New graduate physiotherapists' perceived preparedness for clinical practice. A cross-sectional survey

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Abstract

Objectives: The study aimed to explore new United Kingdom (UK) graduate physiotherapists' perceived preparedness for clinical practice to provide valuable information to support curriculum development.

Methods: An online, mixed method cross-sectional questionnaire was used. Newly qualified UK physiotherapists completed a survey, capturing how physiotherapy degrees prepared them for practice against 1) UK proficiency standards and 2) cross-discipline physiotherapy related clinical skills. Respondents were asked for reflections of their degree course including teaching and effectiveness. Data was converted into proportions with a 95% confidence interval. Likert scale questions were treated as numeric variables with the mean and standard deviation (SD) calculated for combined responses. Thematic analysis reported patterns of data extracted from open-ended questions.

Results: Of a total of 376 respondents, 365 were included in data analysis. Overall respondents perceived that courses prepared them 'well' against 12 of the 15 standards, on a Likert scale of 1-5. Respondents reported that perceived competence was 'indifferent' for manual therapy skills (Mean 3.14 ± SD 1.13), red flag (3.45 ± 1.11) and clinical flag management (2.92 ± 1.16). Exercise prescription (2.42 ± 1.35), psychosocial skills (2.27 ± 1.23) and patient management (2.41 ± 1.12) were areas identified for further teaching focus. Placements were the preferred teaching method most applicable to practice followed by practical seminars.

Conclusion: Respondents felt sufficiently prepared for practice against UK proficiency standards but not physiotherapy related clinical skills. Areas for curricula development included exercise prescription, psychology and pain management.

Keywords: Physiotherapy Education, Professional Standards, Graduating Physiotherapy Students, Physiotherapy

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Introduction

Physiotherapy pre-registration programs must equip graduates with clinical and non-clinical skills, knowledge and behaviours required to enter the profession. In the United Kingdom (UK), these are intrinsically aligned to the Health Care Professionals Council (HCPC) standards of proficiency [1]. These standards are the threshold required to both protect the public and set clear expectations for registrants' knowledge and abilities for professional competence. Within the UK, accredited university programmes assess student competence on both discipline specific skills and general graduate skills which include critical thinking, communication and problem solving [2].

The transition of teaching the physiotherapy curriculum in a university setting, away from hospital environments, has resulted in a stronger focus on evidence-based practice [3]. This has coincided with graduates demonstrating increased critical analysis and clinical reasoning skills during patient management [4]. Despite these positives, the transition to university-based physiotherapy education may hamper the ability for students and graduates to transfer knowledge into a clinical setting [5]. University teaching is embedded within a framework of specific learning outcomes within a set programme structure and these constraints may restrict the knowledge and skills students are taught [6]. This framework affords universities the flexibility to deliver a curriculum to meet their institutional and regional requirements [7]. Whilst this model may positively influence the pedagogical practice of individual courses, such autonomy may result in the taught content substantially varying between programmes, influencing student's preparedness for practice [7]. UK universities often employ a well-developed hybrid model, allowing students to benefit from a university curriculum with practice-based education streamlined through clinical placements, equipping students for employment.

Previous studies have identified a perception amongst wider healthcare graduates that they are underprepared for their clinical role upon graduation [8-12]. Medical graduates have reported the transition to clinical practice as stressful, with newly gained responsibilities of both autonomous and multidisciplinary team working, clinical reasoning, clinical uncertainty and time management pressures all resulting in anxiety regarding perceived competence [9, 13, 14]. Such challenges have been echoed by recently qualified physiotherapists identifying changes in case load volume, patient complexity, and working autonomously as substantial changes leaving graduates feeling overwhelmed and ill-prepared [15]. The challenge for educators is to deliver a curriculum which is practice relevant whilst maintaining a theoretical perspective [16]. As physiotherapy knowledge evolves universities need to carefully consider what students need to be able to know, do and value for successful practice [17]. In addition, to core clinical competencies, non-clinical skills including decision making, initiative, prioritisation, time and stress management have been recommended as important components of initial training to prepare graduates for practice [12,18].

