scores to be matched whilst remaining de-identified. Demographic questions included gender, program type (undergraduate or graduate-entry) and whether English was first language.

*Performance of patient education during a clinical OSCE exam:*  
A review of the literature found no formal measure to assess patient education skills of physiotherapists. Therefore, a structured step-wise process was undertaken to develop an appropriate measure for use in this study.

Phase 1: Empirically derived patient education competencies for physiotherapists reported in a previous study (Forbes et al, 2017) were used to develop the initial performance measure. Eleven of the 22 identified competencies were considered by the research team to be items that represented demonstrable skills that could be observed within a single clinical scenario. These items were included in the performance measure.

Phase 2: The next phase was a review of the existing graduate professional standards in the Australian and New Zealand physiotherapy practice thresholds (PBA, 2015) to identify any further items that reflected patient education competencies for physiotherapists. No additional items were identified.
Content validity was then assessed to ensure the items were appropriate for application to a physiotherapy student population and would be observable and measurable within an OSCE. A panel of five clinical educators and four academics were purposively identified based on their knowledge and expertise regarding physiotherapy student clinical education. Each panel member was individually interviewed by the lead investigator across two face-to-face meetings. This panel was asked about individual item clarity, representativeness and relevance to the construct with application to a student population. This panel was asked about individual item clarity, representativeness and relevance to the construct with application to a student population. The panel were asked to rate each item as “Relevant” “Somewhat relevant” “Slightly relevant” and “Not relevant at all,” as is recommended to assess variability of rating amongst reviewers (Polit & Beck, 2006). They were also given an opportunity to provide feedback to improve the measure (Rubio et al, 2003; Polit & Beck, 2006; Schilling et al, 2007).

The focus of the final instrument (Table 3) was on the students’ ability to provide patient education rather than the specific educational content, (i.e. how education was provided rather than what was being provided), although three items specifically related to patient education content (Table 3).
### Table 3. Patient education performance measure

<table>
<thead>
<tr>
<th>Competency</th>
<th>Circle one number only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Seeks patient perceptions and/or concerns using appropriate questioning</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>2  Uses reflective questioning</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>3  Uses shared decision making</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>4  Selects and uses appropriate learning content tailored to the best interests of the patient</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>5  Uses effective and engaging communication styles, language and/or materials that are tailored to the patient</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>6  Effectively explains the patient’s condition or problem</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>7  Provides self-management education and reinforces patient ability to manage</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>8  Provides family or care-givers with information</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>9  Effectively summarizes information</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
<tr>
<td>1  Identifies when educational needs have been met</td>
<td>0 1 2 3 4 Not assessable</td>
</tr>
</tbody>
</table>

0 = Skill/Competency not attempted or observed  
1 = A minimal attempt is made to exhibit skill/competency  
2 = Skill/competency observed and a minimum skill level is achieved  
3 = Skill/competency exhibited to a good standard  
4 = Skill/competency exhibited to an excellent standard  
Not assessable = No opportunity to demonstrate skill/competency

An OSCE was used to evaluate patient education skills. A patient case was developed which provided the student with the opportunity to deliver information and advice to a patient in a realistic clinical scenario. The OSCE included 10 minutes for students to read the patient case and plan their education, followed by 10 minutes with the standardised patient. The same patient case was used for all students and actors were blinded to participant group allocation. To avoid contamination all students were quarantined following their OSCE so they could not interact with students who were yet to enter the OSCE the same day. Each OSCE performance was video-recorded using a static camera within each examination cubicle. An independent blinded assessor with experience in physiotherapy clinical education and clinical practice rated each video-recorded OSCE using the performance
measure. The assessor was trained on using the measure prior to rating student performance. Video-recording allowed one assessor to complete all evaluations.

**Data analysis**

Statistical analysis was conducted using SPSS version 23 (SPSS, Chicago). Significance was set at p<0.05.

*Analysis of baseline data*

To examine the effect of randomisation, the baseline characteristics (T1) for the two groups were compared using an independent t-test for self-efficacy scores (Table 5) and chi square test for gender, physiotherapy program type and English as first language (Table 4).

*Analysis of outcomes*

Comparison of individual student pre-post self-efficacy scores (T1-T2) was undertaken using a paired t test. Intervention and control group performance scores of individual patient education competencies were compared using an independent t test. The relationship between post-intervention self-efficacy scores and OSCE performance was analysed using a Pearson product moment correlation. A one-way analysis of variance was used to assess group differences in self-efficacy and OSCE performance according to when the intervention occurred across the four weeks to determine whether the week of intervention delivery within the course had an influence on OSCE performance. An analysis of covariance (ANCOVA) was performed to assess between-group differences of self-efficacy scores with pre-test self-efficacy scores as the controlled covariate. All tests were performed as two-tailed with significance of p<0.05.

*Reliability of performance measure*

Reliability of the performance measure was assessed by calculating internal consistency, inter-rater reliability and test-retest reliability. Internal consistency was calculated using a Cronbach’s alpha across the performance scores. A Cronbach alpha of 0.811 was calculated, indicating a good level of internal consistency of the measure (Bland & Altman, 1997). Inter-rater reliability was measured using two
assessors across 40 blinded video performances. Test-retest reliability was calculated by one assessor scoring 40 randomly selected video cases on two occasions separated by 6 weeks. The intra-class correlation coefficients (ICC) with 95% confidence intervals were calculated. In the assessment of inter-rater and test-retest reliability, the following level of agreement was used; 0–0.2 poor, 0.21–0.4 fair, 0.41–0.6 moderate, 0.61–0.8 substantial, and >0.81 almost perfect (Landis & Koch, 1977). Agreement between the assessors ranged from −0.12 to 0.78. Nine of the eleven items had an ICC of >0.6. The remaining two items, scoring -0.12 and 0.54 were reviewed and discussed by the assessors in relation to interpretation, and use of the scoring rubric and performance indicators. After re-assessment of a further 40 video performances, agreement for these two items improved to 0.69 and 0.71. For test-retest reliability, all items had an ICC of >0.64 indicating a substantial level of reliability (Landis & Koch, 1977). Reliability assessment was performed prior to analysis of trial data.

**Results**

Participant flow through the study is outlined in Figure 1.

![Figure 1. Flow of study participants](image)
Participants

While 166 eligible students were recruited, 164 completed the study. One declined to participate. A second participant withdrew as he/she was unable to attend due to illness. The baseline characteristics of participants were similar between intervention and control groups (Table 4).

Table 4. Participant demographics at baseline

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%) N=83 (50.6)</td>
<td>N (%) N=81 (49.4)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>36 (43.4)</td>
<td>34 (42.0)</td>
<td>0.69</td>
</tr>
<tr>
<td>Female</td>
<td>47 (56.6)</td>
<td>47 (58.0)</td>
<td>0.45</td>
</tr>
<tr>
<td>Physiotherapy program type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Entry</td>
<td>19 (22.9)</td>
<td>17 (21.0)</td>
<td>0.12</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>64 (77.1)</td>
<td>64 (79.0)</td>
<td>0.57</td>
</tr>
<tr>
<td>English not first language</td>
<td>8 (9.6)</td>
<td>9 (11.1)</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Self-efficacy

There were no significant differences between self-efficacy scores at baseline between the two groups (p=0.15-0.81). There were 78 matched complete pre and post intervention self-efficacy measures within the intervention group, and 79 within the control group. The remaining self-efficacy scores were unable to be matched due to incomplete identification codes. All eleven items of the self-efficacy scale were significantly higher in the intervention group following the intervention (p<0.05). There was no significant change of self-efficacy scores in the control group on any items (p=0.19–0.89) (Table 3). There were no significant correlations between gender, English as first language, type of physiotherapy degree, or timing (i.e. week) of workshop on self-efficacy scores of either group (p=0.12-0.69) (Table 4). There was a significant between-group difference in mean post self-efficacy scores when controlling for pre-test scores (effect size=0.57; p<0.05). The covariate (pre self-efficacy scores) had a significant effect on post self-efficacy mean scores (effect size=0.43; p<0.05).
Table 5. Self-efficacy scores at T1 and T2

