Physiotherapy new graduate self-efficacy and readiness to engage in pain assessment and management: A mixed-methods study

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Abstract

Introduction: The competent assessment and management of pain is a requirement of all new graduate physiotherapists, however the readiness of new graduates in this area of practice is unknown. Understanding self-efficacy and readiness of new graduates is important in informing curricula.

Methods: A sequential mixed-methods design was used. On completion of their professional education, new graduate physiotherapists completed a survey (n = 150, 90.9% response rate) measuring their self-efficacy for established competencies for pain assessment and management. Six months later, a randomised sample of respondents (n = 15) participated in a semi-structured interview to further explore self-efficacy and readiness for practice.

Results: Competency items with the highest self-efficacy scores were *Demonstrate empathic and compassionate communication* and *Assess patient preferences*. The item with the lowest self-efficacy score was *Differentiate physical dependence, substance use disorder, misuse, tolerance, addiction and nonadherence and how these affect pain and function*. Six themes emerged from the semi-structured interviews: (1) understanding and explaining pain, (2) striving for patient-centred practice, (3) incomplete mastery of outcome measures, (4) chronic pain management is challenging (5) facing patient conflict and complexity and (6) direct mastery is most influential.

Conclusions: New graduate physiotherapists demonstrated high self-efficacy for engaging in patient-centred practice but low self-efficacy for using pain outcome measures, managing chronic pain and substance use. The interview findings corroborated these results and highlighted the role of direct practice for pain assessment

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and management, self-efficacy and readiness for practice. Identifying the implications for improving professional pain curricula and new graduate workplace support in these domains are recommended.

Keywords: pain; physical and rehabilitation medicine; health educators; education.

Background

Pain is an international healthcare priority and one of the leading causes of disability worldwide (Goldberg & McGee, 2011). The International Association for the Study of Pain (IASP) (2017) estimates that one fifth of the world's population experiences pain each year, with 10% living with chronic pain.

Healthcare professionals face the significant challenge of assessing and managing pain of increasing prevalence and complexity. The Institute of Medicine (US) Committee on Advancing Pain Research, Care, and Education (2016) has emphasised the need for "a cultural transformation to effectively prevent, assess, treat and understand pain of all types" (p. 397). To achieve this, health professionals require a comprehensive repertoire of knowledge, skills and behaviours (Hoeger Bement, St Marie, & Nordstrom, 2014; O'Sullivan, 2012). The IASP (2017) has translated this ability into 21 specific competencies (outlined in Table 3) and strongly recommends that all health professional education programs design curricula that equip graduates with the skills to meet these specific competencies in pain assessment and management. To determine the effectiveness of physiotherapy curricula in achieving this, it is important to evaluate whether new graduates entering the workforce are ready to engage in effective assessment and management of pain.

Self-efficacy is a critical construct in understanding and predicting the clinical performance of health professional graduates (van Dinther, Dochy, & Segers, 2011). It is defined as an individual's perception of their own capability to successfully execute a particular task or behaviour (Bandura, 1986). Self-efficacy is an important construct in task performance, where an individual must possess both knowledge and conviction for successful performance (Artino, 2012).

With some research identifying a positive relationship between student academic self-efficacy, clinical self-efficacy and performance, this construct has become a strong area of focus within healthcare education literature (Artino, 2012; van Dinther et al., 2011). This has been documented in physiotherapy literature, where training experiences in performance mastery, vicarious learning and verbal persuasion have increased new graduate confidence to work in private practice settings and deliver patient education (Atkinson & McElroy, 2016; Forbes, Mandrusiak, Smith, & Russell, 2018). However, these studies investigated non-specific self-efficacy and did not relate it to pain assessment and management. As an individual's self-efficacy is task-specific, its measurement must be tailored to each specific activity of interest (Artino, 2012). This study addresses this gap by exploring self-efficacy in new graduate physiotherapists in the context of pain assessment and management.

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Self-efficacy can influence how an individual will engage in professional practice, as it promotes the incentive to act (Artino, 2012). Therefore, it influences the ability of new graduate physiotherapists to engage in pain assessment and management. This knowledge is also paramount for determining whether new graduates are ready to assess and manage pain in professional clinical settings. Any gaps identified within new graduates' self-efficacy may inform essential curriculum development in the domains of professional pain education programs and identify professional support that is required in new graduate settings.