Newly qualified physiotherapists often feel unprepared in the management of patients with complex needs. Recent graduates have reported the challenges of implementing cognitive, psychological and social aspects of patient management [19-21]. New graduate physiotherapists have illustrated that the readiness to manage complex presentations, such as chronic pain, is strongly linked to direct experience and wider workplace support which fosters confidence and perceived competency [21]. Physiotherapists perceived that initial training fails to instil the requisite skills and confidence to successfully address and treat such multidimensional patient presentations [20]. Black and colleagues [22], identified concepts that are integrated in a developmental process for novice physiotherapists, namely the clinical

environment and practice community, learning through experience, confidence development and emerging professional identity. These concepts are considered the 'seeds' of professional formation upon graduation and are based upon skills developed and nurtured within initial training including communication and relational skills, clinical problem-solving and decision-making capabilities [22]. Despite these concepts, newly graduated physiotherapists have reported fear and anxiety, decreased confidence and competence when undertaking the transition into their first year of clinical practice [23].

The variety of subject content, within pre-registration degrees, has been cited as an important reason for differences in student perceptions of competence upon graduation [8,24]. The vast knowledge required in clinical practice makes full graduate preparation impossible, but education providers require the understanding of student's competence to evolve and continually develop during training programmes [10]. Clinicians perceive problem-based learning in a placement setting, to be a key factor in developing transferable skills inherent in clinical practice, which include holistic care, team working efficacy and employing a problem-solving approach [25]. Despite this, Jones and colleagues [26] reported physiotherapy students from a single UK university cohort were unable to identify transferable skills required by potential employers. It is therefore important to understand how recently qualified physiotherapists within the UK, who have secured their first clinical role, feel their university education prepared them for clinical practice. Understanding graduates' perceived competence allows the curriculum to respond and evolve to meet students' needs [26].

The transition of graduation to a fully qualified physiotherapist is a key learning period which is under investigated [22]. To our knowledge the perceived competence of UK graduates, against professional standards, has yet to be investigated. Therefore, the aim of this study was

to understand how recently qualified UK physiotherapists perceived their training prepared them for practice 1) against the HCPC proficiency standards of physiotherapy and 2) cross-discipline physiotherapy related clinical skills. The final aim was to report reflections of their degree course including teaching and effectiveness.

Methods

A cross-sectional mixed methods survey of newly qualified UK physiotherapists, defined as completing a pre-registration degree within the previous 18 months, was conducted from July 2020 to September 2020. The study was approved by the School of Health and Life Sciences ethics committee at *** University, conforming to the Declaration of Helsinki. The study report conforms to STROBE cross sectional guidelines [27].

Design

The online, cross-sectional survey aimed to measure perspectives of physiotherapists regarding 1) how well a pre-registration physiotherapy degree prepared graduates for employment against the HCPC proficiency standards of physiotherapy, 2) cross-discipline physiotherapy related clinical skills and 3) overall reflections regarding course teaching and effectiveness.

A mixed method approach was adopted to allow respondents to share their experiences and facilitate the exploration of different avenues of questions which required in-depth thought [28]. Quantitative questions were designed as dichotomous or Likert scale, of which all scales were unipolar. The Likert scale questions were scored as follows: 1, Poorly; 2, Not well; 3, Indifferent; 4, Well; 5 Extremely Well. Qualitative questions were open ended aimed to capture students' reflections in greater detail. This consisted of creating text boxes to enable respondents to write freely. The qualitative questions (Q10, Q11, Q12, Q13, Q15 and Q16),

were deemed to be an important aspect of this study as it provides richness of respondent's thoughts and experiences, which can contribute to determining truth and meaning behind the dataset. This was employed using thematic analysis within the work of Braun and Clarke [29]. This method, based on an inductive approach, is not limited by frameworks or predetermined themes and can reveal unanticipated insights which may provide more richness to the data [30]. The questionnaire was designed following extensive pilot testing from newly qualified physiotherapists in the UK. The participants in the pilot testing were currently employed across several physiotherapy sub-disciplines including general medicine, mental health, musculoskeletal, neurology, orthopaedics, paediatrics and respiratory care. Following survey production, 15 physiotherapists reviewed for construct validity [31]. The pilot group independently assessed the questionnaire and were requested to provide comments on the format, content, wording and overall ease of completion [32]. As a result, modifications were made with specific questions added (two), removal of questions (one), change to format of questions (four) and alteration of sequence. Following changes, the questionnaire was re-reviewed by the pilot group and an additional three physiotherapists who were not invited to complete the live questionnaire. Following the final review, a further change to online formatting was finalised.

