A qualitative study of physiotherapy final year undergraduate students’ perceptions of clinical reasoning

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ABSTRACT

Clinical reasoning is a fundamental component of physiotherapists’ clinical competence. However, research examining how clinical reasoning is understood and developed in physiotherapy undergraduate courses is limited, particularly from the student’s perspective. The aim of this study was to explore the current understanding of clinical reasoning held by final year undergraduate students, and how it is represented in the undergraduate musculoskeletal curriculum in Portugal. A qualitative research approach involving final year undergraduate students’ from four different physiotherapy programmes was used. A total of 28 students participated in four focus group discussions, which were digitally recorded, transcribed verbatim, and analysed thematically.

Four themes were identified: 1) an instrumental process; 2) a clinician centred process; 3) a knowledge dependent process; 4) a context dependent process. Findings of this study suggest that the primary purpose of clinical reasoning was to assist musculoskeletal physiotherapists in the diagnosis and treatment of clinical problems, and to facilitate efficient management of individual practices. The insights into the promotion of clinical reasoning in undergraduate musculoskeletal curricula may have important implications for curriculum design, teaching and learning strategies, and graduation profile in physiotherapy undergraduate courses.

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1. Introduction

Clinical reasoning has been widely promoted by different healthcare professions as a core competence of health professional education and effective practice (Ajwai and Higgs, 2007; Smith et al., 2008). In contrast to earlier studies, which investigated the clinical reasoning process in physiotherapy (Payton, 1985; Thomas-Edding, 1987; Rivett and Higgs, 1997; Doody and McAteer, 2002), recent research has emphasised aspects of clinical reasoning other than the hypothetico-deductive reasoning approach or pattern recognition, such as interaction, collaboration or ethical reasoning (Edwards et al., 2004; Ajwai and Higgs, 2007; May et al., 2008; Smith et al., 2008). As a result of this evolving understanding about the nature of clinical reasoning, other factors have emerged as relevant in clinical expertise for example, ability to integrate and apply thinking and learning skills effectively to make sense of, learn collaboratively from, and generate knowledge within familiar and innovative clinical experiences (Christensen et al., 2008a).

Considering the above developments, current understanding of clinical reasoning calls for education that focuses on development of generic thinking and learning skills, such as problem solving or self-directed learning, in addition to technical profession-specific content (Solomon and Baptiste, 2005; Christensen et al., 2008a). However, research conducted with the purpose of exploring how development of capability in clinical reasoning can be facilitated, in the context of professional entry-level physiotherapy education, has found that key clinical reasoning dimensions such as, reflective thinking or dialectical thinking, may be underdeveloped, disconnected or absent in the conceptions of and reflections on clinical reasoning (Christensen et al., 2008b). These findings are consistent with others reported in the allied health professions’ literature, where students and novice clinicians show a tendency to be therapist centred and focused on the procedural aspects of clinical reasoning (Jensen et al., 2000; Smith et al., 2007; Hendrick et al., 2009).

This tendency influences the way students’ practice and think about their practice and could be related to how they understand clinical reasoning and its role in clinical practice (Knight and Mattick, 2006; Higgs and McAlister, 2007). However, despite
recognition of the importance of clinical reasoning, and the difficulties encountered by novices in applying a more integrative model of practice, research studies are few and mostly concerned with differences in the cognitive process (Rivett and Higgs, 1997; Doody and McAteer, 2002). Therefore the aim of this study was to explore the understanding of Portuguese final year undergraduate students in relation to the nature and role of clinical reasoning in their clinical practice and professional development.

1. Study context

Physiotherapy is a regulated profession in Portugal. The profession has specific legislation taking account of the fields of its activity and establishing the rules related to the activities performed. Registration for practice is compulsory, and it is the responsibility of health authorities. Beyond government regulation, there is no self-regulation. In Portugal, the patient/client has access to the physiotherapist by referral from a medical practitioner. Physiotherapists have the freedom to decide what treatment to apply. However the current practical scenario is quite diverse and in many workplaces physiotherapists practice under strict medical prescription, including the patient diagnosis, a specification of the treatment modalities to be carried out and the number of sessions and their frequency.

