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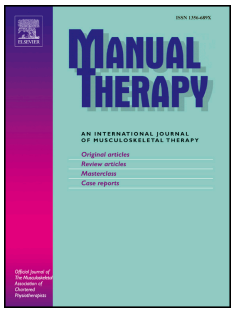

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A comparison of patient education practices and perceptions of novice and experienced physiotherapists in Australian physiotherapy settings.

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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' (≤5years' 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 are 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 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, 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 is 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 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 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 sub-groups 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 here

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 ($p<0.05$).

Table 2 here

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 3 here

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 here

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 here

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.

The survey measure is available on request from the lead author: xxxxxxx

REFERENCES

Albaladejo C, Kovacs FM, Royuela A, del Pino R, Zamora J. The efficacy of a short education program and a short physiotherapy program for treating low back pain in primary care: a cluster randomized trial. Spine 2010; 35(5): 483-496

Alston SD, O'Sullivan TJ. Patient education in physiotherapy of low back pain: acute outcomes of group instruction. Ir J Med Sci 2005; 174(3): 64-69

Barr J, Threlkeld AJ Patient–practitioner collaboration in clinical decision-making. Physiother Re Int 2000. 5(4): 254-260.

Barron CJ, Klaber Moffett JA, Potter M. Patient expectations of physiotherapy: definitions, concepts, and theories. Physiother Theory Pract 2007. 23(1): 37-46

Boynton PM, Greenhalgh T. Selecting, designing, and developing your questionnaire. BMJ 2004. 328 (7451): 1312-1315

Coleman MT, Newton KS. Supporting self-management in patients with chronic illness. Am Fam Physician 2005. 72(8): 1503.

Cooper K, Smith BH, Hancock E. Patient-centredness in physiotherapy from the perspective of the chronic low back pain patient. Physiotherapy 2009. 94(3); 244-252

Crosbie J, Gass E, Jull G, Morris M, Rivett D, Ruston S, Sheppard L, Sullivan J, Vujnovich A, Webb G, Wright T. Sustainable undergraduate education and professional competency. J Physiother 2002; 48 (1): 5-7.

Cutilli CC. Do your patients understand? Providing culturally congruent patient education. Orthop Nurs 2006. 25(3): 218-224

Davis LA, Chesbro SB. Integrating Health Promotion, Patient Education, and Adult Education Principles with the Older Adult: A Perspective for Rehabilitation Professionals. J Allied Health 2003. 32(2): 106-109.

Doody C, McAteer M Clinical reasoning of expert and novice physiotherapists in an outpatient orthopaedic setting. Physiotherapy 2002. 88(5): 258-268

Freda MC. Issues in patient education. J Midwifery Womens Health 2004. 49(3): 203-209.

Friedman AJ, Cosby R, Boyko S, Hatton-Bauer J, Turnbull G. Effective teaching strategies and methods of delivery for patient education: a systematic review and practice guideline recommendations. J Cancer Educ 2011. 26(1): 12-21.

Gannon W, Hildebrandt E. A winning combination; women, literacy and participation in health care. Health Care Women Int 2002. 23(6): 754-760

Glanz K, Rimer BK, Viswanath K Health behavior and health education: theory, research, and practice 2008. San Francisco: Jossey-Bass.

Gold DT, McClung B. Approaches to patient education: emphasizing the long-term value of compliance and persistence. Am J Med 2006. 119(4): S32.

Gyllensten AL, Gard G, Salford E, Ekdahl C Interaction between patient and physiotherapist: a qualitative study reflecting the physiotherapist's perspective. Physiother Res Int 1999. 4(2) 89-109

Health Workforce Australia: Australia's Health Workforce Series – Physiotherapists in Focus. 2012. Adelaide.

Higgs J, Bithell C. Professional expertise. In: Higgs J, Titchen A, editors. Practice Knowledge and Expertise in the Health Professions. Butterworth-Heinemann; 2001. p. 59-68

Hills R, Kitchen S. Toward a theory of patient satisfaction with physiotherapy: exploring the concept of satisfaction. Physiother Theory Pract 2007. 23(5): 243-254.