<table>
<thead>
<tr>
<th>Self-efficacy Item</th>
<th>Intervention Group (n=78)</th>
<th>Control Group (n=79)</th>
<th>Between group difference T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1 Mean (SD)</td>
<td>T2 Mean (SD)</td>
<td>d Effect size</td>
</tr>
<tr>
<td>I understand the role of patient education</td>
<td>4.17 (0.49)</td>
<td>4.63 (0.48)</td>
<td>0.95</td>
</tr>
<tr>
<td>I understand the impact of social, cultural and behavioural variables on patient learning</td>
<td>3.89 (0.67)</td>
<td>4.18 (0.64)</td>
<td>0.30</td>
</tr>
<tr>
<td>I understand the principles of adult learning</td>
<td>3.28 (0.80)</td>
<td>4.29 (0.66)</td>
<td>1.38</td>
</tr>
<tr>
<td>I feel confident to use questioning to seek the patient’s perceptions and concerns about their condition</td>
<td>3.57 (0.77)</td>
<td>4.34 (0.60)</td>
<td>1.12</td>
</tr>
<tr>
<td>I feel confident to obtain information from the patient assessment to understand their learning needs</td>
<td>3.33 (0.78)</td>
<td>4.27 (0.58)</td>
<td>1.37</td>
</tr>
<tr>
<td>I feel confident to use reflective questioning (questions that allow the patient to reflect out loud)</td>
<td>3.17 (0.76)</td>
<td>4.10 (0.67)</td>
<td>1.30</td>
</tr>
<tr>
<td>I feel confident to select and use a range of appropriate learning content that is tailored to the patient</td>
<td>3.17 (0.71)</td>
<td>4.04 (0.60)</td>
<td>1.32</td>
</tr>
<tr>
<td>I feel confident to explain the patient’s condition to them</td>
<td>3.30 (0.81)</td>
<td>3.81 (0.71)</td>
<td>0.67</td>
</tr>
<tr>
<td>I feel confident to use shared decision making (ie outlining options to the patient and reaching a decision about treatment together)</td>
<td>3.43 (0.81)</td>
<td>4.04 (0.60)</td>
<td>0.86</td>
</tr>
<tr>
<td>I feel confident to provide self-management strategies to the patient and reinforce their ability to manage</td>
<td>3.23 (0.81)</td>
<td>4.02 (0.66)</td>
<td>1.07</td>
</tr>
<tr>
<td>I feel confident to provide family or care-givers with information (where they are present)</td>
<td>3.50 (0.67)</td>
<td>3.99 (0.69)</td>
<td>0.72</td>
</tr>
<tr>
<td>I feel confident to tailor communication styles, language and materials to the patient</td>
<td>3.47 (0.74)</td>
<td>4.02 (0.70)</td>
<td>0.76</td>
</tr>
<tr>
<td>I feel confident to control attention and engagement when educating the patient</td>
<td>3.40 (0.62)</td>
<td>4.13 (0.63)</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>3.35 (0.73)</td>
<td>4.15 (0.68)</td>
<td>1.13 0.00</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>I feel confident to provide education content that is in the best interests of the patient</td>
<td>3.07 (0.64)</td>
<td>3.97 (0.70)</td>
<td>1.34 0.00</td>
</tr>
<tr>
<td>I feel confident to recognise and effectively manage barriers to effective education (ie identify where learning may be compromised and act to discuss or modify these barriers)</td>
<td>3.68 (0.71)</td>
<td>4.17 (0.60)</td>
<td>0.75 0.00</td>
</tr>
<tr>
<td>I feel confident to summarise information for the patient</td>
<td>3.27 (0.59)</td>
<td>3.92 (0.68)</td>
<td>1.02 0.00</td>
</tr>
<tr>
<td>I feel confident to integrate evidence based practice into patient education</td>
<td>3.71 (0.56)</td>
<td>4.21 (0.64)</td>
<td>0.83 0.00</td>
</tr>
<tr>
<td>I feel confident to provide education within the limits of my practice and seek advice or refer to another professional where appropriate</td>
<td>3.37 (0.74)</td>
<td>4.34 (0.59)</td>
<td>1.45 0.00</td>
</tr>
<tr>
<td>I feel confident to identify when patient learning has been achieved through evaluation</td>
<td>3.47 (0.72)</td>
<td>4.21 (0.58)</td>
<td>1.13 0.00</td>
</tr>
<tr>
<td>I feel confident to review progress of the patient’s learning</td>
<td>3.98 (0.75)</td>
<td>4.38 (0.57)</td>
<td>0.6 0.00</td>
</tr>
</tbody>
</table>
**Performance of patient education**

The 8th item of the performance measure ("Provides family or care-givers with information") was not able to be assessed in the OSCE as there was no parent or caregiver required in the case. As such there were 10 assessable items within the performance measure. The patient education performance scores differed significantly between groups, with participants from the intervention group achieving higher scores for nine of the ten assessable items (p<0.05) (Table 6). Item 5 “Uses effective and engaging communication styles, language and/or materials that are tailored to patient” was not significantly different between groups although a trend was observed.

Table 6. Performance scores

<table>
<thead>
<tr>
<th>Performance Item</th>
<th>Intervention Group Mean (SD)</th>
<th>Control Group Mean (SD)</th>
<th>d (effect size)</th>
<th>Mean difference (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Seeks patient perceptions and/or concerns using appropriate questioning</td>
<td>3.73 (0.50)</td>
<td>2.16 (1.09)</td>
<td>1.85</td>
<td>1.57 (0.00)</td>
</tr>
<tr>
<td>2 Uses reflective questioning</td>
<td>2.53 (0.82)</td>
<td>1.52 (1.06)</td>
<td>1.07</td>
<td>1.01 (0.00)</td>
</tr>
<tr>
<td>3 Uses shared decision making</td>
<td>1.70 (1.09)</td>
<td>1.20 (0.83)</td>
<td>0.52</td>
<td>0.50 (0.01)</td>
</tr>
<tr>
<td>4 Selects and uses appropriate learning content tailored to the best interests of the patient</td>
<td>2.51 (0.74)</td>
<td>2.02 (0.47)</td>
<td>0.79</td>
<td>0.48 (0.00)</td>
</tr>
<tr>
<td>5 Uses effective and engaging communication styles, language and/or materials that are tailored to patient</td>
<td>2.51 (0.70)</td>
<td>2.32 (0.67)</td>
<td>0.28</td>
<td>0.19 (0.09)</td>
</tr>
<tr>
<td>6 Effectively explains the patient's condition or problem</td>
<td>2.58 (0.81)</td>
<td>1.91 (0.85)</td>
<td>0.81</td>
<td>0.66 (0.00)</td>
</tr>
<tr>
<td>7 Provides self-management education and reinforces patients ability to manage</td>
<td>2.48 (0.67)</td>
<td>2.21 (0.74)</td>
<td>0.38</td>
<td>0.27 (0.02)</td>
</tr>
<tr>
<td>8 Provides family or care-givers with information</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>9 Effectively summarizes information</td>
<td>1.37 (0.93)</td>
<td>0.62 (0.83)</td>
<td>0.85</td>
<td>0.76 (0.00)</td>
</tr>
<tr>
<td>10 Uses the “teach back” (verbal or demonstration) method to evaluate learning</td>
<td>2.06 (1.50)</td>
<td>0.09 (0.48)</td>
<td>1.79</td>
<td>1.97 (0.00)</td>
</tr>
<tr>
<td>11 Identifies when educational needs have been met</td>
<td>1.33 (1.19)</td>
<td>0.19 (0.50)</td>
<td>1.25</td>
<td>1.14 (0.00)</td>
</tr>
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</table>
Relationship between self-efficacy and performance

There was a weak positive correlation between total self-efficacy scores and performance scores of 0.229 (p=0.039).

Effect of week of intervention

There were no significant differences in OSCE performance scores within the intervention or control group based on timing of the workshop in the course (week 1, 2, 3 or 4) (f=0.65; p=0.59)

Discussion and Conclusion

This is the first study to examine the effect of specific training on physiotherapy students’ patient education self-efficacy and performance. Our findings demonstrated significantly higher self-efficacy scores and performance across observable competencies in students who received a patient education training intervention compared to a matched control group. These findings imply that a single intervention session using video examples, simulated patient practice and debriefing can enhance physiotherapy student self-efficacy and performance in delivery of patient education. Importantly, at 3.5hrs, it is realistic that such an intervention may be effectively integrated into existing physiotherapy training programs.

One of the largest differences in OSCE performance scores between the intervention and control group related to assessing the patient’s perceptions and concerns using appropriate questioning (Item 1). The low scores of the control group for this item indicate that without specific training, this skill may be underdeveloped when students enter clinical placement settings. The intervention group demonstrated significantly better performance of this skill and furthermore, had enhanced self-efficacy relating to this skill following training. Assessing the needs of the patient as a learner, including identifying their concerns and preferences have been previously identified as a critical aspect of enhancing patient-centred education outcomes (Meesters et al, 2009; Crumlish & Magel, 2011; Friberg et al, 2012; Ndosi et al, 2015). This may have important implications for training as patient education that is patient-centred in nature results in higher quality patient care and improved health outcomes (Smith et al, 2007; Hyrkas & Wiggins, 2014). Conversely, therapist-
centered education may result in a lack of attention to patient needs and contribute to the development of barriers that impact outcomes and care (Saha et al, 2008). As the intervention group demonstrated a better ability to assess the learning needs of the patient, this likely enabled them to tailor their education to the patient. This may explain why the intervention group scored significantly higher in their tailoring of patient education and may have impacted on other aspects of their OSCE performance.

Another large difference in patient education performance between the intervention and control groups related to the use of the ‘teach-back’ approach (Item 10). The mean score for the control group was less than 0.1, indicating that this skill was rarely demonstrated by control group participants. The teach-back approach has been widely recommended as an important inclusion within patient education training curricula as it allows the professional to appraise patient learning and progress the educational process (Smith et al, 2007; Crumlish & Magel, 2011; Frank-Bader et al, 2011; Friberg et al, 2012; Tamura-Lis, 2013) and ultimately assess the impact of their teaching endeavours (Crumlish & Magel, 2011). Furthermore, it has been empirically recognised as a patient education competency that all physiotherapists should possess (Forbes et al, 2017). The large difference between the intervention and control group was not surprising given that this skill receives little attention in health professional teaching and training (Friedman et al, 2011). Our findings demonstrate that with training, physiotherapy students are able to integrate this skill into an observable clinical interaction. Thus, this skill should be specifically included in physiotherapy curricula.