The overall aim of this study was, therefore, to understand how new graduate physiotherapists engage in pain assessment and management by evaluating their self-efficacy. This study addresses the following two research aims: (1) to investigate and explore the self-efficacy of new graduate physiotherapists in relation to the core competencies of pain assessment and management and (2) to explore the perceived influence of curriculum-based and clinical learning experiences during training on self-efficacy.

Methods

Design

A sequential explanatory design (Creswell & Plano Clark, 2007) was selected for its ability to comprehensively explore and address the research aims (Bowling, 2005). The quantitative phase occurred first and aimed to identify new graduate self-efficacy in relation to the core competencies of pain assessment and management. The subsequent qualitative phase then aimed to explain and expand on this self-efficacy and explore perceived influences. Triangulation of survey data was intended to enhance the credibility of the study results (Wisdom, Cavaleri, Onwuegbuzie, & Green, 2012). Ethical clearance was gained for this study from the University of Queensland Institutional Human Research Ethics, approval number 2009001668.

Measurement instruments

A self-report survey measure was selected to measure new graduate self-efficacy related to pain assessment and management. A thorough search of the literature revealed no existing instruments. A self-efficacy measure was designed using Bandura's theory of self-efficacy scale construction guidelines (Bandura, 2006) and known competencies in the area of pain assessment and management (IASP, 2017). The survey consisted of two components:

1. **Self-efficacy scale:** Self-efficacy is a domain-specific construct and will be inappropriately defined if assessed with a generalised or global measure (Artino, 2012). The measurement of an individual's self-efficacy must therefore be tailored to the specific task of interest. Self-efficacy should be measured by asking respondents to rate their perceived level of "confidence" in executing relevant task-specific competencies (Bandura, 2006; Tholcken, 2004). This was achieved by using the term "confidence" alongside each competency item in this study's survey. The

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competency items used were derived directly from internationally recognised IASP competencies in the area of pain. These competencies encompass the fundamental requirements that health professionals should possess to effectively assess and manage pain. A 5-point Likert scale ranging from 1 = completely disagree to 5 = completely agree was used in the survey to measure the level of agreement for each of the competency items.

2. **Demographic questions:** The final section of the survey collected demographic data, including age, gender and the professional education program studied.

The survey was piloted with six final-year students and six physiotherapists (67% female, mean age 31). Face validity was established through feedback on content, wording, clarity and item structure (Bowling, 2005). Minor changes were made in response to piloting feedback. Test-retest reliability of the measure was undertaken at baseline and at 2 weeks and demonstrated an acceptable intra-class correlation of > 0.75 for all items (Fink, 1995).

A semi-structured interview framework was developed to explain and expand on the IASP competencies with an explicit focus on self-efficacy and readiness for practice. This framework followed a combined inductive and deductive approach with open-ended questions that were designed to elicit discussion around the participants' thoughts and experiences of assessing and managing pain (Gale, Heath, Cameron, Rashid, & Redwood, 2013). To ensure the interview responses informed the survey results, probing questions were structured using the same IASP health professional competencies as a guide.

Participants and procedure

Survey

Participants: A convenience sample of 165 new graduate physiotherapists were recruited at the end of their professional studies (Figure 1), and 150 completed the survey in full (response rate = 90.9%). Inclusion was limited to a cohort of new graduate physiotherapists from a single tertiary institution at the completion of their professional education program. These programs were either bachelor-entry or master's-entry programs. The bachelor-entry program is a 4-year full-time undergraduate degree with 3 teaching years and 20–25 weeks of clinical placement, while the master's-entry program is a 2-year full-time equivalent entry-level degree with 20 weeks of clinical placement and the prerequisite of holding a previous undergraduate degree. All participants provided written informed consent before commencing.

Procedure: Participants were invited to complete a 10-minute hardcopy survey, which included a separate consent form inviting participants to be contacted for an interview. All surveys were distributed and collected by an independent member of staff not involved with the study. This occurred during a final university lecture held on campus at the end of their professional education program. Survey participants remained anonymous to the research team. All survey data collected were treated with confidentiality, kept in locked storage and only viewed by the research team.