The final survey consisted of 16 questions (Supplementary Material 1) and was hosted online at onlinesurvey.ac.uk. Section one of the questionnaire captured initial participant background characteristics including age, gender, length of time qualified, time between graduation and first clinical role and current clinical sub-discipline. Additional background questions included the type of pre-registration course completed (BSc or MSc) and previous degree awards. Section two included questions related to the HCPC standards of proficiency [1]. The HCPC, the governing body of several UK allied health professions including physiotherapy, produce

standards of proficiency registrants are expected to meet [1]. The standards are set out to ensure safe and effective practice within regulated physiotherapy practice. Similarly, physiotherapy courses are regulated by the HCPC and require accreditation from the Chartered Society of Physiotherapy (CSP), thus higher education institutes must also meet these guidelines with regards to the content of their programme. Importantly, the standards provide clear guidance for what students must know, understand and are competent to do by the time initial training is completed [1]. Respondents were asked how well their pre-registration degree prepared them for practice against these standards.

Section three aimed to understand how initial training had prepared newly qualified physiotherapists in a range of cross-discipline physiotherapy related clinical skills. These skills were agreed upon and adapted by the pilot group, from the four pillars of contemporary practice as described by the CSP, the trade union body of UK physiotherapists [33]. The four pillars reflect the scope of practice of physiotherapy professionals within the UK and include exercise, movement and rehabilitation, manual therapy and therapeutic handling, therapeutic and diagnostic technologies and allied approaches [33]. The pilot group were asked to identify the skills considered most important to newly graduated physiotherapists within a contemporary clinical practice framework.

Within the final section of the questionnaire, respondents were asked to share their experiences and reflect on their degrees' ability to prepare them for clinical practice, highlight areas of good practice, rate the usefulness of interprofessional learning and rank a series of teaching methods (Supplementary Material 1). In addition, participants were asked to identify areas of the curriculum which required an increased teaching focus and those which had not been useful to current clinical practice (including what they would change about their degree course).

Respondents were also asked if their taught programme was of an appropriate duration to understand, learn and competently apply the physiotherapy skills required in the workplace (Supplementary Material 1).

Participants

Participants were asked to complete the questionnaire if they had qualified from a pre-registration UK physiotherapy course within the previous 18 months. For inclusion, participants were required to be working in a clinical role. Respondents working from the broad spectrum of physiotherapy sub-disciplines were included. The authors contacted the CSP, who confirmed approximately 2,000 students qualified per year from pre-registration courses within the UK. From this data, we calculated the sample size (95% Confidence Interval) regarded using www.qualtrics.com, with 323 respondents required for a 5% margin of error.

A study recruitment message was posted via the CSP's interactive community (iCSP). The iCSP provides access to a range of electronic networks, where members can subscribe to topics of interest. Each network has an individual focus and members subscribe individually and consent to receive messages posted within that forum. The lead author, as a member of the CSP, posted a recruitment message on the 'Newly Qualified' network explaining the study and providing a link to the survey. A reminder message was posted at two and four weeks prior to survey closure (30/09/2020).