Undergraduate physiotherapy programmes in Portugal are 4-year degree courses. All the courses provide academic training that is located in a polytechnic/university setting. In general, the main aim of the physiotherapy courses is to prepare students for professional autonomy and excellence in clinical practice and make them capable of assessing, managing and preventing problems related with the body, movement and function. Currently there are 15 institutions providing physiotherapy courses following a traditional curriculum design model with the following sequence: basic sciences; applied sciences; clinical education. Clinical education outside the university setting constitutes about 25% of the total education programme and requires some form of supervised clinical practice throughout the education programme. Clinical reasoning is a common topic in the physiotherapy programmes and it is embedded as a learning outcome in the topics of other course units (e.g. musculoskeletal course unit). Although there are a variety of teaching and learning strategies used to develop competence in clinical reasoning, the most common are traditional lectures and paper case scenarios used by the lecturers to discuss and guide students reasoning.

2. Methods

To explore the students’ perspectives about clinical reasoning an interpretative hermeneutic approach was chosen. This approach was chosen because it is relevant to the study of clinical reasoning as it is concerned with the individual’s experiences and perceptions of clinical reasoning. Students’ perceptions were explored through focus group discussions. Focus groups provided the opportunity to examine the co-construction of meaning (experiences) in action, something that is not possible in one-on-one interviews. Consequently, participants were encouraged to interact with one another’s views and generate new ideas from different perspectives (Krueger, 1994; Flick, 2006).

2.1. Participants and recruitment

Following protocol approval by the Faculty of Health and Social Sciences Ethics and Governance Committee of the host university, a sample of 28 students from four physiotherapy courses in Portugal were purposefully selected to participate in this study. Given the potential differences in the graduates’ profiles, four courses were selected against the following criteria: diversity of institutions that offer undergraduate physiotherapy degrees (private versus public); educational experience i.e. (number of years since the first edition of the physiotherapy degree was implemented). Therefore, two private and two public institutions, and two older and two new institutions were selected.

In the selected courses, the course director invited all final year undergraduate students who had completed at least one period of clinical education in a musculoskeletal setting, to participate in the study. All potential participants were provided with information sheets detailing the aims and procedures of the study. Contacts were also provided to give the students the opportunity to ask questions about the research. Students who agreed to participate were asked to send an email to the course director confirming their willingness to participate. After this initial recruitment procedure, each course director compiled a list of students who had volunteered to participate in the focus groups and their email addresses, and sent this information to the researcher. This list was anonymised and only the assigned student number was known. Participants were then randomly selected from this pool of volunteer students and formally invited by email. Once participants’ agreement was obtained a consent form were sent by email to all participants and a convenient date and time was established to run each focus group.

2.2. Focus group

Focus groups sessions took place at the students’ institutions and were facilitated by the researcher using the method proposed by Krueger (1994, 1997). Open, transitional, key and ending questions and the use of probes were used following a similar structure as outlined in Table 1. The focus groups lasted between 75 and 90 min. A research assistant with experience in qualitative methods took notes during and immediately following the sessions, covering areas such as the main ideas, topics or themes addressed by the participants.

The focus group interviews were recorded using both video and audio recordings with external microphones. Video records were used to gain a perspective of the seating arrangements and to differentiate between similar voices. All audio recordings were transcribed verbatim after the meetings and reviewed for accuracy. The written transcripts were crosschecked against hand written notes and anonymised (Krueger and Casey, 2000). Selected quotes were then translated into English, following the guidelines provided by Beaton et al. (2000). All the audio and videotapes were erased at the end of the study.