Health professionals, including physiotherapists, may not effectively engage in patient education when they lack self-efficacy to use it in practice (Macdonald et al, 2008; Ivarsson & Nilsson, 2009; Ssvavarsdottir et al, 2015). This study was able to demonstrate that the brief training intervention led to a significant improvement in self-efficacy across all physiotherapy patient education competencies. These findings may indicate a relationship between training, self-efficacy and performance of patient education. Although weak, the significant positive correlation between self-efficacy and OSCE performance indicates a potentially mediating role of self-efficacy on patient education performance. This is consistent with other studies that
have identified a relationship between higher self-efficacy and higher clinical performance in physiotherapy (Jones et al, 2011), medical (Opacic et al, 2003) and nursing students (McLaughlin et al, 2008).

There are several possible reasons to explain the lack of difference between the two groups relating to the “use of communication styles, language and materials that are tailored to the patient” (Item 5). Firstly, this may be because communication is trained and emphasised throughout the physiotherapy curricula prior to this intervention and students already possess these skills to a high standard and this is not significantly improved following a brief intervention. Secondly, the training intervention was aimed at the process and skills of patient education and did not focus explicitly on communication, therefore it was not surprising that participants in both groups were scored similarly for performance in this area.

Limitations

There are several limitations to be considered in this study. First, the research design was not able to fully control for contamination or compensatory rivalry between intervention and control groups, nor control for participant awareness of group allocation. The interventions and associated assessments were delivered four times over a four-week period, which meant that students who had completed their involvement could potentially discuss both the intervention and the OSCE with students yet to participate. Awareness of group allocation may have influenced self-efficacy scores. However, as analysis did not show an effect of timing on OSCE performance, it is not anticipated that this influenced results. Further, the use of the self-efficacy measure before the intervention may have proposed a threat to internal validity due to familiarisation with one of the primary outcome measures.

Second, factors outside of the effect of the training also need to be considered. One important factor is the use of feedback. The use of positive feedback has been linked to higher self-efficacy regardless of skill performance (Boehler et al, 2006; Aper et al, 2012). During the intervention participants received feedback from their peers and the actor playing the role of the patient. This feedback was observed to be largely positive in nature. As feedback was provided to participants during their interactions by the patient actors and peers, we were not able to fully control the amount and
type of feedback received, nor could we test for possible interactions between quality of feedback and self-efficacy scores.

Third, generalising the findings to performance in real clinical practice and maintenance of such skills is not known as a follow up was not used. Patient education skills in clinical settings are the long-term goal of such an intervention. There is a need for further work to examine the effects of training on longer-term clinical performance outcomes. Presumably, long term performance would be further improved through regular practice, observation and feedback, such as that occurring through clinical placement and mentoring experiences. The success of this training model in enhancing patient education self-efficacy and performance may have similar effects in other health professional groups and therefore could potentially inform curricula training of other health professional students. Further research to ascertain the effect of training across other settings and professions is required. Finally, the intervention utilised several pedagogical components which may have contributed to skill development and self-efficacy in a number of ways. It is not known which components had the greatest effect on self-efficacy and performance and if all components were required for the success of the intervention.

Conclusion

The results of our study show the benefits of a single, brief patient education training intervention on physiotherapy student self-efficacy and performance of patient education. It also provides support for specific patient education training being incorporated into health professional education. There is a need for further research to understand the long-term effects or maintenance of such skills and the impact on patient care.

Practice Implications

A brief intervention offers an approach that could be integrated into existing programs to augment students’ patient education self-efficacy and skills and enhance readiness for clinical practice. Future research should consider the effects of follow-up training on the maintenance of skills, particularly into clinical settings. It would be anticipated that ongoing implementation within the workplace may be
required to sustain longer term benefits for both professional and patient outcomes (Visser & Wysmans, 2010).

References


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CHAPTER SEVEN: Discussion

The purpose of this chapter is to discuss the overall findings from this thesis and to provide insight into the limitations, implications and directions for further research.

7.1 Summary of the Research

The overarching purpose of this thesis was to explore patient education practice and competencies in physiotherapy and to understand how training may enhance self-efficacy and the skills of physiotherapy students to engage in patient education. To achieve this overall purpose, several detailed investigations were conducted to resolve the identified deficiencies within the current literature. The first was to determine current patient education practices and perceptions of physiotherapists (Study 1) and ascertain how these vary based on levels of experience (Study 2). This provided insight into key practice issues relating to novice physiotherapists’ use of patient education and provided further understanding of the perceived importance of factors that lead to the development of patient education skills. This study also suggests a positive relationship between professional experience and patient-centred approaches to patient education.

Due to the inherent lack of extant literature, knowledge of patient education competencies specific to physiotherapy was necessary to further define professional practice requirements, inform training, and develop appropriate outcome measures for the later studies. An explicit set of competencies was determined through a consensus approach (Study 3). As a key attribute of effective patient education, patient-centred elements featured strongly in the list of competencies. To further understand patient education training needs and understand new-graduate readiness to engage in patient education, it was important to explore self-efficacy of new-graduates, and specifically investigate the relationship between self-efficacy and previous training experiences (Study 4). It was also apparent from the existing literature that a more scientifically robust method of assessing the effectiveness of patient education skill training was needed. The literature review of patient education practice and training approaches was used to inform the design of a training intervention and outcome measures. The efficacy of this specific patient education
intervention delivered to physiotherapy students was then determined using a randomised controlled trial (Study 5).

7.2 Main Conclusions

Below is a summary of the main conclusions that can be drawn from the series of studies in this thesis in conjunction with the extant literature:

- In Study 1, Australian physiotherapists reported frequently using a variety of educational content and delivery approaches, and perceive most educational content to be important in their practice. This is similar to that of earlier research in North America and Europe. Also consistent with previous research, Australian physiotherapists perceive experience with patients, and interactions with colleagues as the most important factors in the development of their patient education skills (Chase et al, 1993; Hillier et al, 2015). The current research indicated a greater relative perceived importance of the contribution of professional in-services to the development of patient education skills compared to earlier research (Chase et al, 1993). This may suggest the important role of ongoing professional development for patient education skill development, which has been reflected within existing research (Visser & Wysmans, 2010; Bergh et al, 2014; Svavarsdottir et al, 2015). The relatively low rating of importance of formal academic physiotherapy preparation compared to other factors in our study is of particular interest considering patient education is an expected competency for graduate-entry physiotherapists (Physiotherapy Board of Australia, 2015).

- The findings from Study 2 indicated that experienced physiotherapists have a higher use of patient-centred educational content and higher use and perceived importance of patient self-management compared to novice physiotherapists, as consistent with previous research (Gyllensten et al, 1999; Holmes, 1999; Resnik & Jensen, 2003; Gold & McClung, 2006; Hoeger-Bement et al, 2014; Richardson et al, 2014). These findings indicate that students or novice physiotherapists may benefit from strategies to facilitate a patient-centred approach to patient education, self-management education, evaluation approaches and strategies to manage barriers.
• Study 3 led to the development of a concise list of competencies for patient education in physiotherapy. These competencies strongly reflect a theme of patient-centered education, and highlight the role of the physiotherapist in assessing learning needs, tailoring patient education and evaluating patient learning as consistent with best practice outlined within the relevant literature. These findings aid in supporting the training of physiotherapy students and professionals toward specific competencies for the effective provision of patient education. By identifying the key competencies in this area, benchmarking patient education training and assessment of physiotherapists for improved educational and professional outcomes is enabled.

• The findings of Study 4 reinforce the role of training experiences that encompass Bandura’s three main sources of self-efficacy in the development of patient education self-efficacy of new-graduate physiotherapists. Providing opportunities for students to enact real practice such as during clinical placements and simulated patient practice were perceived as having the strongest influence on patient education skill. This was consistent with findings from Study 1 in which physiotherapists identified actual patient practice as the most important influence on the development of patient education skills. Key areas where new-graduates may lack self-efficacy were identified, in particular, the use of reflective questioning and identifying and managing barriers. Reflective questioning is an important component of effective patient education as it allows the therapist to collaborate with the patient, support problem solving and promote decision making. Identifying and managing barriers must be considered for the therapist to determine how they will engage in patient education and how successfully they may address factors influencing patient learning. These represent key areas that could be augmented through patient education training approaches, which informed the following study.

• Study 5 advanced the overall aim of the thesis by evaluating the use of a patient education training program on patient education self-efficacy and skills of physiotherapy students. Training incorporated video examples, simulated patient practice, feedback and debriefing. Importantly, this is the first study to assess the efficacy of a physiotherapy patient education training intervention. This is also the
first study to assess patient education self-efficacy and skills in relation to specific patient education competencies in the health professions. Adding to previous literature, the findings demonstrate that brief, active approaches, using multiple teaching and learning strategies, enhance self-efficacy and performance of patient education skills. This study also explored the relationship between patient education self-efficacy and performance. Although weak, the significant positive correlation between self-efficacy and skills highlight the potentially mediating role of self-efficacy on patient education performance. This is consistent with other studies that have identified a relationship between higher self-efficacy and higher clinical performance in health professional students. The findings from this study strongly support the use of such training embedded within the physiotherapy curriculum to enhance patient education self-efficacy and skills.

### 7.3 Training and research implications

The research conducted within this thesis has made several major contributions to the knowledge of patient education practice in physiotherapy. Four key implications are outlined:

A shared understanding of best practice is needed to enhance patient education training and practice.