Data Analysis

Following survey closure, the data was extracted from onlinesurveys.ac.uk into Microsoft Excel (Microsoft Corp, Redmond, WA, USA) using the analyse function. The survey was not designed to test for differences between respondents and therefore no such analysis was

performed. Using the Wilson procedure, [34] we present descriptive data with results from the dichotomous questions converted into proportions with lower and upper limits of the 95% confidence interval. Likert scale questions were treated as numeric variables [35]. The mean and SD were calculated for combined responses across each potential option. In addition, due to the surveys aims, we employed an exploratory design allowing open-ended answers to be included. While this provides a more ecologically valid response, it also creates an extra stage in analysis. Following the work of Braun and Clarke [29], the number of qualitative responses varied between 100 to 150 for each qualitative question and were exported into a document to allow familiarisation of the respondent's comments to be reviewed by JA. The comments that made a similar point were coded manually and enabled the researcher to search and group potential broad categories. The categories were reviewed again where additional coding permitted a set of sub and main themes to be generated. These themes were redefined regarding names and re-grouping if advised following a triangulation and peer debriefing process from another researcher (PC). If any disagreements between researchers arose in relation to formation of themes, coding etc, another researcher (JC) would provide an independent review of the disagreement. There were no disagreements following the analysis processes used. Hermeneutic revisiting of the data set was performed to reduce any researcher prejudices or biases that may have de-valued aspects in the process of generating themes. There were some comments that did not align to any of the themes, and these ranged from 5 to 10 comments per question. These questions were deemed as not adding any insights to the phenomenon and were discarded.

Role of Funding Source

No funding was received for this study.

Results

A total of 376 newly qualified physiotherapists, defined as graduating from a pre-registration UK degree programme within the past 18 months, completed the survey (Figure 1).

INSERT FIGURE 1 APPROX HERE

From this sample 11 respondents were removed from the final data analyses; six due to failing to complete the survey and five for not qualifying within the 18-month cut off period. A total of 365 participants (Age [mean ± SD, range]: 28 ± 8, 21 to 59; Males [number, percentage]: 135, 37%; Females: 228, 62%; Self Identifying Other: 2, 1%) completed the survey and their characteristics are presented in Table 1.

INSERT TABLE 1 APPROX HERE

Of the 141 respondents who had completed a previous degree the most popular were BSc Sports Therapy and Rehabilitation, Sports Science and Psychology. Only one respondent had not completed a previous science**,** technology**,** engineering, or mathematics (STEM) related course, named BSc History.

Respondents perceived courses prepared them 'Well' against 12 of the 15 standards (Table 2). Of the three standards rated as 'Indifferent' the awareness of culture, equality and diversity on practice was graded the lowest. Respondents, felt 'well' prepared to practice in a non-discriminatory manner, however, perceived they lacked the awareness of cultural perspectives.

INSERT TABLE 2 APPROX HERE

Respondents rated how their degree course prepared them against several cross-discipline physiotherapy related clinical skills. Table 3 presents the combined means and standard deviation.

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Respondents were asked to reflect upon the areas of their course which would have benefitted from an increased teaching focus. Four themes emerged which included exercise therapy, psychology, pain management and manual therapy. In relation to exercise therapy, further exercise prescription and strength and conditioning were frequently cited as areas participants felt they would have benefitted from an increased teaching focus. Understanding and applying psychological principles, including the cognitive behavioural therapy approach, psychosocial aspects of patient management and general mental health comprehension were important to respondents. Pain education was the third most popular response which included chronic pain. In relation to manual therapy, respondents felt a larger variety of practical hands-on skills were required increasing the need for further dedicated teaching time.

The two main areas of training which respondents felt were not useful to employment were electrotherapy and manual therapy. Specially within electrotherapy, some respondents particularly selected ‘ultrasound’ as a modality not typically used within contemporary clinical settings. The manual therapy theme contained a variety of descriptions including reference to deep transverse frictions and proprioceptive neuromuscular facilitation techniques. Research was the third theme, with respondents feeling this was not helpful in practice. Lastly, service

improvement, policy and leadership were also perceived as lacking relevance in the applied physiotherapy setting.

Overall, respondents felt that the inter-professional learning aspect of their degree was 'moderately useful' (3.38 mean ± SD 1.36). A large proportion of responses suggested that inter-professional learning was useful to understand professional roles which would enhance future multidisciplinary team working and coherence. Some however, felt there was no benefit to inter-professional learning, and these responses were mainly from those currently practising as musculoskeletal physiotherapists.