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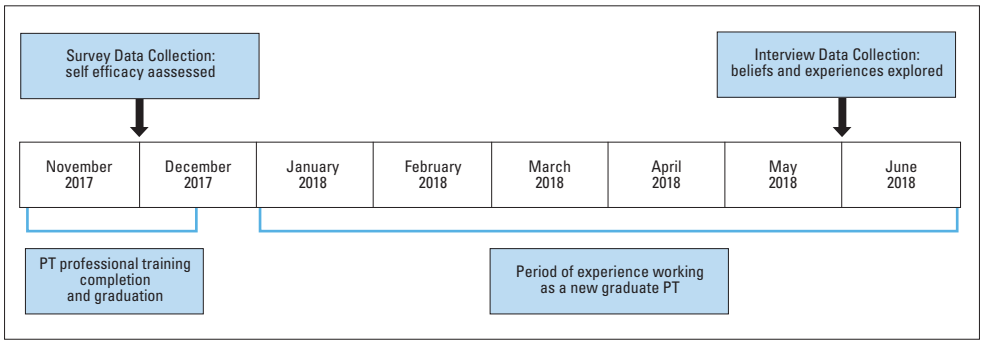

Figure 1. Data collection timeline.

Interview

Participants: Sixty-six new graduate physiotherapists consented in writing to be contacted for an interview at the time of survey completion by providing a contact email address. To minimise bias, a randomised sampling strategy was used for selecting participants from this group. Demographic characteristics were categorised according to gender, age group (20–24; 25–29; 30–34) and level of study (bachelor or master's entry). Twelve groups were identified, and all potential participants in each group were then assigned a number and were drawn using a computer-generated random number generator. Participants were individually contacted via email to request participation. When there was no response within 7 days from an individual in the initial group, random selection continued. Inclusion was restricted to individuals currently undertaking full- or part-time work in a new graduate physiotherapist role. Individuals were required to state the percentage of their patient load that required pain assessment and management. They were excluded from the interview if this was less than 20%.

Procedure: Interviews were conducted via telephone and digitally recorded using an external audio recording device to allow access to a geographically dispersed population and maintain relative anonymity (Sturges & Hanrahan, 2004). At the time of interview, all participants were informed that their responses would be audio recorded and were requested to verbally reaffirm their consent. The interview framework was followed for each participant, and probes were used at appropriate times to draw out and clarify meaning (Table 1). Interviews ranged from 24–38 minutes (mean 30 minutes 40 seconds) in length and were independently transcribed verbatim with accompanying field notes that captured the researcher's initial insights. All interviews were conducted in May and June 2018 (Figure 1) by the lead researcher, with the assistant researcher also present. Concurrent data analysis of the interviews was completed during this same time period. After 15 interviews were completed, data saturation was reached, as no further themes, ideas or issues were identified, and interviews were discontinued.

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Table 1
Interview Guide and Probing Questions Used During Semi-structured Interviews

Interview Guide
Describe where you work currently as a new graduate physiotherapist.
Explain what a typical day involves for you.
Explain your typical patient caseload.
Tell me about your role in pain management.
Tell me about what good pain assessment and management means to you.
Describe the situations where pain assessment or management is required where you feel you lack confidence.
Outline the learning experiences you believed to be most valuable in learning how to assess and manage pain.
Probing Questions (based on the IASP competencies)
Detail-oriented probes:
Explain how you use tools to measure your patients' pain.
Explain your experiences in managing patients with substance use disorders.
Describe how you interact with different professions when managing a patient in pain.
Elaboration probes:
What do you think helped you to become competent or confident in that area?
How did your training prepare you for that?
What particular aspects of pain assessment and management do you find challenging?
How could your training have been improved to aid your confidence for practice?
Echo probes:
You said you feel confident to do this. Why do you feel this way?
You're saying that you felt unprepared for this. What could have helped you feel more prepared?

Data analysis

Survey

Self-efficacy survey data were transferred into a Microsoft Excel spreadsheet and checked for missing responses. Only responses with > 80% of data were included to minimise the effect of missing data on subsequent analyses. Excel was used to generate descriptive statistics. The responses to self-efficacy items were tabulated as frequency distributions. Non-parametric testing was undertaken using SPSS version 20.0, and a Mann-Whitney U test was used to compare self-efficacy scores of each respondent according to the demographic groups of gender and program of study. The statistical significance was set as $p < 0.05$.

Interview

A framework method for thematic analysis (Gale et al., 2013) for interview data was used to systematically generate descriptive and explanatory conclusions centred on themes. The interview passages were analysed with a combined inductive and deductive approach to allow exploration of specific areas of interest and the discovery of new findings. In the transcription and familiarisation stages, one researcher (MI) re-listened to the audio-recorded interviews and transcribed them verbatim to become immersed in

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and sensitised to the data (Gale et al., 2013). The researcher (MI) then worked through each interview transcript line by line and coded passages according to her interpretation of the content. Similar emerging concepts were organised into subcategories and then initial codes. These categories and codes were verified by all members of the research team and transformed into an analytical framework, which was used for subsequent transcripts. Each code was further refined until data saturation occurred, after which final codes were agreed upon by the research team. Codes were charted, interpreted and then refined into final themes with accompanying illustrative quotations. Throughout the analysis process, efforts were made to maximise rigour and reflexivity and minimise bias. This included ensuring that participants were not personally known to the researcher, that personal questions (apart from demographic inquiries) were avoided and that the same semi-structured interview framework was applied to all interviews. The research team also engaged in regular meetings for data triangulation and to resolve inconsistencies in interpretation.