Hoeger Bement MK, St Marie BJ, Nordstrom TM, Christensen N, Mongoven JM, Koebner I J, Sluka KA. An interprofessional consensus of core competencies for prelicensure education in pain management: curriculum application for physical therapy. Physl Ther 2014. 94(4): 451

Holmes C The attitudes and perspectives of physical therapist students regarding patient education. J Phys Ther Ed 1999. 13(2); 8-14

Hoving C, Visser A, Mullen PD, van den Borne B. A history of patient education by health professionals in Europe and North America; from authority to shared decision making education. Patient Educ Couns. 2010; 78(3): 275-281

Jensen GM, Shepard KF, Hack LM. The novice versus the experienced clinician: insights into the work of the physical therapist. Phys Ther 1990. 70 (5): 314-323

Jensen GM, Shepard KF, Gwyer J, Hack LM. Attribute dimensions that distinguish master and novice physical therapy clinicians in orthopedic settings. Phys Ther 1992. 72(10): 711-722.

Jensen GM, Lorish CD. Promoting patient cooperation with exercise programs: linking research, theory, and practice. Arthritis Care Res 1994. 7(4): 181.

Jensen GM, Gwyer J, Shepard KF, Hack LM. Expert practice in physical therapy. Phys Ther 2000. 80(1): 28

Jones M, Jensen GM, Edwards I. Clinical reasoning in physiotherapy. In: Higgs J editor. Clinical Reasoning in the Health Professions. Boston: Elsevier, 2008 p. 245-254

Kaariainen M, Kyngas H The quality of patient education evaluated by the health personnel. Scand J Car Sci 2010. 24 (3): 548-556

King CA, Bithell C. Expertise in diagnostic reasoning: a comparative study. BJTR 1998. 5(2):78-87

Klaber Moffett J A, Richardson PH. The influence of the physiotherapist-patient relationship on pain and disability. Physiother Theory Pract 1997. 13(1): 89-96.

Lagger G, Pataky Z, Golay A. Efficacy of therapeutic patient education in chronic diseases and obesity. Patient Educ Couns 2010. 79(3): 283-286

Levinson W, Lesser CS, Epstein RM. Developing physician communication skills for patient-centered care. Health Aff (Millwood)2010. 29(7): 1310-1318.

Little P, Everitt H, Williamson I, Warner G, Moore M, Gould C, Payne S. Preferences of patients for patient centred approach to consultation in primary care; observational study. BMJ 2001. 322(7284): 468-472.

Locke EA, Latham GP. Building a practically useful theory of goal setting and task motivation: a 35-year odyssey. Am Psychol 2002. 57(9): 705-717.

Lorig KR, Holman HR. Self-management education: history, definition, outcomes, and mechanisms. Ann Behav Med 2003. 26(1): 1-7

Louw A, Diener I, Butler DS, Puentedura E J The effect of neuroscience education on pain, disability, anxiety, and stress in chronic musculoskeletal pain. Arch Phys Med Rehabil 2011. 92(12): 2041-2056.

May BJ Teaching a skill in clinical practice 1983. Phys Ther 63: 1627-1633.

Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical literature. Soc Sci Med 2000. 51(7): 1087-1110

Ndosi M, Johnson D, Young T, Hardware B, Hill J, Hale C, Adebajo A. Effects of needs-based patient education on self-efficacy and health outcomes in people with rheumatoid arthritis: a multicentre, single blind, randomised controlled trial. Ann Rheum Dis. 2015

Nordholm LA, Adamson BJ, Heard R Australian physiotherapists' and occupational therapists' views on professional practice. J Allied Health 1995. 24(4): 267

Nour K, Laforest S, Gauvin L, Gignac M. Behavior change following a self-management intervention for housebound older adults with arthritis: an experimental study. Int J Behav Nutr Phys Act. 2006; 3: 12-12.

Nunez M, Nunez E, Yoldi C, Quinto L, Hernandez MV, Munoz-Gomez J. Health-related quality of life in rheumatoid arthritis: therapeutic education plus pharmacological treatment versus pharmacological treatment only. Rheum Int. 2006; 26(8): 752-757

Physiotherapy Board of Australia and Physiotherapy Board of New Zealand. Physiotherapy practice thresholds in Australia and Aotearoa New Zealand 2015.

http://www.physiotherapyboard.gov.au/documents/default.aspx?record=WD15%2F16750&dbid=AP&chksum=LWuk27uBUFj5MTUort6Qug%3D%3D.