Establishing expert consensus of patient education competencies specific to physiotherapy provides a common language in the field of physiotherapy training. This also allows a shared understanding of outcomes for professional practice standards and assessment. Practicing physiotherapists should be aware of not only their role as patient educators but of the characteristics of effective practice. Patient-centered approaches that involve assessing the educational needs of the patient, tailoring content and delivery to the patients' preferences, and evaluating patient learning are some of the key concepts relating to best practice of patient education, highlighted in this research. The inclusion of these in the final competency list can be used to guide best practice. As a result of this body of work, physiotherapist awareness in this area may act to stimulate interest for professional practice activities or in-services to further develop patient education skills.
It is important to also reflect more broadly on the role of patient education within physiotherapy curricula. The shift in healthcare from a largely biomedical model has provided a stimulus for physiotherapy training to focus on patient-centred skills and the biopsychosocial nature of health. This has driven a wider view of the social context of the individual and how they seek to manage and maintain their own health, rather than viewing healthcare as driven by disease processes and the decisions of the health professional (Higgs et al, 1999; Struber, 2003; Martins, 2006). Patient education is an integral aspect of patient-centred care and therefore should form a key component of a contemporary physiotherapy curriculum. Creating a dialogue about the role of patient education within the wider physiotherapy curriculum, teaching patient education theory, enabling specific patient education encounters and advocating for the practice of skills during training imparts to our future health professionals that patient education is a vital skill. This may stimulate and empower physiotherapy students to become more effective educators.

*Self-efficacy is an important construct to foster and it is especially facilitated by direct practice*

Experiences consistent with Bandura’s sources of self-efficacy had a strong influence on patient education self-efficacy within the research. New-graduate physiotherapists who reported having all three of these major sources of experiences during their entry-level training had significantly higher self-efficacy in relation to patient education competencies than those who did not undertake all curricula experiences. These findings help reinforce the role of opportunities to practice and perform patient education during training, in addition to observation, feedback and experiencing a social emphasis on these skills as important in the training of physiotherapy students. To develop self-efficacy related to patient education practices, the existing research recommends educational strategies such as student exposure to appropriate role modelling, providing explicit opportunities to practice skills in realistic environments and opportunities for performance feedback (Tresolini & Stritter, 1994; Benbassat & Baumal, 2002; Bosse et al, 2012; Svavarsdottir et al, 2015). Our findings support these recommendations by demonstrating a link between training experiences and self-efficacy and new-graduate physiotherapist perception of their significance. Nearly all new-graduates within the self-efficacy
study rated successful use of patient education during clinical placements as a significant influence on their confidence to perform patient education and it emerged as the most dominant theme from the research. Whether this is due to this being the first opportunity that students have to utilise patient education skills or not is beyond the scope of this research however it does reinforce the critical role of clinical placement experiences on the development of patient-centred skills (Healey, 2008; Ernstaw et al, 2009).

*Physiotherapy training providers should have awareness of their role in patient education self-efficacy and skills*

Clinical educators and academics should have an awareness of their role in promoting and potentially enhancing patient education self-efficacy and skills. This was strongly reflected within our findings where new-graduates indicated that clinical educators or teachers who emphasised the importance of patient education were a significant contributor to their patient education self-efficacy. New-graduates also identified feedback as a significant influence, emphasising the role of verbal or social persuasion in developing patient education self-efficacy. These findings underscore the importance of the ‘hidden curriculum’ whereby educators may shape student values, roles and subsequent professional identity as patient educators both positively and negatively (Gaufberg et al, 2010; Monrous, Rees & Hu, 2011). Other recent research also supports these findings where health professionals experienced in the area of patient education strongly identify work-based practice, rehearsal and mentoring as important in the development of patient education expertise and confidence (Svavarsdottir et al, 2015).

*Training can be embedded within existing curricula*

An important consideration in this project was designing an intervention that could be realistically embedded into existing physiotherapy programs. Physiotherapy training providers are under increasing pressure to fit all required content into the curriculum with increasing resource constraints (McMeeken, 2007). Emphasis needs to be on innovative, efficient, evidence-based pedagogies that equip learners to become effective patient educators. Numerous studies support the use of simulated patient pedagogy to provide learners with interactive opportunities to enhance clinical
knowledge, communication and patient-centred skills, while also producing high teaching and learning satisfaction for staff and students (Ahsen et al, 2010; Lin et al, 2013; Mandrusiak et al, 2014; Gartmeier et al, 2015). Further emphasising this need, healthcare student transition to practice may be constrained if training is vastly different to that in real clinical practice (Bombeke et al, 2012). Authentic training can be achieved through realistic activities and tasks (Higgs, 2009) and addressing students’ attitudes towards patient-centred skills (Bombeke et al, 2012). Our research has emphasised the value and role of such training approaches and determined its efficacy with specific reference to patient education skills.

7.4 Further research

Although this research has helped to strengthen the knowledge of current patient education practice, competencies and training in physiotherapy, there still remain several critical areas that have not been addressed.

7.4.1 Understanding barriers to practice

The finding that novice physiotherapists perceived patient-related factors as the strongest barriers to effective patient education is consistent with previous research (Chase et al, 1993; Holmes, 1999). Previous literature has indicated that physiotherapists perceive they lack skills needed to identify and address patient related barriers such as presenting psychosocial issues (Sanders et al, 2013). Whether this relates to physiotherapists actual skills, or their perception of skills to manage these barriers is outside the scope of this research. Further research should aim to investigate the influence of such barriers on patient education practice of new-graduate or student physiotherapists. Training may then focus on how to identify and manage these barriers during training and within professional settings. This is critical as the attitude and perceptions displayed by student physiotherapists may adversely affect the patient-therapist interaction and subsequent patient outcomes.

7.4.2 Expansion of competencies

Further research should aim to advance the understanding and potential use of patient education competencies within professional practice settings. This includes establishing their presence and use within and across various clinical and non-clinical physiotherapy contexts. Replication of Study 3 with other panels, such as
practitioners in specialised areas of physiotherapy, experts in the area of patient education pedagogy and other health professional groups may provide further insight into competencies across settings and the potential for shared competencies across professions. This may be particularly pertinent where physiotherapists are adopting a wider scope of practice (Kersten et al, 2007) and in managing complex health conditions where consistency of key messages from multiple health professionals during patient education is integral to patient care.

7.4.3 Further effects of training

Health professionals with expertise in patient education cite peer support networks, observation of others, inter-professional cooperation, mentoring and more contact and discussion with other professionals in the area of patient education as key to developing expertise (Svavarsdottir et al, 2015). Although this highlights a range of educational and professional training opportunities, research is needed to determine the extent to which such approaches enhance patient education skills of physiotherapy students and professionals and the relative extent of these effects. This is particularly important considering that novice patient educators have been observed to avoid providing patient education due to fear of receiving unpredictable questions or insecurity in a new situation (Svavarsdottir et al, 2015). Future research should focus on determining factors and contributors to the differences between novice and experienced therapists and what can be done to close this gap, or to accelerate the acquisition of experience, self-efficacy and skill in this area.

7.4.4 Understanding further implications of training

A challenge for future research is exploring the longer term implications of patient education training in terms of self-efficacy and skills of individual learners and its influence on patient outcomes. Such follow up should include the investigation of self-efficacy and performance of skills within clinical placement settings before completion of physiotherapy training. Future research should also consider the use of follow-up training in the form in-services or meetings within professional settings for the maintenance of skills. Such educational strategies have shown promising results in professional settings (Visser & Wysmans, 2010) and health professionals including physiotherapists have identified such approaches as important in the development of patient education skills (Svavarsdottir et al, 2015).
Reflecting on future iterations of the intervention has been a major aspect of evaluating the implications of this thesis. Integrating patient education training as employed within the study is a key feature of a future curriculum that focuses on fostering patient education self-efficacy and skills. Reflecting on the thesis as a whole, the results support that self-efficacy and skills relating to patient education best practice can be enhanced using a brief, active, learner centred intervention. However, it is also important to identify the limitations of a single intervention. If the skills are not actively practiced or facilitated, either explicitly through further curricular activities or implicitly through patient interactions, educator feedback or encouragement from educators and peers, such a single intervention may have limited and short-term impact on skills and self-efficacy.

7.5 Limitations

Limitations for each study have been discussed within the individual study manuscripts. However, there were a few overall limitations within the thesis that are important to consider.

Although the research aimed to reflect patient-centred practice and patient satisfaction data from previous research was used to help inform the studies, the important view of the patient was not considered as a measure in the series of studies included in this thesis.

Study one to four used methodologies to obtain self-reported practices and perceptions of the physiotherapist or new-graduate and I am therefore unable to report actual clinical behaviours or perspectives that may be captured through other research methods. It is important to recognise that self-reported research may not accurately reflect actual clinical practice (Boynton and Greenhalgh, 2004). To contain the scope of the research, responses from patients, families, educators or administrators, or physiotherapists outside Australia were not specifically sought.

Generalising the findings from a randomised controlled trial to performance in real clinical practice and the maintenance of such skills is not known as a follow-up was not used. Although patient education skills in clinical settings are the long term goal of such an intervention, generalizability of results to actual clinical performance is not possible from the study design. Like most areas of teaching and learning, there is a
challenge of examining the effects of training on longer-term clinical performance outcomes and those across varying physiotherapy settings. Presumably, long term performance would be further improved through regular practice, observation and feedback, such as that occurring through clinical placement, mentoring and post-professional training.