Results

Part 1: Self-efficacy survey

A total of 150 surveys were completed (response rate 90.9%). Respondents had a mean age of 24 years (range 21 to 34 years). The majority were females (n = 87, 58%) from the bachelor-entry program (n = 109, 72.7%). The demographics accurately reflected student enrolment data obtained from the University of Queensland and are outlined in Table 2. Only three respondents (2%) selected "agree" or "strongly agree" for all survey items, while 78 respondents (52%) selected "disagree" or "strongly disagree" for at least one item. The item with the highest self-efficacy score was *Demonstrate empathic and compassionate communication*, in which most respondents (n = 134, 89.3%) selected "agree" or "strongly agree". Other items with over 80% of respondents selecting "agree" or "strongly agree" included *Assess patient preferences* (n = 131, 87.3%) and *Explain importance of health promotion and self-management strategies* (n = 124, 82.7%).

The item with the lowest self-efficacy score was *Differentiate physical dependence, substance use disorder, misuse, tolerance, addiction and nonadherence and how these conditions affect pain and function*, in which most respondents selected either "disagree" or "strongly disagree" (n = 37, 24.7%) or "undecided" (n = 81, 5%). Similarly, for *Describe pain assessment and management needs of special populations*, most respondents selected either "disagree" or "strongly disagree" (n = 41, 27.3%) or "undecided" (n = 69, 46%). For *I feel confident to use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population*, most respondents selected either "disagree" or "strongly disagree" (n = 15, 10%) or "undecided" (n = 71, 47.3%). There were no significant differences in scores for individual survey items and total scores between respondents based on gender (p = 0.15) or program of study (p = 0.34). All self-efficacy survey results are outlined in Table 3.

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Table 2
Subject Demographic Information

	Survey Respondents (n = 150)		Interview Participants (n = 15)	
	n (%)	Mean	n (%)	Mean
Age (years)		23.97		23.27
Gender				
Female	87 (58)		11 (73.3)	
Male	63 (42)		4 (26.7)	
Physiotherapy degree				
Bachelor entry	109 (72.7)	11 (73.3)		
Masters entry	41 (27.3)	4 (26.7)		
Discipline of practice as a new graduate				
Public Hospital: Full Time			6 (40)	
Private Hospital: Full Time			1 (6.7)	
Private Hospital: Part Time			1 (6.7)	
Private Practice			7 (46.7)	

Part 2: Interviews

Fifteen semi-structured telephone interviews were completed. Participants had a mean age of 23.3 years (range 21 to 27 years). The majority were females (n = 11, 73.3%) from the bachelor-entry program (n = 11, 73.3%). Most participants worked as full-time new graduate physiotherapists in either hospital settings (n = 7, 46.7%) or in private practice settings (n = 7, 46.7%). Further demographic information is outlined in Table 4.

Six themes were generated from the interview data following analysis. It should be noted that although the six themes represent separate issues, they often occurred in parallel, and participants often reported one or more issues relating to pain assessment and management self-efficacy. The details of these findings are outlined in the following text, along with illustrative quotes:

(1) Understanding and explaining pain

Participants described a strong sense of "preparedness" around understanding pain and its meaning when entering the workforce. They attributed value to the role of their classroom-based studies in giving them this knowledge and confidence:

> *That course where you go through all the pain modules … was a good basic introduction to the topic of pain and really changed my understanding of that. … I feel like I have a pretty sound understanding of the science behind pain and the mechanisms.* (P9)

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Table 3
Self-efficacy Score Frequencies for Individual Survey Items (IASP Competencies)