A total of 270 (74%) of participants felt that their degree course included an appropriate amount of time to learn core physiotherapy skills. Several comments suggested that allocated time was sufficient providing this was used wisely. Numerous responses suggested that courses were poorly organised particularly in terms of module structure and content. An overall theme emerged suggesting the theoretical underpinning of physiotherapy related skills should be developed throughout modules. These modules should be interlinked in a more cohesive way to facilitate the achievement of wider programme outcomes. Various comments suggested that the courses overall assessment calendar should be rescheduled to ensure no overlap with clinical placement activity. This would allow students to fully focus on the learning experienced whilst within the clinical environment.

Figure 2 displays the preferred delivery methods which respondents perceived as the most influential on practice. Respondents ranked each delivery method in order (1= highest, 6 =lowest).

INSERT FIGURE 2 APPROX HERE

Placements were considered the most influential method of learning which prepared students for employment. The transition of theory into practice and working with patients where common responses to why placements were so important to prepare students for practice. Practical based sessions within the university setting were also valued by respondents.

When asked if respondents would change anything about their degree, the overarching theme related to course lecturers. Two distinct subthemes of this category emerged, firstly lecturers were dated and not evidence based and secondly, they were not approachable and lacked empathy towards the student body. Course structure and content was the second most common theme with respondents generally suggesting a heavier weighting in practical based assessment and relevant content was required. Lastly, respondents expressed their desire for more placements and practical sessions. Respondents felt pre-registration courses warranted increased placement time of longer durations, and further elective opportunities.

Discussion

Pre-registration physiotherapy courses in the UK must produce graduates who are clinically prepared, fit for purpose and ready to meet the demands of contemporary practice. The primary aim of this study was to understand how recently qualified physiotherapists perceived their course prepared them for practice against HCPC standards.

Students' perceived competence of the HCPC standards upon graduation

A key and novel finding of our study suggests that the UK universities who offer pre-registration physiotherapy programmes generally prepare graduates for practice 'well' against

the HCPC standards of proficiency. Three standards were an exception with respondents rating their competence against the standard as 'indifferent'. These included competencies of autonomy, awareness of culture, inclusion and diversity with the ability to draw on knowledge to inform practice.

Physiotherapist respondents in this study were 'well' prepared to practice safely and effectively, understanding the key concepts of the knowledge base while communicating effectively within ethical and legal boundaries. Similar results have been reported in a sample of new graduate Australian physiotherapists who considered themselves prepared for practice upon qualification against the core physiotherapy assessment and treatment skills [15]. A narrative review of new graduate doctors in the UK similarly identified they were prepared for clinical practice against core competencies including history taking, physical examination, diagnosis, and patient management [11]. Competencies of communication, ethical and legal aspects were also perceived to be achieved [11].

The transition from student to independent clinician is an exciting, challenging and rewarding period of personal and professional growth [16]. This evolution can include initial transition shock with graduates realising a lack of preparedness, knowledge, and skill [36,37]. This shock emerges during the transition from the known role of a student to the relatively less familiar role of a practising professional [37]. Occupational therapy [38] and nursing [39] are two allied health professional roles where newly qualified graduates have described this gap in entry-level education and requirements of clinical practice. Physiotherapists have previously reported the challenges of this transition to practice with changes in caseload volume, complexity and autonomy all contributing to graduates' feeling overwhelmed and ill-prepared [15].

Cultural plurality has important implications for the provision of modern healthcare [40]. Cultural competence is an essential part of taught curriculums preparing students for professional physiotherapy practice, ensuring students have the knowledge, attitudes and skills required to work effectively with both healthcare users and providers [41,42]. Cultural perspectives inform expectations that patients have of health care providers including physiotherapists and contribute to shaping the patient experience [43]. Clinicians should be open to learning from and understanding different cultural perspectives and to approach cross-cultural encounters with humility [44,45]. Our results suggest this important aspect of physiotherapy practice, grounded within a cultural framework of sensitivity and awareness, requires further development within UK based curricula. Education providers should acknowledge that, whilst pre-registration students are motivated to learn cultural competencies, the design of classroom-based teaching should be responsive to the characteristics of the cohort [42].