The intervention developed for Study 5 utilised several pedagogical components which may have contributed to skill development and self-efficacy in a number of ways. Elucidating which specific training component had the greatest effect on self-efficacy and performance, or if all components were required for success of the intervention, cannot be substantiated when multiple approaches were used. This however is in keeping with physiotherapy curricula activities for skill development which often include a number of pedagogical elements such as lectures, peer learning, experiential practice and clinical practice (Healey 2008; Rodger et al, 2008). It is also consistent with the extant literature relating to patient consultation skills training of health professionals where approaches using multiple active teaching and learning strategies are well supported and thus recommended for improving in skills, knowledge and self-efficacy (Dwamena et al, 2012).

A key challenge in teaching patient education skills is that learners (ie, students) may have inadequate or incomplete clinical knowledge of the content they are trying to ‘teach’ the patient. Effective educators need adequate knowledge relating to the topic they are teaching (Eriksson & Nilsson, 2008), where a lack of clinical knowledge or familiarity is identified as a barrier to effective education (Friberg et al, 2012). This was confirmed in Study 1 where physiotherapists recognised a lack of knowledge as a barrier. It is therefore a key challenge in aiming patient education skill training at undergraduate students where familiarity with content and knowledge are not yet fully developed. It is recommended that patient education skills training be considered throughout the continuum of physiotherapy training, with specific emphasis in the later stages of curricula where students have the opportunity to apply their knowledge and skills through approaches such as simulated patient practice and during clinical placements. Conversely, it is important to recognise that patient education training of students can enhance self-efficacy and skills without the student having completed all training, in particular, clinical placements.
Patient education as an intervention involves many variables including communication and collaboration between patient and professional, adequate environmental factors conducive to learning and ultimately a patient who is ready and willing to engage in learning (Adams, 2010). This makes patient education as an intervention much more complex and variable than other clinical skills that are considered more procedural in nature (Rindflesch, 2009). A consequence of this variability and complexity is that simply applying patient education research findings and their implications across individuals, clinical settings and health professions poses a key challenge for education providers.

Lastly, this research has not explicitly addressed cultural variabilities of health and the concept of patient education in the context of cultural variability. When patients do not understand their healthcare professional, or their healthcare professional is insensitive to cultural differences, the quality of care provided and the outcomes of patient education are compromised (Anderson et al, 2003). A lack of cultural competence of healthcare providers is one of the main reasons many cultural groups, including lower socioeconomic groups, ethnic minorities and individuals with disabilities receive inadequate healthcare (Shaya & Gbarayor, 2006). It also must be reflected that a person’s presentation of illness, and thus their interpretation and response to patient education will be strongly influenced by their culture (Padilla & Brown, 1999). Contemporary healthcare training in Australia has a strong and specific emphasis on building cultural competence to ensure graduates can work competently in a culturally diverse workplace (Queensland Health, 2012). Culturally sensitive healthcare involves making a holistic assessment of the patient’s preferences and needs, which is reflected within the patient education competencies generated within the current research and within the training intervention design and assessment. Despite this, the patient education training intervention did not explore cultural competency within patient education practice. It is recommended that future iterations of the intervention should incorporate practice activities or cases that promote the use of culturally sensitive healthcare practice. This may include skills in providing written information to culturally diverse populations, using culturally specific cases, eliciting patient narratives, communicating through translators and reflecting on personal cultural beliefs and biases (Anderson et al, 2003) which may impact patient education practice and outcomes (Padilla & Brown, 1999).
7.6 Final conclusion

In summary, the series of studies in this thesis have addressed several key areas that were identified within the extant literature. This research has contributed insight into patient education practice in physiotherapy and how training can be utilised to enhance student patient education self-efficacy and performance. It is anticipated that the outcomes of this thesis will provide guidance for professional practice of patient education in physiotherapy and for the training of students in this area.
References


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Appendix 1
Study 1 & 2 ethics approval

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<td>Chief Investigator:</td>
<td>Ms Roma Forbes</td>
</tr>
<tr>
<td>Supervisor:</td>
<td>Dr Allison Mandrulak, Dr Trewor Russell, Dr Michelle Smith</td>
</tr>
<tr>
<td>Co-Investigator(s):</td>
<td>Dr Allison Mandrulak, Dr Trewor Russell, Dr Michelle Smith</td>
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<td>SHRS</td>
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<td>Duration:</td>
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Comments/Conditions: Expedited Review - Low Risk

Name of responsible Committee:
Behavioural & Social Sciences Ethical Review Committee

This project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:
Associate Professor John McLean
Chairperson
Behavioural & Social Sciences Ethical Review Committee

Signature [Signature]  Data 30/3/2015
Appendix 2: Study 1 & 2 - Participant information and consent

Patient education practice of physiotherapists: a national survey

Eligibility
We are seeking registered physiotherapists working in Australia to complete this survey.

Voluntary participation
Participation in the research will involve completing an anonymous online survey, which should take about 5-10 minutes. Your involvement in this research project is voluntary. Once you start, you can withdraw from the study at any time without any penalty or loss of benefits by closing the web link at any stage of the survey.

About the research project
Patient education is a major component of physiotherapy practice. As primary care providers, physiotherapists are positioned to educate patients and deliver tools and skills to maximise health outcomes. This study aims to better understand patient education perceptions and practices of Australian physiotherapists and gain a picture of the content and structure of its practice to inform physiotherapy practice and education.

Confidentiality and use of data
All information relating to your participation in the project will be treated confidentially and reported anonymously. All data is stored on secure web servers and within a password protected computer. All information relating to your participation in the project will be treated confidentially and reported anonymously.

Feedback
As data collected will be anonymous, it will not be possible to directly inform and provide feedback to participants of the research findings. However, the results of the research are intended to be communicated via conference presentations and journal publications. If you would like to request a short summary of the key research findings, please email the researcher directly.

Ethical Clearance
This study adheres to the Guidelines of the ethical review process of The University of Queensland and the National Statement on Ethical Conduct in Human Research. Whilst you are free to discuss your participation in this study with project staff (contactable on 0459219330), if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Coordinator on 3365 3924

Researcher Contact
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Dr Michelle Smith, School of Health and Rehabilitation Science, University of Queensland, m.smith5@uq.edu.au

* 1. I have read and understood the above information consent to participation

☐ Yes
☐ No
Appendix 3: Study 1 & 2 - Participant Questionnaire

Demographics

2. What is your gender?
   - Female
   - Male

3. What is your age?
   [scroll menu]

4. Is English your primary language?
   [scroll menu]

5. How many years have you been practising as a physiotherapist?
   [scroll menu]

6. What is your highest physiotherapy award?
   [scroll menu]

Clinical Practice

7. Which of the following would best describe your primary area of practice?
   - Musculoskeletal
   - Cardiorespiratory
   - Neurological
   - Paediatrics
   - Women’s health
   - Aged care
   - Sports
   - Other (please specify)

8. What is your primary state or territory of practice?
   - New South Wales
   - Queensland
   - Victoria
   - Western Australia
   - ACT
   - Northern Territory
   - Tasmania
   - South Australia

9. How would you describe the location of your practice?
Patient Education

Patient education is 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”

This may include any of the following; Teaching or demonstration of specific skills, exercise, movements and postures, or specific activities to improve knowledge, beliefs or behaviours.

10. What is your average time per initial visit engaging specifically in patient education related activities (minutes)?

[scroll menu]

11. What is your average time per follow up visit engaging specifically in patient education related activities (minutes)?

[scroll menu]

12. During patient consultation time, how often do you undertake the following?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Very often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing information about the patient’s condition or diagnosis</td>
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<tr>
<td>Providing verbal or written instruction for exercise</td>
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<tr>
<td>Advice or teaching correct posture and movement</td>
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<tr>
<td>Advice or teaching self-management strategies</td>
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<tr>
<td>Asking and addressing the patient’s concerns</td>
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<tr>
<td>Providing information about the patient’s prognosis</td>
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<tr>
<td>Advice or strategies to perform activities of daily living (ADL’s)</td>
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<tr>
<td>Exploring patient ideas and perceptions</td>
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<tr>
<td>Advice or teaching activity pacing</td>
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<tr>
<td>Advice on social support</td>
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<tr>
<td>Counselling about stress, emotional or psychosocial problems</td>
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<tr>
<td>General health promotion</td>
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<tr>
<td>Advice or teaching problem-solving strategies</td>
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<tr>
<td>Explaining pain neurophysiology/mind-body description of pain</td>
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<tr>
<td>Advice on use of assistive devices or equipment</td>
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</tbody>
</table>
### 13. Please rate the following patient education activities according to your perceived importance:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not Important</th>
<th>Slightly Important</th>
<th>Moderately Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing information about the patient’s condition or diagnosis</td>
<td></td>
<td></td>
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<tr>
<td>Providing verbal or written instruction needed to perform basic exercise program</td>
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<tr>
<td>Advice or teaching correct posture and movement</td>
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<tr>
<td>Advice or teaching self-management strategies</td>
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<tr>
<td>Asking the patient their concerns and discussing these specifically</td>
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<tr>
<td>Providing information about the patient’s prognosis</td>
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<tr>
<td>Advice or strategies to perform activities of daily living (ADL’s)</td>
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<tr>
<td>Exploring patient ideas and perceptions</td>
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<tr>
<td>Advice or teaching activity pacing</td>
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<tr>
<td>Advice on social support</td>
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<tr>
<td>Counselling about stress, emotional or psychosocial problems</td>
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<tr>
<td>General health promotion</td>
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<tr>
<td>Advice or teaching problem-solving strategies</td>
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<tr>
<td>Explaining pain neurophysiology/mind-body description of pain</td>
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<tr>
<td>Advice on use of assistive devices or equipment</td>
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</tbody>
</table>