	Strongly disagree n (%)	Disagree n (%)	Undecided n (%)	Agree n (%)	Strongly agree n (%)
1. I feel confident to explain the complex, multidimensional and individual-specific nature of pain.	5 (3.3)	24 (16)	40 (26.7)	66 (44)	15 (10)
2. I feel confident to present theories and science for understanding pain.	10 (6.7)	19 (12.7)	54 (36)	57 (38)	10 (6.7)
3. I feel confident to define terminology for describing pain and associated conditions.	1 (0.7)	16 (10.7)	43 (28.7)	76 (50.7)	14 (9.3)
4. I feel confident to describe the impact of pain on society.	0 (0)	15 (10)	45 (30)	81 (54)	9 (6)
5. I feel confident to explain how cultural, institutional, societal and regulatory influences affect assessment and management of pain.	0 (0)	22 (14.7)	44 (29.3)	71 (47.33)	13 (8.7)
6. I feel confident to use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population.	2 (1.3)	13 (8.7)	71 (47.3)	55 (36.7)	9 (6)
7. I feel confident to describe patient, provider and system factors that can facilitate or interfere with effective pain assessment and management.	0 (0)	24 (16)	51 (34)	69 (46)	6 (4)
8. I feel confident to assess patient preferences and values to determine pain-related goals and priorities.	0 (0)	4 (2.7)	15 (10)	110 (73.3)	21 (14)
9. I feel confident to demonstrate empathic and compassionate communication during pain assessment.	0 (0)	2 (1.3)	14 (9.3)	71 (47.3)	63 (42)
10. I feel confident to demonstrate the inclusion of patient and others, as appropriate, in the education and shared decision-making process for pain care.	0 (0)	1 (0.7)	36 (24)	84 (56)	29 (19.3)
11. I feel confident to identify pain treatment options that can be accessed in a comprehensive pain management plan.	2 (1.3)	12 (8)	57 (38)	66 (44)	13 (8.7)
12. I feel confident to explain how health promotion and self-management strategies are important to the management of pain.	0 (0)	4 (2.7)	22 (14.7)	88 (58.7)	36 (24)
13. I feel confident to develop a pain treatment plan based on benefits and risks of available treatments.	0 (0)	10 (6.7)	49 (32.7)	76 (50.7)	15 (10)
14. I feel confident to monitor effects of pain management approaches to adjust the plan of care as needed.	0 (0)	11 (7.3)	44 (29.3)	84 (56)	11 (7.3)

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Table 3
Self-efficacy Score Frequencies for Individual Survey Items (IASP Competencies (contd.)

	Strongly disagree n (%)	Disagree n (%)	Undecided n (%)	Agree n (%)	Strongly agree n (%)
15. I feel confident to differentiate physical dependence, substance use disorder, misuse, tolerance, addiction and nonadherence and how these conditions affect pain and function.	4 (2.7)	33 (22)	81 (54)	27 (18)	5 (3.3)
16. I feel confident to develop a treatment plan that takes into account the differences among acute pain, acute-on-chronic pain, chronic/persistent pain and pain at end of life.	1 (0.7)	9 (6)	45 (30)	85 (56.7)	10 (6.7)
17. I feel confident to describe the unique pain assessment and management needs of special populations.	2 (1.3)	39 (26)	69 (46)	39 (26)	1 (0.7)
18. I feel confident to explain how to assess and manage pain across settings and transitions of care.	1 (0.7)	23 (15.3)	50 (33.3)	73 (48.7)	3 (2)
19. I feel confident to describe the role, scope of practice and contribution of the different professions within a pain management care team.	1 (0.7)	23 (15.3)	65 (43.3)	53 (35.3)	8 (5.3)
20. I feel confident to implement an individualised pain management plan that integrates the perspectives of patients, their social support systems and healthcare providers in the context of available resources.	1 (0.7)	17 (11.3)	69 (46)	61 (40.7)	2 (1.3)
21. I feel confident to describe the role of the clinician as an advocate in assisting patients to meet treatment goals.	0 (0)	2 (1.3)	34 (22.7)	95 (63.3)	19 (12.7)

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Table 4
De-identified Interview Participant Details

Subject Number	Age (years)	Gender	BE/ME	Discipline of Work as New Graduate	Proportion of Patient Load Requiring Pain Assessment and Management (%)
P1	22	Male	BE	Public Hospital (FT)	100
P2	21	Female	BE	Private Practice (FT)	100
P3	22	Female	BE	Private Hospital (PT)	80
P4	24	Female	BE	Public Hospital (FT)	100
P5	23	Female	BE	Public Hospital (FT)	90
P6	27	Female	ME	Private Practice (FT)	95
P7	24	Female	BE	Public Hospital (FT)	90
P8	23	Male	BE	Private Practice (FT)	80
P9	24	Male	ME	Public Hospital (FT)	100
P10	22	Female	BE	Private Hospital (FT)	90
P11	22	Female	BE	Private Practice (FT)	95
P12	26	Female	ME	Private Practice (FT)	100
P13	22	Female	BE	Public Hospital (FT)	66
P14	25	Female	ME	Private Practice (FT)	90
P15	22	Male	BE	Private Practice (FT)	50