Preparation of clinical skills

Clinical skills continue to be a core area of physiotherapy practice and university curricula. A substantial amount of time and focus is allocated on taught courses to the clinical skills students require upon graduation [46]. Our survey suggests that respondents felt a range of clinical skills taught during pre-registration programmes did not prepare them for practice. Exercise prescription, psychosocial skills and patient management were all skills new graduates felt they were not adequately prepared for from their taught degree. A strong need for the re-evaluation of exercise education has previously been identified in Irish university curricula [47]. The idiosyncratic nature of exercise prescription reported by O'Donoghue et al, [47] across Irish undergraduate physiotherapy curricula is replicated within the UK, due to the flexibility afforded to providers in programme development. Content reinforcement, with the opportunity

to revisit prior learning, is one way to address the perceived lack of clinical skill development of taught courses. Methods allowing students to consolidate, process and critique their learning provides the best opportunities to succeed [48]. Education providers and curricula developers may wish to consider such opportunities for consolidation in the areas highlighted in our study to prepare students for the challenges faced upon graduation [47].

Patient management and psychosocial skills were two other clinical attributes which respondents felt they were ill-prepared for. Incorporating psychological interventions within physiotherapy practices improves patient outcomes, including enhanced adherence to exercise programmes, increased confidence, and augmented self-efficacy [49]. Studies exploring psychology training in physiotherapy have reported significant inconsistencies across UK undergraduate programmes [50]. These inconsistencies contribute to the reluctance of clinicians to adopt psychological interventions due to limited competency [3]. Alexanders and Douglas [3] have previously suggested that it is apparent that physiotherapy programmes would benefit from including a broad range of psychological skills training within curricula. Diver et al. [51] identified that the lack of knowledge across the teaching team, coupled with role clarity misunderstandings, provided barriers to the implementation of psychological skills in pre-registration training. Post graduate training provision also lacks psychology content both within formal (e.g. continuous professional development and university led courses) and less formal (e.g. on the job training, in-service training) education [52]. This often results in qualified clinicians lacking fundamental psychological skills, with physiotherapists expressing the need for further training in the field [53]. Appreciation of the processes involved to adequately embed psychological training in pre- and post-graduation training requires thought and consideration. Aspects of this include the mode of delivery,

level, scope of practice and appropriate theory to support students and graduates in their understanding to ultimately support patients.

Reflections of physiotherapy education

Exercise therapy, pain management and manual therapy were three emerging areas, in addition to psychology knowledge, where respondents felt they were 'not well' prepared for clinical careers and required an increased teaching emphasis. Physiotherapy has recently undertaken a paradigm shift from passive therapies to a more patient focused, self-management and guidance approach. [54]. The encouragement of a patient's active participation in both treatment and rehabilitation represents a cultural change within clinical practice and a change in physiotherapist and patient roles [55]. The role of a physiotherapist as an educator is more pronounced, teaching the patient ways of reaching better health as an active participator [56]. Such a role is expected to be developed in the final phase of physiotherapy training [57]. This focus mirrors the results of our study in which respondents felt greater emphasis was required across three broad areas of exercise, psychology, and pain management. All themes are integral to patient management and the production of increased health literacy, linked directly to healthcare service utilisation and ultimately patient outcomes [58-61].

Additionally, respondents also felt that two main areas of teaching; electrotherapy and manual therapy, were not useful to employment. This contrasts with some respondents identifying manual therapy as an area requiring further curricula focus. It appears newly qualified physiotherapists are divided on the importance of manual therapy teaching in their initial training. Manual therapy can be considered a broad spectrum of handling and treatment techniques and are considered an important treatment modality by physiotherapists [62,63]. Responses in this survey did not identify specific sub-disciplines of the profession where such

teaching was perceived as most useful to current clinical practice. As graduates progress into a variety of physiotherapy sub-disciplines (Table 1), it is likely that the focus of manual therapy techniques in these areas varies greatly. For instance, in sub-disciplines such as mental health and elderly care, manual therapy is not as prevalent as within musculoskeletal care. It is likely that the broad range of physiotherapists sampled in this study contributed to these diverse views. These results may also reflect the paradigm shift from a biomedical model of physiotherapy care towards a biopsychosocial approach [64,65].