### 14. What methods do you use for delivery of patient education?

<table>
<thead>
<tr>
<th>Method</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Very often</th>
<th>Always</th>
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</thead>
<tbody>
<tr>
<td>One-to-one discussion</td>
<td></td>
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<tr>
<td>Anatomy models or pictures</td>
<td></td>
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<tr>
<td>Generic handouts/pamphlets</td>
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<tr>
<td>Personalised handouts</td>
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<tr>
<td>Physical demonstration of exercise, movement, posture or activity</td>
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<tr>
<td>Use of biofeedback equipment</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Very often</td>
<td>Always</td>
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<tr>
<td>Photography or video</td>
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<tr>
<td>Links to websites or other online content</td>
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<tr>
<td>Formal group education activities</td>
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<tr>
<td>Use of physiotherapy assistant</td>
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</tbody>
</table>

Other (please specify) __________

15. How do you evaluate the effectiveness of your patient education?

<table>
<thead>
<tr>
<th>Ask the patient to repeat or discuss content in their own words</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Very often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask the patient to demonstrate</td>
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<tr>
<td>Interpret signals from the patient that show they understand</td>
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<tr>
<td>Objective measures or standards</td>
<td></td>
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</tbody>
</table>

Other (please specify) __________

16. Please indicate to what extent you feel the following factors would be a barrier to your effective use of patient education:

<table>
<thead>
<tr>
<th>Cognitive status of patient</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional status of patient</td>
<td></td>
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<tr>
<td>Attitude of patient</td>
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<tr>
<td>Patient assuming a passive role</td>
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<tr>
<td>Knowledge or literacy of patient</td>
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<tr>
<td>Lack of trust or rapport between patient and therapist</td>
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<tr>
<td>Patient not understanding English language</td>
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<tr>
<td>My lack of knowledge of the topic</td>
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</tbody>
</table>
Lack of time allocated for treatment session
Lack of participation by family members
Lack of privacy in clinic environment

Other (please specify)

17. What is the relative importance of the following items in contributing to the development of your patient education skills?

<table>
<thead>
<tr>
<th>Training and/or experience before physiotherapy studies</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic/University physiotherapy studies</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Post-graduate Academic/University studies (leave blank if not applicable)</td>
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<tr>
<td>Continuing education courses</td>
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<td>Professional in-services</td>
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<tr>
<td>Interaction with colleagues</td>
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<tr>
<td>Personal experience with patients’</td>
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</tr>
</tbody>
</table>

Other (please specify)
Appendix 4: Study 1 – Manuscript Acceptance

[IJTR] 2016:18:2 Evaluating Physiotherapists' Practice and Perception of Patient Education; a National Survey in Australia
ijtr@markallengroup.com
Tue 1/11/2016 10:03 PM
To:
Roma Forbes;
Dear Roma Forbes, Allison Mandrusiak, Trevor Russell and Michelle Smith,

Thank you for submitting your revised article, 'Evaluating Physiotherapists' Practice and Perception of Patient Education; a National Survey in Australia', to the International Journal of Therapy and Rehabilitation. We are very pleased to inform you that we would like to accept your article for publication in the journal. I will contact you in due course with a proofed version. The comments by reviewer 2 can be incorporated when I send over the proof.

With best wishes,

Vicki Williams
Editor, IJTR

Reviewer 1: This revised version can be accepted now.

Referee 2:
g 4, paragraph 1, in the new text "Less participants reported...” I think "fewer" would be a better word choice than less
Pg 6, para 2, new text, "diseases and risk factors require” either need to add that require or requiring

Referee 3:
The authors have done a thorough job of addressing all the reviewer comments resulting in an improved manuscript.

International Journal of Therapy and Rehabilitation
St Jude's Church
Dulwich Road
London
SE24 0PB

Tel: 020 7738 5454
Fax: 020 7978 8316
Email: ijtr@markallengroup.com
Appendix 5: Study 2 – Manuscript Acceptance

Date: 16 Jan 2017
To: "Roma Forbes" r.forbes2@uq.edu.au
From: "Manual Therapy" eesserver@eesmail.elsevier.com
Reply To: "Manual Therapy" MTherapy@elsevier.com
Subject: Your Submission
Ms. Ref. No.: YMATH-D-16-00148R2
Title: A comparison of patient education practices and perceptions of novice and experienced physiotherapists in Australian physiotherapy settings
Musculoskeletal Science & Practice

Dear Ms. Roma Forbes,

I am pleased to inform you that your paper "A comparison of patient education practices and perceptions of novice and experienced physiotherapists in Australian physiotherapy settings" has been accepted for publication in Manual Therapy.

PUBLISHER NOTE: We wish to inform you that Manual Therapy will re-launch in January 2017 as Musculoskeletal Science and Practice: an international journal of musculoskeletal physiotherapy. As your paper will now be published in a 2017 issue it will be typeset and published under its new title.

We wish to also confirm that the journal will continue to be published by Elsevier, the Editorial team will remain the same and the Aims and Scope of the journal will not change.

Your article can now be available online between 8-12 weeks after acceptance, as a fully published, citable paper.

Papers that have been accepted for publication, but have not yet been published in the printed journal, are made available online as Articles in Press accessible through the journal’s ScienceDirect page (http://www.sciencedirect.com/science/journal/1356689X).

Articles in Press takes full advantage of the enhanced ScienceDirect functionality, including the ability to be cited, by assigning a unique Digital Object Identifier (DOI) to each individual article which enables the citation of a paper before volume and issue numbers are allocated. DOIs should always be cited alongside the name of the journal and year of
proofs will be dispatched to you at the above address in due course. if you have any further queries please contact the production editor.

when your paper is published on sciencedirect, you want to make sure it gets the attention it deserves. to help you get your message across, elsevier has developed a new, free service called audioslides: brief, webcast-style presentations that are shown (publicly available) next to your published article. this format gives you the opportunity to explain your research in your own words and attract interest. you will receive an invitation email to create an audioslides presentation shortly. for more information and examples, please visit http://www.elsevier.com/audioslides.

yours sincerely
ann patricia moore cbe, phd
editor-in-chief
musculoskeletal science & practice
Appendix 6: Study 3 – Ethics Approval

The University of Queensland
Institutional Human Research Ethics Approval

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>Patient Education in Australian Physiotherapy Outpatient Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Investigator:</td>
<td>Ms Roma Forbes</td>
</tr>
<tr>
<td>Supervisor:</td>
<td>Dr Allison Mandrusiak, Dr Trevor Russell, Dr Michelle Smith</td>
</tr>
<tr>
<td>Co-Investigator(s):</td>
<td>Dr Allison Mandrusiak, Dr Trevor Russell, Dr Michelle Smith</td>
</tr>
<tr>
<td>School(s):</td>
<td>SH-RS</td>
</tr>
<tr>
<td>Approval Number:</td>
<td>2015000459</td>
</tr>
<tr>
<td>Granting Agency/Degree:</td>
<td>PhD</td>
</tr>
<tr>
<td>Duration:</td>
<td>31st March 2016</td>
</tr>
</tbody>
</table>

Comments/Conditions:

Expedited Review - Low Risk

Name of responsible Committee:

Behavioural & Social Sciences Ethical Review Committee

This project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:

Associate Professor John McLean
Chairperson
Behavioural & Social Sciences Ethical Review Committee

Signature [Signature]

Data 30/3/2015
Appendix 7: Study 3 - Participant information and consent

Consensus among expert physiotherapists in relation to patient education

Panellist information

Eligibility
We are seeking specialist physiotherapists working in Australian physiotherapy settings to be part of an expert Delphi panel to investigate the use of patient education

Voluntary Participation
Participation in the research will involve completing an online survey of four (4) questions and demographic measures, which should take about 10 minutes. After approximately 6 weeks you will be asked to complete a second questionnaire that will take about 5-10 minutes. This will include a summary of your own responses from round one, in addition to a summary of responses from the Delphi panel. Once you start, you can withdraw from the study at any time without any penalty or loss of benefits by closing the web link at any stage of the survey.

De-identified results of this study will be emailed to all participants

About the research project
Patient education is a major component of physiotherapy practice. As primary care providers, physiotherapists are positioned to educate patients and deliver tools and skills to maximise health outcomes. Delphi methods are useful in synthesising inconsistent or conflicting information, by determining the extent to which groups of people agree about a specific issue. This study aims to gain expert consensus on the best practice of patient education in physiotherapy including competencies required for patient education.

Confidentiality and use of data
Please note that any information that could identify any individuals or locations will be removed from survey data and not shared with other panellists or released by the researcher to a third party unless required to do so by law. All data will be stored on secure web servers and within a password protected computer.