Resnik L, Jensen GM Using clinical outcomes to explore the theory of expert practice in physical therapy. Phys Ther 2003. 83(12): 1090

Roter D. The enduring and evolving nature of the patient–physician relationship. Patient Educ Couns 2000. 39(1): 5-15

Rindflesch AB A grounded-theory investigation of patient education in physical therapy practice. Physiother Theory Pract 2009. 25(3): 193-202.

Richardson J, Loyola-Sanchez A, Sinclair S, Harris J, Letts L, MacIntyre NJ, Martin Ginis K Self-management interventions for chronic disease: a systematic scoping review. Clin Rehabil 2014. 28(11): 1067-1077.

Rivett DA, Higgs J. Hypothesis generation in the clinical reasoning behaviour of manual therapists. J Physiother 1997. 11(1): 40-45

Sanders T, Foster NE, Bishop A, Ong BN Biopsychosocial care and the physiotherapy encounter: physiotherapists' accounts of back pain consultations. BMC Med Disord 2013. 14(1): 65-65.

Schillinger D, Grumbach K, Piette J Association of health literacy with diabetes outcomes. JAMA 2002. 288(4): 475.

Schrieber L, Colley M Patient education. Best Pract Res Clin Rheum 2004. 18(4): 465-476.

Shepard KF, Hack LM, Gwyer J, Jensen GM. Describing expert practice in physical therapy. Qual Health Res 1999. 9(6); 746-758

Smith S, Mitchell C, Bowler S. Patient-centered education: applying learner-centered concepts to asthma education. *Journal of Asthma 2007. 44*(10); 799-804

Smith M, Higgs J, Ellis E Effect of experience on clinical decision making by cardiorespiratory physiotherapists in acute care settings 2010. Physiother Theory Pract 26(2): 89-99

Stewart M, Brown JB, Donner A, McWhinney IR, Oates J, Weston WW, Jordan J The impact of patient-centered care on outcomes 2000. J Fam Practice 49(9): 796.

Svavarddottir MH, Siguroardottir AK, Steinsbekk A How to become an expert educator: a qualitative study on the view of health professionals with experience in patient education 2015. BMC Med Ed 15 (1): 1-9

Wainwright SF, Shepard KF, Harman LB, Stephens J Factors that influence the clinical decision making of novice and experienced physical therapists. Phys Ther 2011. 91(1): 87-101

Table 1; Participant Demographics and comparison with national data

Variable	Experienced N (%)	Novice N (%)	Available national data (%)*
Gender			
Male	64 (31.4)	20 (38.5)	31.2
Female	140 (68.6)	32 (61.5)	68.8
Age			
20-29	0 (0.0)	39 (75.0)	
30-39	28 (14.4)	9 (17.3)	
40-49	75 (38.7)	4 (7.7)	Mean age
50-59	70 (36.1)	0 (0.0)	= 39 years
60+	21 (10.8)	0 (0.0)	
Experience (years)			
<1	0	7 (13.0)	NA
1-2	0	16 (30.4)	NA
3-5	0	29 (56.5)	NA
6-10	0	0	NA
11-20	69 (33.8)	0	NA
21+	135 (66.2)	0	NA
English first language			

Yes	198 (97.1)	49 (94.2)	NA
No	6 (2.9)	3 (5.8)	NA
Highest Physiotherapy Qualification			
Entry Level	115 (56.4)	48 (90.4)	NA
Masters (Titled Physiotherapist)	81 (39.7)	4 (7.7)	NA
Specialist	8 (3.9)	0 (0.0)	NA
Not stated	1 (0.5)	1 (1.9)	NA
Primary Area of Practice			
Musculoskeletal	124 (60.5)	29 (55.8)	53.0
Neurological	16 (7.8)	5 (9.6)	6.8
Cardiorespiratory	1 (0.5)	1 (1.9)	6.5
Paediatrics	4 (2.0)	1 (1.9)	5.5
Women's Health	15 (7.3)	1 (1.9)	2.4
Aged Care	16 (7.8)	7 (13.5)	13.8
Sports	11 (5.4)	4 (7.7)	3.4
Other	14 (6.8)	2 (3.8)	5.3
Not stated	3 (1.5)	1 (2.0)	3.2
State			
New South Wales	44 (21.6)	8 (15.4)	29.2
Queensland	74 (36.2)	20 (38.4)	19.5
Victoria	33 (16.2)	9 (17.3)	25.6
Western Australia	24 (11.8)	7 (13.5)	12.5
Australian Capital Territory	9 (4.4)	2 (3.8)	2.0
Northern Territory	1 (0.5)	0 (0.0)	0.7
Tasmania	4 (2.0)	2 (3.8)	1.8
South Australia	14 (6.7)	3 (5.8)	8.8
Not stated	1 (0.5)	1 (1.9)	NA
Location			
Major City	133 (65.2)	34 (65.3)	80.3
Inner Regional	25 (17.2)	12 (23.1)	13.0
Outer Regional	26 (12.7)	6 (11.5)	5.3
Remote	6 (2.9)	0 (0.0)	1.2