Abbreviations: BE = bachelor entry; ME = master's entry; FT = full time; PT = part time

Despite expressing this feeling of understanding, participants reported that they frequently encountered challenges in having to explain pain in practical situations with patients:

> *I understood pain, but I didn't know how to explain it in a good way to someone who has chronic pain.* (P4)

> *I often get a few tricky patients where I can't seem to find a way … to try and get across what's in my brain.* (P1)

However, it was expressed that during clinical placements or new graduate work, receiving feedback and additional direct experiences in delivering pain education was valuable in enhancing readiness and confidence:

> *Giving education to a practice patient and getting feedback … allowed us to get better at it and refine our knowledge.* (P9)

Some participants discussed how vicarious experiences of watching others perform was valuable in enhancing their skill development and confidence:

> *Our [clinical educator] … gave us a thorough tute on explaining pain to patients and pain management and things like that, so after that I felt a lot more confident.* (P7)

> *Watching the other physios talk about pain in that kind of setting [was helpful].* (P6)

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(2) Striving for patient-centred practice

Participants expressed a strong sense of value towards patient-centredness in their perception of appropriate and effective pain assessment and management. Participants expressed that this was a largely inherent value:

> *It automatically and naturally becomes what you do.* (P13)

In addition, there were several sources of learning that they felt contributed to patient-centredness. Performance mastery activities, including patient simulations and clinical placements, were viewed as important facilitators to self-efficacy in this area:

> *[I feel] pretty confident having practised communicating with patients … and getting feedback on how to promote self-management.* (P9)

> *The more patients you talk to, the more you're able to be empathetic.* (P13)

Whilst recounting their priorities around pain treatment planning, participants also revealed a strong recognition of the importance of tailoring pain assessment and management:

> *It's tailored to the patient and it's not a one-recipe kind of thing.* (P14)

(3) Incomplete mastery of outcome measures

In their role as a new graduate, participants admitted to feeling unprepared to apply pain outcome measures to patients. On further enquiry, they conveyed that they had a reasonable theoretical understanding of specific pain outcome measures but felt very challenged to apply this understanding:

> *I'd say I'd be less confident in [administering one] rather than just knowing which one to pick.* (P13)

More specifically, participants concurred that pain questionnaires were a common outcome measure of concern:

> *In terms of other questionnaires and what conditions are best to use them for, it's all a bit of a blur.* (P11)

They then expressed a need for more vicarious and direct experiences in the practical administration of pain outcome measures. Participants discussed how they thought a paucity of such training was related to their lack of self-efficacy in this domain:

> *We just learned about it theoretically a lot, but we never really applied it.* (P11)

> *It was something we always touched on, but it wasn't until SP week and prac where I realised how important it is to have those outcome measures.* (P4)

Consequently, participants believed that more direct experiences in using pain outcome measures would be necessary for the physiotherapy education program to ensure the skill is attained properly:

> *[We need] more teaching about how to administer a questionnaire correctly, because I think it's a thing that's a bit underestimated.* (P1)

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(4) Chronic pain management is challenging

For the task of managing patients with chronic pain, feelings of inadequacy and ill-preparedness were unanimous among the participants. Although some felt confident in their ability to treat acute pain, they expressed that their self-efficacy for managing chronic pain felt comparatively much lower:

> *I definitely find acute conditions much easier. I feel more confident.* (P12)

> *I think that's from not having as much exposure to chronic pain patients on placements.* (P9)

> *If they were more complicated, then I'd struggle.* (P10)

The participants believed that these feelings of concern and ill-preparedness were related to a lack of opportunities in their curriculum. They conveyed the belief that both vicarious and direct clinical opportunities in both the class-based curriculum and during clinical placements were needed:

> *Through uni, we always talk about the assessment and treatment of patients, but we never talk about long-term ongoing treatments for chronic pain.* (P6)

> *I don't think I had the exposure on my clinical placements with chronic pain patients—you're always given the easy one, because you're just a student at that point.* (P12)

One participant recalled a lack of exposure to chronic pain as a student and described subsequently struggling as a new graduate because of an expectation to manage several chronic pain patients every day:

> *During my year of placements, I didn't have a lot of exposure to chronic pain, so that was something very difficult coming into the job, having 3 or 4 out of 12 of my patients per day who were in chronic pain.* (P4)

Participants also referred to chronic pain as being an "unknown" entity that challenges many health professionals. They were of the opinion that implementing a larger chronic pain focus across theoretical and clinical training might be a viable recommendation for bridging this gap in understanding:

> *The musculoskeletal courses were more acute-orientated than chronic-orientated … [we needed] more information on chronic pain management in the musculoskeletal courses.* (P9)

(5) Facing patient conflict and complexity

Participants shared the belief that managing patient conflict and complexity is challenging for new graduate physiotherapists. In particular, they admitted that they experience difficulty when dealing with patient-related barriers such as adherence to management or lapses in communication. This was often attributed to a lack of direct experiences in their training years:

> *Getting people to buy in properly is hard.* (P8)

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> *We learn a lot about education … but I think the thing I come across a lot is conflict and resistance [with patients]. … I think that could be something else that could be worked into the curriculum.* (P1)

Similarly, when commenting on the management of patients with physical dependence and substance use disorders, participants consistently admitted to having negligible education or direct experience in the domain and, hence, felt unprepared:

> *I'm not so confident with the substance-abuse side of things.* (P9)

> *I just don't think we really had that much conversation about [substance abuse] at uni. It wasn't a big component, so I'm not confident.* (P6)

Participants recognised their lack of self-efficacy in this domain and expressed a need for more education, feedback and direct practice opportunities in dealing with patient conflict and complexity:

> *[We need] more practice for ourselves, absolutely. And more education about how to deal with an aggressive patient—advice, case studies, anything.* (P1)

(6) Direct mastery is most influential

All participants expressed their undivided belief that theoretical teaching of skills must be followed by significant amounts of practical application. In their view, skill mastery would be incomplete without enactive mastery experiences:

> *I don't think learning about it is sufficient enough. Definitely having a go is important.* (P12)

Across all the domains of pain competencies that were discussed, the participants consistently perceived performance mastery experiences as the most influential source of their learning:

> *I feel like I'm learning a lot more when I'm actually treating patients and experiencing it in the real world.* (P1)

> *I was feeling like I was learning so much more on the job than what I could learn in books.* (P14)

When reflecting on areas of professional practice in which direct experience was limited, participants revealed that they lacked confidence and felt underprepared. This was particularly relevant for the management of chronic pain and of special populations. The participants were cognisant of this relationship and used it to explain their opinion:

> *[Clinical placements are] the best time to consolidate that knowledge that you've learnt. I feel like if I'd had placements in special populations, I'd feel quite confident coming out and applying for jobs in those areas and working in those areas.* (P12)

The group of participants unanimously agreed that performance mastery experiences were necessary to develop clinical self-efficacy:

> *Your confidence is boosted anytime that you feel you have a better clinical grasp on the situation.* (P2)

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Discussion

The overall findings from this study demonstrate that this new graduate physiotherapist cohort have high self-efficacy and perceived readiness for practice in some areas of pain assessment and management but not others. Additionally, the results have revealed a clear preference for practical- or clinical-based learning experiences in developing self-efficacy in this area.

Pain assessment and management that integrates the perspective and needs of the patient enhances therapeutic effects (Stewart et al., 2000), is predictive of improved clinical outcomes and is considered best practice in physiotherapy (Beattie & Silfies, 2015; O'Sullivan, O'Keefe, Caneiro, & O'Sullivan, 2016). Our study has demonstrated that some new graduate physiotherapists have high self-efficacy for assessing patient preferences and promoting self-management strategies with effective communication. This was corroborated by the interview findings, where participants expressed preparedness for communicating empathically with patients and tailoring pain assessment and management to the needs and preferences of the patient.

Results from both the survey and interviews demonstrated low self-efficacy in applying pain outcome measures in a clinical setting. Previous research has identified this issue, where physiotherapists report barriers in implementing outcome measures in routine practice, including limited knowledge of existing measures, poor encouragement from the workplace and limited time (Hill et al., 2008; Wedge et al., 2011). This finding in our study is of particular concern, as validated outcome measures and self-report questionnaires for pain are essential for assessing baseline pain status and monitoring patient change (Delitto, George, & van Dillen, 2012). As the new graduates in this study report challenges with using such measurement tools, this may imply that their ability to objectively assess and monitor patients presenting with pain may be compromised.