Ethical Clearance
This study adheres to the Guidelines of the ethical review process of The University of Queensland and the National Statement on Ethical Conduct in Human Research. Whilst you are free to discuss your participation in this study with project staff (contactable on 049219330), if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Coordinator on 3365 3924

Researcher Contact
Roma Forbes, School of Health and Rehabilitation Science, r.forbes2@uq.edu.au
Dr Allison Mandrusiak, School of Health and Rehabilitation Science, a.mandrusiak@uq.edu.au
Dr Trevor Russell, School of Health and Rehabilitation Science, t.russell1@uq.edu.au
Dr Michelle Smith, School of Health and Rehabilitation Science, m.smith5@uq.edu.au

* 1. I have read and understood the above information and consent to participation

☐ Yes
☐ No

* 2. Please enter the identification number from your email or your name
Appendix 8: Study 3 – Participant Questionnaire Round One

Consensus among expert physiotherapists in relation to patient education

Demographics

3. What is your gender?
   - Female
   - Male

4. What is your age?

5. How many years have you been practicing as a physiotherapist?

6. Which of the following would best describe your main workplace setting?
   - Musculoskeletal and/or sports private practice
   - Neurology
   - Domiciliary service (in home)
   - Hospital
   - Educational facility
   - Defence force facility
   - Aboriginal health service
   - Other (please specify)

7. Which of the following would best describe your core area of practice?
   - Musculoskeletal
   - Cardiorespiratory
   - Neurological
   - Paediatrics
   - Women’s health
   - Aged care
   - Sports
   - Other (please specify)

8. What is your primary state or territory of practice?
   - New South Wales
9. How would you describe the location of your practice?
- Major City
- Inner Regional
- Outer Regional
- Remote

Patient education is 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).

This may include any of the following;
Teaching or demonstration of specific skills, exercise, movements, postures, or activities to improve knowledge, beliefs or behaviours.

Patient education competencies are behaviours, knowledge, skills, abilities, attributes or other characteristics that positively impact patients’ knowledge and health behaviours.

10. What specific knowledge, skills, abilities, attributes or other characteristics do physiotherapists need to possess or learn to provide effective patient education?

Please identify and describe (where possible) ten (10) or more items that you perceive as most important in the space below

Appendix 9: Study 3 - Participant questionnaire (round two)
Instructions
During round one, you were asked to identify competencies that were required for effective patient education.

The following competencies outline those which were identified by the panel and will be used to create a competency framework for physiotherapy education and assessment. Of these competencies developed in round one, we wish to seek agreement as to whether these are competencies that should be held by all physiotherapists.

An additional text box has been provided to include any additional competencies that you feel are important and have not been included within the list.
<table>
<thead>
<tr>
<th>Understand the role of patient education</th>
<th>All physiotherapists</th>
<th>Only expert/specialist physiotherapists</th>
<th>Not an important patient education competency for physiotherapists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand the impact of social, cultural and behavioural variables on learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand the principles of adult learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide self-management education and reinforce patients ability to manage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use cognitive behavioural therapy skills</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Use socratic dialogue/method</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilize reflective questioning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use shared decision making</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seek patient perceptions and concerns using appropriate questioning</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Obtain information from the patient assessment to understand learning needs</td>
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<tr>
<td>Select and use a range of appropriate learning content tailored to the patient</td>
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<tr>
<td>Provide family or care-givers with information (where present)</td>
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<tr>
<td>Use communication styles, language and materials that are tailored to the patient</td>
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<tr>
<td>Control attention and engagement throughout the educational intervention</td>
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<tr>
<td>Provide advice regarding other members of the healthcare team</td>
<td></td>
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<tr>
<td>Provide content that is in the best interests of the patient</td>
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<tr>
<td>Effectively explain the patient’s condition</td>
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<tr>
<td>Recognise and manage barriers to effective education</td>
<td></td>
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<tr>
<td>Effectively summarize information</td>
<td></td>
<td></td>
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<tr>
<td>Integrate evidence based practice into patient education</td>
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<td></td>
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<tr>
<td>Provide education within limits of practice, seeking advice or referring to another professional where appropriate</td>
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<tr>
<td>Identify when educational needs have been met</td>
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<tr>
<td>Consistently and regularly review progress of patient learning</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Use the “teach back” method to evaluate understanding</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Continue to develop patient education skills</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Other
Identification of competencies for patient education in physiotherapy using a Delphi approach

Physiotherapy

Dear Ms. Forbes,

Thank you for submitting your paper for consideration for publication in ‘Physiotherapy’.

Your article has now been accepted and is on the path to production. We would like you to produce a short, narrated PowerPoint (called Audio Slides) that we will make available on the Physiotherapy Journal Website. This will give your paper further exposure and allow readers to listen to a brief summary of your work whilst viewing a short PowerPoint presentation.

The narrated PowerPoint can be up to 5 minutes long and include up to five slides. There is an easy to use, web-based tool to help create the presentation using only a web-browser and computer with a microphone http://www.elsevier.com/books-and-journals/content-innovation/audioslides

You should include a summary of the background that lead to your research question, a description of the number and characteristics of your participants, a brief methodology, a summary of the main outcomes, your conclusion and important clinical implications.

This format may be adapted to your study design.

For systematic reviews the format should include a summary of the background that lead to the need for the review, a brief outline of your search strategy, quality assessment, numbers of included papers and main characteristics of important papers. Summarise the strength of evidence and notable bias and the important clinical implications of the results of your review.

For meta-analyses include Forest plots of the main results.

These Audioslides are not peer reviewed and it is the Author's responsibility to ensure their accuracy. They should reflect the content of the Article. Please do not include material that has not included in the accepted manuscript.

Please see further information: http://www.elsevier.com/about/content-innovation/audioslides-author-presentations-for-journal-articles

Proofs of your article will be emailed to you for approval in due course.

With kind regards,

The Editorial Board
Physiotherapy
Appendix 11: Study 4 - Ethics Approval

THE UNIVERSITY OF QUEENSLAND
Institutional Human Research Ethics Approval

Project Title: Evaluation Of Teaching And Learning In The School Of Health And Rehabilitation Sciences (Interprofessional, Intercultural Project) -04/09/2015 - AMENDMENT

Chief Investigator: Dr Caddie Driscoll

Supervisor: None

Co-Investigator(s): Roma Forbes, Prof S Brauer, Dr L Gustafsson, Prof Jenny Stron, Prof L Hickson, Prof Deb Theodore, Dr Joseph Kel, Dr Anne Hill, Dr Allison Manoula, Mrs Tessa Quinlan, Ms Ruth Dunwoodie, Ms Anna-Maria Gaine, Ms Lucy Hunter, Mrs Wendy Davila, Ms Amy Fagan, Dr Tammy Aplin, Dr Kerry Adam, Liz Springfield

School(s): School of Health and Rehabilitation Sciences

Approval Number: 20030001088

Granting Agency/Degree:

Duration: 31st December 2017

Comments/Conditions:

Note: If this approval is for amendment of a previously approved project, the investigator is advised to adhere to the National Statement on Ethical Conduct in Human Research and to seek approval for any amendments before commencing.

Name of responsible Committee:
Medical Research Ethics Committee

This project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:
Professor Bill Vicenzino
Chairperson
Medical Research Ethics Committee

Signature

Date: 10/01/2016
Appendix 12: Study 4 - Participant information and consent

PARTICIPANT INFORMATION AND CONSENT (QUESTIONNAIRE)

**Project Title:** Physiotherapy student readiness for a role in patient education

**Investigators:** Roma Forbes, Dr Allison Mandrusiak, Dr Trevor Russell, Dr Michelle Smith
School of Health and Rehabilitation Sciences, The University of Queensland.

**Purpose of study:** The aim of this study is to better understand physiotherapy student readiness for their role in patient education. This project has the potential to modify teaching and learning experiences to aid in physiotherapists’ use of patient education.

**Description of study and risks:** Your participation involves completion of a questionnaire which will take approximately 10 minutes. There is no foreseeable risk, inconvenience or discomfort associated with participation in this study. Participation in this study is completely voluntary and your decision to participate, or not, will not prejudice your existing or future relationship with The University of Queensland. If you decide to participate, you are able to withdraw from this study at any time, should you wish to do so, without penalty. This research project may not be a direct benefit to you personally. However, your participation will help improve understanding of student and staff learning expectations, needs and preferences to guide curriculum development.

**Privacy:** Your privacy while participating in this study will be maintained at all times. Publications resulting from this study will not allow identification of any individuals. Files will be stored in an anonymous manner in a locked filing cabinet.

This study has been cleared in accordance with the ethical review guidelines and processes of The University of Queensland (ethical clearance #2009001668). These guidelines are endorsed by the University's principal human ethics committee, the Human Experimentation Ethical Review Committee, and registered with the Australian Health Ethics Committee as complying with the National Statement. You are free to discuss your participation in this study with either the researcher in person, or on 0459219330 or r.forbes2@uq.edu.au. If you would like to speak to an officer not involved in the study, you may contact the Ethics Officer on 3365-3924

Completion of the survey in the following pages indicates your consent to participate in this project.
Appendix 13: Study 4 - Participant questionnaire

Gender:  M / F          Is English your first language?   Yes / No

Have you had previous experience with patients/clients before your physiotherapy training?    Yes / No

If Yes, please outline:........................................................................................................................................