* Health Workforce Australia (HWA) data (2012)

Table 2. Self-reported ratings of frequency of educational content by experienced and novice physiotherapists.

Item		*Never N (%)*	*Rarely N (%)*	*Sometimes N (%)*	*Very Often N (%)*	*Always N (%)*	*Difference (p value - two tailed)*
Providing verbal or written instruction needed to perform basic exercise program	Experienced	0 (0)	0 (0)	5 (2.5)	55 (27.5)	140 (70.0)	0.07
	Novice	0 (0)	0 (0)	4 (7.8)	21 (41.2)	26 (51.0)	
Providing information about the patient's condition or diagnosis	Experienced	0 (0)	0 (0)	6 (3.0)	51 (25.6)	142 (71.4)	0.06
	Novice	0 (0)	0 (0)	2 (3.8)	23 (44.2)	27 (51.9)	
Advice or teaching self-management strategies	Experienced	0 (0)	2 (1.1)	10 (5.5)	78 (43.1)	91 (50.3)	0.02*
	Novice	0 (0)	2 (3.8)	10 (19.2)	21 (40.1)	19 (36.5)	
Advice or teaching correct posture and movement	Experienced	0 (0)	0 (0)	15 (7.5)	78 (38.8)	108 (53.7)	<0.001*
	Novice	0 (0)	0 (0)	11 (21.2)	27 (51.9)	14 (26.9)	
Asking and addressing patient's concerns	Experienced	0 (0)	1 (0.5)	17 (84.2)	67 (33.2)	117 (57.9)	<0.001*
	Novice	0 (0)	0 (0)	12 (23.1)	23 (44.2)	17 (32.7)	
Providing information about the patient's prognosis	Experienced	0 (0)	3 (1.5)	24 (11.9)	87 (43.3)	87 (43.4)	<0.001*
	Novice	0 (0)	4 (7.7)	13 (25.0)	25 (48.1)	10 (19.2)	
Advice or strategies to perform activities of daily living	Experienced	0 (0)	1 (0.5)	45 (22.5)	100 (50.0)	54 (27.0)	0.09
	Novice	0 (0)	7 (13.7)	12 (23.5)	19 (37.3)	13 (25.5)	
Advice or teaching activity pacing	Experienced	0 (0)	3 (1.5)	42 (20.9)	106 (52.7)	50 (24.9)	0.07
	Novice	1 (1.9)	4 (7.7)	13 (25.0)	24 (46.2)	10 (19.2)	
Exploring patient ideas and perceptions	Experienced	0 (0)	4 (2.0)	59 (29.6)	83 (41.7)	53 (26.6)	<0.001*
	Novice	1 (2.0)	8 (15.7)	21 (41.2)	16 (31.4)	5 (9.8)	
General health promotion	Experienced	0 (0)	8 (4.0)	65 (32.7)	84 (42.2)	42 (21.1)	0.06
	Novice	0 (0)	8 (15.4)	18 (34.6)	17 (32.7)	9 (17.3)	
Advice or teaching problem-solving strategies	Experienced	0 (0)	18 (9.0)	63 (31.3)	86 (42.8)	34 (16.9)	0.04*
	Novice	0 (0)	8 (15.7)	20 (39.2)	18 (35.3)	5 (9.8)	
Explaining pain neurophysiology/mind-body description of pain	Experienced	1 (0.5)	23 (11.4)	85 (42.3)	80 (39.8)	12 (6.0)	0.34
	Novice	0 (0)	11 (21.2)	18 (34.6)	22 (42.3)	1 (1.9)	
Advice on use of assistive devices or equipment	Experienced	0 (0)	20 (10.0)	87 (43.5)	83 (41.5)	10 (5.0)	0.05
	Novice	0 (0)	3 (5.7)	18 (34.6)	25 (48.1)	6 (11.5)	
Counselling about stress, emotional or psychosocial problems	Experienced	4 (2.0)	39 (19.4)	75 (37.3)	77 (38.3)	6 (3.0)	0.07
	Novice	0 (0)	16 (30.8)	22 (42.3)	12 (23.1)	2 (3.8)	
Advice on social support	Experienced	8 (4.0)	42 (21.1)	101 (50.8)	43 (21.6)	5 (2.5)	0.08
	Novice	4 (7.7)	20 (38.5)	15 (28.8)	10 (19.2)	3 (5.8)	

*significant difference ($p<0.05$)

Table 3. Self-reported ratings of importance of educational content by experienced and novice physiotherapists.