This study's cohort of new graduates demonstrated relatively low self-efficacy for managing patients with substance use disorders. Current evidence suggests that the prevalence of opioid abuse in the general population is a devastating international public health problem that is growing at an alarming rate (Roland, Lake, & Oderda, 2016). As first-contact practitioners, it is vital that physiotherapists are competent at identifying substance use disorders and have the competency to manage these patients' needs. If they are unable to do so, the presence of these disorders may go unnoticed and cause a continual escalation of emergency department visits and drug-poisoning deaths (Roland et al., 2016). It is very likely that new graduate physiotherapists will need to engage with and manage this pain population, but our findings indicate that some are not prepared to do so.

Another area of concern in new graduate readiness relates to the management of chronic musculoskeletal pain, which is increasing in prevalence in primary healthcare settings (Ernstzen, Louw, & Hillier, 2017). This is consistent with concerns among the wider profession, where physiotherapists feel underprepared to adequately address the biopsychosocial dimensions of chronic pain despite levels of experience (Synnott

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et al., 2015). Furthermore, where the optimal management strategy for chronic pain remains inconclusive (Oliveira et al., 2012), chronic pain management continues to be a challenge for many physiotherapists, not just new graduates.

Lastly, our results demonstrated that this cohort of new graduates used multiple sources of learning to develop self-efficacy for pain assessment and management: performance mastery experiences, vicarious learning and verbal persuasion, which form the main sources of self-efficacy. Although not the main aim of the current study, our results indicated that performance mastery experiences were the strongest contributors to new graduate self-efficacy for pain assessment and management, consistent with self-efficacy theory (Bandura, 1997). Existing literature also demonstrates that physiotherapy students consistently rate clinical placement experiences as the most important contribution to their learning and professional confidence (Forbes et al., 2017). This is not unexpected, as clinical placements provide experiential learning opportunities and are integral in enhancing understanding of content, clinical reasoning and interpersonal skills (Smith & Crocker, 2017). These findings in our study are, therefore, supported by existing literature and provide important implications for curriculum improvement strategies.

Implications

Our results have identified areas within pain assessment and management where some new graduate physiotherapists lack readiness due to low self-efficacy. These findings have implications for the support that may be required for some new graduates entering the professional setting. Our study provides clinicians, supervisors and practice management with an informed understanding that some new graduates feel unprepared to use outcome measures and manage patients with chronic pain. This may enable workplaces to plan and deliver more relevant support to new graduates, which will promote their self-efficacy and readiness to practise effective pain assessment and management. It also indicates a lack of readiness to identify substance abuse disorders, which may be a consideration for training providers given the increasing prevalence of this issue.

Additionally, future research will be needed to determine ways for improving this clinical self-efficacy in physiotherapy students and new graduates. This may include implementing more practical and clinical learning experiences in these areas, as these are the most powerful source of learning and self-efficacy in higher education (van Dinther et al., 2011), which has been reinforced by the findings from this study. However, it is beyond the scope of this study to address any further curricula initiatives.

Limitations

Several limitations must be considered. Most notably, all participants were selected from a single cohort at one tertiary institution. Therefore, the results are limited to this single cohort. Generalising the results of the current study to new graduates from other settings is compromised. The term “confidence” was used alongside each competency

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as per self-efficacy scale construction guidelines (Bandura, 2006), however the term is not strictly synonymous with self-efficacy. In addition, construct validity may have been reduced if participants were unfamiliar with the scale items on the survey. The self-report survey measure may have also been prone to social desirability bias, and participants may have answered interview questions with response bias. Also, the qualitative results may not be representative of the true population, as new graduate physiotherapists with extremely low self-efficacy may have declined to be interviewed. In addition, the researchers had a background in physiotherapy and prior experience of the participants' curriculum. This may have reduced rigour and transparency and introduced observer bias and reactivity. However, we attempted to minimise this risk by using self and team critical reflection, a randomised interview selection process and by ensuring the participants were not personally known to the researcher who was undertaking the interviews.

Conclusions

The overall findings of this study demonstrate that this cohort of new graduate physiotherapists have high self-efficacy for achieving patient-centred practice and effective communication during pain assessment and management. However, they have low self-efficacy for applying pain outcome measures and managing patients with chronic pain and substance use problems. This highlights areas in which new graduates may lack readiness for practice. These findings have implications for teaching and learning in pain assessment and management and workplace support for new graduate physiotherapists entering the profession. The findings provide support for the use of direct clinical practice experiences to enhance readiness for pain assessment and management. The implications of these findings must be interpreted with caution because the study cohort limits generalisability.

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The authors have no conflicts of interest to report.

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