Please rate your agreement with the following:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I understand the role of patient education</td>
<td></td>
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<tr>
<td>I understand the impact of social, cultural and behavioural</td>
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<tr>
<td>variables on patient learning</td>
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<tr>
<td>I understand the principles of adult learning</td>
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<tr>
<td>I feel confident to use questioning to seek the patient’s</td>
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<tr>
<td>perceptions and concerns about their condition</td>
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<tr>
<td>I feel confident to obtain information from the patient</td>
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<td>assessment to understand their learning needs</td>
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<tr>
<td>I feel confident to use reflective questioning (questions</td>
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<td>that allow the patient to reflect out loud)</td>
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<tr>
<td>I feel confident to select and use a range of appropriate</td>
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<tr>
<td>learning content tailored to the patient</td>
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<td>I feel confident to explain the patient’s condition to them</td>
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<td>I feel confident to use shared decision making</td>
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<td>I feel confident to provide self-management strategies to</td>
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<td>the patient and reinforce their ability to manage</td>
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<tr>
<td>I feel confident to provide family or care-givers with</td>
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<tr>
<td>information (where they are present)</td>
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<tr>
<td>I feel confident to tailor communication styles, language and</td>
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<tr>
<td>materials to the patient</td>
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<tr>
<td>I feel confident to control attention and engagement when</td>
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<tr>
<td>educating the patient</td>
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<tr>
<td>I feel confident to provide education content that is in the</td>
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<tr>
<td>best interests of the patient</td>
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<tr>
<td>I feel confident to recognise and effectively manage barriers</td>
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<tr>
<td>to effective education</td>
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<tr>
<td>I feel confident to summarise information for the patient</td>
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</tbody>
</table>
I feel confident to integrate evidence based practice into patient education

I feel confident to identify when patient learning has been achieved through evaluation

I feel confident to review progress of the patient’s learning

I feel confident to provide patient education within the limits of my practice and refer on to another professional where appropriate

I feel confident to take action to continue to develop my patient education skills (professional development)

<table>
<thead>
<tr>
<th>Have not had this experience</th>
<th>Insignificant</th>
<th>No opinion</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully performing <strong>patient education</strong> during clinical placements</td>
<td></td>
<td></td>
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<tr>
<td>Successfully performing <strong>patient education</strong> during simulation or standardised patient activities</td>
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<tr>
<td>Successfully practicing patient education with peers</td>
<td></td>
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<tr>
<td>Observing a peer, clinician or teacher performing <strong>patient education</strong></td>
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</tr>
<tr>
<td>Receiving feedback from clinicians or teachers regarding my <strong>patient education</strong> skills</td>
<td></td>
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<tr>
<td>Clinical educators or teachers emphasising that <strong>patient education</strong> is an important part of physical therapy practice</td>
<td></td>
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</tbody>
</table>

Please identify and explain what you feel has had the biggest influence on your ability to perform patient education
Appendix 14: Study 4 – Manuscript Acceptance

Manuscripts with Decisions

<table>
<thead>
<tr>
<th>ACTION</th>
<th>STATUS</th>
<th>ID</th>
<th>TITLE</th>
<th>SUBMITTED</th>
<th>DECISIONED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO: Hack, Lauren</td>
<td>Accept (27-Feb-2017)</td>
<td>JOFTE-10-16-0085-R1</td>
<td>New graduate physical therapists' self-efficacy to perform patient education is influenced by entry-level training experiences</td>
<td>21-Jan-2017</td>
<td>27-Feb-2017</td>
</tr>
<tr>
<td></td>
<td>Awaiting Production Checklist</td>
<td></td>
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</tbody>
</table>

view decision letter
Appendix 15: Study 5 – Ethics Approval

THE UNIVERSITY OF QUEENSLAND
Institutional Human Research Ethics Approval

Project Title: Patient-Centred Education Training for Physiotherapy Students, a Randomised Controlled Trial

Chief Investigator: Ms Roma Forbes
Supervisor: None
Co-Investigator(s): None
School(s): School of Health and Rehabilitation Sciences

Approval Number: 2016001524

Granting Agency/Degree:

Duration: 31st December 2017

Comments/Conditions:

Expedited Review - Low Risk
- Patient-Centred Education Observation Form
- Consent Form
- Study Protocol
- Satisfaction with course measure

Note: If this approval is for amendments to an already approved protocol for which a UQ Ethics Trial Protection Insurance Form was originally submitted, then the researchers must directly notify the UQ Insurance Office of any changes to that Form and Participant Information Sheet & Consent Forms as a result of the amendments, before action.

Name of responsible Committee:
University of Queensland Human Research Ethics Committee B
This project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:
Dr. Frederick Khafagi
Chairperson
University of Queensland Human Research Ethics Committee
Registration: EC00457

Signature ______________________ Date ________________

02/12/2016
Appendix 16: Study 5 - Participant information and consent

INFORMATION FOR PARTICIPANTS

Researchers: Ms Roma Forbes, Dr Allison Mandrusiak, Prof Trevor Russell and Dr Michelle Smith
You are invited to participate in a research study entitled: Training physiotherapy students to educate patients; a randomised controlled trial.

The purpose of the study is to determine the effect of participating in patient education training on self-efficacy and skills relating to patient education.

The following information is intended to assist you in making an informed decision whether or not to participate. If you have any questions, please do not hesitate to ask.

Why have I been chosen?
You are eligible to participate in this study because you are a student in PHTY4401 or 7881.

What will happen if I take part?
You will be asked to complete a self-survey rating your confidence. Following the training, you will be asked to complete another self-survey rating your confidence and how you found the workshop. All participants will be evaluated. A practice OSCE will be filmed so that they can be viewed and evaluated by a clinical instructor who is not involved in the standardised patient program, nor is involved in your assessment of this current course.

What are the benefits?
The study includes training and practicing clinical physiotherapy skills. All students have the opportunity to participate in the training as a compulsory part of the program. The information obtained from this study may help physiotherapy educators to develop more effective strategies to utilize when training physiotherapy students in the future. Your decision to participate or not participate in the study will not affect your grade in this course or your upcoming standardised patient examination.

Data protection: what use will be made of data collected?
Personal data and information related to your evaluations, including the practice OSCE will be kept secure at all times. You will be asked to provide an identification code that will match your evaluation forms to your patient education task in the final week to ensure confidentiality is maintained at all times. Only anonymous and generalised data will be reported.

Your participation is voluntary. If you choose not to participate you will not be evaluated and you will not need to complete forms.

You may decide not to participate in this study or to withdraw at any time without affecting your standardised patient program or grades. If you choose to participate in the study, you may withdraw at any time by notifying the Researcher or any of your instructors during the standardised patient program. You may contact Roma in person or by phone at 0459219330. Upon your request to withdraw, all information pertaining to you will be removed. If you choose to participate, all information will be held in strict confidence and will have no bearing on your grades. Your responses will be considered only in combination with those from other participants and only generalised data will be published in professional journals or presented at professional conferences. If you are willing to participate in this study, please sign the VOLUNTARY CONSENT FORM. Take the extra unsigned copy with you.
This study adheres to the Guidelines of the ethical review process of The University of Queensland and the National Statement on Ethical Conduct in Human Research. Whilst you are free to discuss your participation in this study with project staff (contactable on 33652718 or r.forbes2@uq.edu.au), if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Coordinator on 3365 3924.

Consent Form
I have read and understand the information on the form and I consent to volunteer to be a subject in this research study. I understand that my responses will be kept completely confidential and that I have the right to withdraw from the study at any time. I have received an unsigned copy of this Informed Consent Form to keep for my personal records.

Name:

Signature:

Date:

I certify that I have explained to the above individual the nature, purpose, and potential benefits and risks associated with participation in this research study.

Date ________________ Investigator’s Signature ______________________
Appendix 17: Study 5 – Assessment scoring form (assessor)

**Patient Education Assessment Form**

Student: ____________________________  Observer: __________________________________  Date: __________________

**Directions:** Track competencies in the left column. Assign one mark per row. Select ‘not assessed’ where the item is not applicable to the patient case.

0 = Skill/Competency not attempted or observed  
1 = A minimal attempt is made to exhibit skill/competency  
2 = Skill/competency observed and a minimum skill level is achieved  
3 = Skill/competency exhibited to a good standard  
4 = Skill/competency exhibited to an excellent standard  
Not assessable = No opportunity to demonstrate skill/competency

<table>
<thead>
<tr>
<th>Competency</th>
<th>Circle one number only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Seeks patient perceptions and/or concerns using appropriate questioning</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>2  Uses reflective questioning</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>3  Uses shared decision making</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>4  Selects and uses appropriate learning content tailored to the best interests of the patient</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>5  Uses effective and engaging communication styles, language and/or materials that are tailored to the patient</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>6  Effectively explains the patient’s condition</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>7  Provides self-management education and reinforces patients ability to manage</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>8  Provides family or care-givers with information</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>9  Effectively summarizes information</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>10 Uses the “teach back” (verbal or demonstration) method to evaluate learning</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
<tr>
<td>11 Identifies when educational needs have been met</td>
<td>0 1 2 3 4 Not assessed</td>
</tr>
</tbody>
</table>
Appendix 18: Study 5 – Manuscript Acceptance

To: Roma Forbes

Ref.: Ms. No. PEC-17-487R2
Patient Education and Counseling

Dear Ms. Forbes,

A final disposition of “Accept” has been registered for your paper, Training physiotherapy students to educate patients; a randomised controlled trial to be published in Patient Education and Counseling.

Thank you for choosing Patient Education and Counseling for your publication.

Yours sincerely,

Patient Education and Counseling

Patient Education and Counseling is available through ScienceDirect®

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