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

*significant difference ($p<0.05$)

Table 4. Self-reported frequency of educational delivery approaches and evaluation approaches by experienced and novice physiotherapists

Education Delivery Approach		***Never* N (%)**	***Rarely* N (%)**	***Sometimes* N (%)**	***Very Often* N (%)**	***Always* N (%)**	***Difference (p value - two tailed)***
One-to-one discussion	Experienced	0 (0.0)	0 (0.0)	4 (2.0)	61 (30.3)	136 (67.7)	0.02*
	Novice	0 (0.0)	0 (0.0)	2 (3.8)	27 (51.9)	23 (44.2)	
Physical demonstration	Experienced	0 (0.0)	0 (0.0)	7 (3.5)	76 (37.8)	118 (58.7)	0.11
	Novice	0 (0.0)	0 (0.0)	0 (0.0)	29 (55.8)	23 (44.2)	
Anatomy models or pictures	Experienced	1 (0.5)	11 (5.5)	44 (21.9)	100 (49.8)	45 (22.4)	0.11
	Novice	0 (0.0)	3 (6.0)	12 (24.0)	32 (64.0)	3 (6.0)	
Personalised handouts	Experienced	1 (0.5)	11 (5.5)	32 (15.8)	92 (45.5)	66 (32.7)	<0.001*
	Novice	0 (0.0)	4 (7.7)	21 (40.4)	23 (44.2)	4 (7.7)	
Photography or video	Experienced	27 (13.4)	45 (22.4)	64 (31.8)	60 (30.0)	5 (2.5)	0.31
	Novice	8 (15.7)	12 (23.5)	20 (39.2)	9 (17.6)	2 (3.9)	
Generic handouts/pamphlets	Experienced	8 (4.0)	53 (26.5)	72 (36.0)	49 (24.5)	18 (9.0)	0.50
	Novice	3 (6.0)	10 (20.0)	25 (50.0)	11 (22.0)	1 (2.0)	
Links to websites or other online content	Experienced	18 (9.0)	65 (32.3)	89 (44.3)	27 (13.4)	2 (1.0)	0.06
	Novice	6 (11.8)	26 (51.0)	10 (19.6)	9 (17.6)	0 (0.0)	
Formal group education activities	Experienced	75 (37.3)	65 (32.3)	35 (17.4)	22 (10.9)	4 (2.0)	0.28
	Novice	20 (40.0)	21 (42.0)	7 (14.0)	1 (2.0)	1 (2.0)	
Use of Physiotherapy Assistant	Experienced	154 (76.6)	16 (8.0)	23 (11.4)	7 (3.5)	1 (0.5)	0.47
	Novice	36 (70.6)	8 (15.7)	4 (7.8)	3 (5.9)	0 (0.0)	
Evaluation of Education Approach		***Never* N (%)**	***Rarely* N (%)**	***Sometimes* N (%)**	***Very Often* N (%)**	***Always* N (%)**	***Difference (p value - two tailed)***
Ask the patient to demonstrate	Experienced	1 (0.5)	1 (0.5)	4 (2.0)	90 (44.8)	105 (52.2)	0.50
	Novice	0 (0.0)	1 (1.9)	2 (3.8)	24 (46.2)	25 (48.1)	
Interpret signals from the patient	Experienced	1 (0.5)	3 (1.5)	24 (11.9)	105 (52.2)	68 (33.8)	0.72
	Novice	1 (2.0)	2 (3.9)	7 (13.7)	23 (45.1)	18 (35.3)	
Objective measures or standards	Experienced	1 (0.5)	3 (1.5)	37 (18.4)	79 (39.3)	81 (40.3)	0.58
	Novice	0 (0.0)	0 (0.0)	10 (19.6)	24 (47.1)	17 (33.3)	
Ask patient to repeat or discuss content in own words	Experienced	4 (2.0)	21 (10.4)	72 (35.8)	76 (37.8)	28 (13.9)	<0.001*
	Novice	8 (15.7)	7 (13.7)	20 (39.2)	11 (21.6)	5 (9.8)	
Ask family members or care-givers	Experienced	18 (9.0)	44 (22.1)	78 (39.2)	51 (25.6)	8 (4.0)	0.47
	Novice	4 (7.8)	12 (23.5)	16 (31.4)	15 (29.4)	4 (7.8)	
Analyse patient tasks through video	Experienced	85 (42.3)	53 (26.4)	39 (19.4)	20 (10.0)	4 (2.0)	0.55
	Novice	19 (37.2)	14 (27.5)	12 (23.5)	5 (9.8)	1 (2.0)	