Placements were deemed the area of pre-registration courses which prepared respondents the most for employment. Providing learning experiences to students that are authentic to the complexity of practice and replicating clinical scenarios faced on graduation is a crucial aspect of their educational journey [17]. Placement activity has been identified and acknowledged as playing a critical role in preparing new graduates for independent practice [15]. The value of clinical placements is widely acknowledged, with students considering them amongst the most authentic, meaningful, and transformative learning experience [66]. Placements provide excellent learning opportunities for students which develop professional capabilities. However, the provision of quality clinical experiences is becoming increasing difficult within physiotherapy education due to a number of internal pressures placement providers face [67]. Universities and placement providers should champion role-emerging practice-based learning options within the profession, providing novel physiotherapy opportunities to enhance graduate readiness for future practice [68]. The provision of diverse student placement options, outside of those traditional clinical arenas, will provide greater flexibility for graduates to complete clinical placement hours [69]. The increase of private sector participation in clinical education has displayed comparable students' outcomes in relation to clinical performance and is likely to be beneficial in better preparing students for graduation [70].

Practical seminars were also highly ranked by respondents with online learning deemed the least preferred method for preparing graduates for practice. The impact of COVID-19 has seen an increase in online learning across a variety of subjects including physiotherapy. Educational providers should monitor student progression to ensure an evolving online curriculum meets the requirements for the newly qualified workforce. Online learning provides increased flexibility, interactivity, self-pacing, comfort and accessibility to students [71-76]. However, conventional classroom socialisation is a by-product of online learning [73], with real time sharing of ideas, knowledge and information partially absent in the digital world [77]. Further research is required to investigate the impact of online learning on physiotherapy students.

When asked what respondents would change about their degree, lecturing staff was the most noted theme. The influence of lecturers is intrinsic to student outcomes and satisfaction across education [78,79]. Within physiotherapy education, academics sit at the interface between theoretical teaching and the transition to clinical practice. Therefore, the influence of lecturers on the student experience is evident, with direct responsibility for many facets which contribute to each student's success [80]. Delivery of dated theory lacking current evidence-base and a lack of identification with the student body were reasons for disengagement between lecturers and students. Respondents who cited the teaching of dated theory and a lack of evidence base practice did not detail the reasons behind these comments. Potentially, taught content within educational programmes lack evidence-based practice or alternatively the topics taught are not currently witnessed by students in practice. Evidence suggests research only slowly diffuses into clinical practice, sometimes taking more than a decade, for implementation [81,82]. This lag may explain discrepancies between taught content and current clinical practice observed by respondents. Additionally, within this study respondents identified research as an area of the

curriculum which was not helpful to clinical practice. Evidence-based practice, the integration of clinical expertise, patient values, and the best research into the decision-making process for patient care, is regarded as integral to physiotherapy practice [83]. The results of this study suggest further pre-registration education is required to reinforce the benefits and importance of evidenced-based practice and its implementation and adoption into graduate clinical practice.

Limitations

We acknowledge limitations of this study need to be considered when interpreting the results. It is possible that the respondents who completed the online questionnaire from the invitations are not representative of the entire target population [84,85]. We recognise that this survey does not present the views of all newly qualified physiotherapists within the UK. Whilst a mixed methods approach can enrich the response data the nature of such a survey lacks detailed understanding of the reasons for respondent's answers. Future research may wish to further explore the findings of this study to capture how UK pre-registration courses may better support newly qualified clinicians to be employment ready.

Conclusion

The transition from physiotherapy student to new graduate is challenging. The results of this study suggest that UK pre-registration courses generally prepare students 'well' against the physiotherapy standards of proficiency. Newly qualified physiotherapists felt they were 'not well' prepared for cross-discipline physiotherapy related skills including exercise prescription, psychological interventions, and patient management. Course providers may wish to reflect on these areas to ensure they help develop a 'future ready graduate' for contemporary practice.

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