* significant difference ($p<0.05$)

Table 5. Self-reported agreement of barriers to effective patient education by experienced and novice physiotherapists

Item		*Strongly Disagree N (%)*	*Disagree N (%)*	*Neutral N (%)*	*Agree N (%)*	*Strongly Agree N (%)*	*Difference (p value - two tailed)*
Cognitive status of patient	Experienced	2 (1.0)	9 (4.5)	4 (2.0)	102 (51.0)	83 (41.5)	0.03*
	Novice	0 (0.0)	0 (0.0)	1 (2.0)	17 (34.0)	32 (64.0)	
Lack of trust or rapport	Experienced	1 (0.5)	9 (4.6)	10 (5.1)	86 (43.7)	91 (46.2)	0.57
	Novice	0 (0.0)	1 (2.0)	2 (4.1)	22 (44.9)	24 (49.0)	
Emotional status of patient	Experienced	2 (1.0)	16 (8.0)	9 (4.5)	116 (58.0)	57 (28.5)	0.21
	Novice	0 (0.0)	1 (2.0)	5 (10.0)	25 (50.0)	19 (38.0)	
Attitude of patient	Experienced	1 (0.5)	10 (49.6)	15 (7.5)	109 (54.2)	66 (32.8)	0.07
	Novice	0 (0.0)	2 (4.0)	6 (12.0)	17 (34.0)	25 (50.0)	
Patient not understanding English	Experienced	2 (1.0)	21 (10.7)	16 (8.2)	100 (5.7)	57 (29.1)	0.40
	Novice	0 (0.0)	2 4.0)	4 (8.0)	29 (58.0)	15 (30.0)	
Patient assuming a passive role	Experienced	2 (1.0)	26 (13.2)	16 (8.1)	93 (47.2)	60 (30.5)	0.04*
	Novice	0 (0.0)	1 (2.0)	3 (6.0)	22 (44.0)	24 (48.0)	
My lack of knowledge on topic	Experienced	8 (4.1)	27 (13.8)	16 (8.2)	96 (35.2)	49 (25.0)	0.78
	Novice	0 (0.0)	6 (11.8)	6 (11.8)	27 (52.9)	12 (23.5)	
Lack of time	Experienced	11 (5.6)	44 (22.3)	16 (8.1)	90 (45.7)	36 (18.3)	0.69
	Novice	0 (0.0)	12 (24.0)	8 (16.0)	24 (48.0)	6 (12.0)	
Literacy of patient	Experienced	4 (2.0)	62 (31.5)	18 (9.1)	82 (41.6)	31 (15.7)	0.67
	Novice	2 (3.9)	10 (19.6)	5 (9.8)	30 (58.8)	4 (7.8)	
Lack of family participation	Experienced	9 (4.6)	66 (33.7)	43 (21.9)	57 (29.1)	21 (10.7)	0.92
	Novice	1 (2.0)	15 (30.6)	14 (28.6)	17 (34.7)	2 (4.1)	
Lack of privacy in clinic environment	Experienced	24 (12.2)	68 (34.7)	29 (14.8)	52 (26.5)	23 (11.7)	0.64
	Novice	6 (12.0)	17 (34.0)	11 (22.0)	13 (26.0)	3 (6.0)	

*significant difference ($p<0.05$)

Highlights

- Experienced physiotherapists report higher use of self-management education
- Experienced physiotherapists report higher use of patient-centred content
- Experienced physiotherapists report higher use of seeking patient understanding
- Experienced physiotherapists perceive fewer barriers to patient education