| Table 1 |
| Focus group topic guide. |
| What does the term Clinical Reasoning mean to you? |
| What is involved in Clinical Reasoning? |
| When thinking about clinical practice with musculoskeletal patients what do you think about? |
| How do you see the role of Clinical Reasoning in musculoskeletal physiotherapy practice? |
| When you are with patients how do you personally approach Clinical Reasoning? |
| Could you please give examples? |
| How do you recognise good Clinical Reasoning? |
| What has facilitated your understanding of Clinical Reasoning? |
| What part does Clinical Reasoning play in a treatment episode of a patient with Musculoskeletal problems? |
| How does Clinical Reasoning inform the overall patient management? |
| Is there anything further that you would like to add? |
2.3. Data analysis

Each focus group transcription was analysed as a single case first, preserving the meaningful relations that a specific group had with the topic under study (Flick, 2006). The elaboration of a preliminary system of categories was conducted using open coding and selective coding, as described by Strauss and Corbin (1990). Initial coding was based on the participants’ wordings in the transcripts, in order to reflect the meaning students ascribed to their experiences followed by the fragment’s precise location in the transcript. Analysis of a word or phrase allowed the researcher to focus on themes that appeared to be significant and explore alternative explanations. As the coding list grew in size, the researcher began the process of grouping some codes under more abstract codes. This process was then repeated for each transcript, thus allowing emergent themes to be drawn out. The researcher continued the reiterative process of data analysis to saturate the categories.

Following individual analysis, similar or identical categories were grouped together from the different focus group transcriptions. The group categories were then compared to establish similarities or the presence of disconfirming data. Emergent major theme clusters were detailed separately, together with any connections, clusters or sub-themes. The process continued until a full list of themes was produced. The final step involved identification of passages that seemed to be representative of how students understand and approach clinical reasoning.

All the data analysis process was subject to peer review and audit and researcher’s interpretation was member checked. Two external advisers with experience in qualitative methods were invited to review the data analysis process and the findings. The results of the reflection and discussions of the researcher with this advisory team were incorporated into data analysis and the findings. Following data analysis, a summary statement, which included main ideas of the discussion supported by illustrative quotes, was forwarded to each participant. All the participants then responded with full agreement, indicating that the data had been accurately interpreted.

3. Findings

Twenty-eight students were assigned to one of four focus groups according to their institutions (seven students per institution). Students from different focus groups had similar characteristics (years of experience in the course, age, gender). No dropouts were reported.

Four themes emerged from the texts produced by the participants in relation to the way they understood and approached clinical reasoning in musculoskeletal conditions: an instrumental process; a clinician centred process; a knowledge dependent process; and a context dependent process. Each theme is presented and contextualised below with participants’ own words.

3.1. Theme 1: an instrumental process

Participants in this study shared a similar understanding about clinical reasoning and its role in clinical practice. In this context, the term instrumental relates to the characteristics of the clinical reasoning process, in which the clinical actions and interactions were essentially focused on the determination of cause–effect relationships, and the treatment decisions based on expected patterns of normality. Accordingly, students’ descriptions of clinical reasoning emphasised the cognitive nature of the process and its role in clinical diagnosis and in selecting appropriate treatment procedures.

“I think clinical reasoning is a method that allows us to identify the patient’s real problems in order to define real goals and to choose the appropriate treatment. In this sense allows me to be effective...” (Group 1, p13)

During their discussions the sequential nature of the process and the dominance of the diagnostic reasoning strategy became evident. Identification of the patient’s problem(s) was the major focus of reasoning and other decisions were dependent on this phase. However, although acknowledging the relevance of the diagnostic phase, participants reported that clinical reasoning underpinned all the clinical decisions that they made. One participant from the third focus group described this in the following words:

“If the strategies (treatment) are not working we have to change, we have to adopt new strategies, and we have to reason again. So it isn’t only diagnosis. During our intervention we have to reason in order to see what will be the best intervention to take and what can we change”. (Group 3, p7)

The emphasis students gave to the ability to diagnose was closely related to their notion of autonomous and qualified practice. The possibility of making autonomous decisions related to patients’ clinical diagnosis and implementation of appropriate treatment procedures was valued highly by the students, and used to distinguish between qualified and unqualified practice. From the students’ perspective, clinicians whose practice was confined to the application of techniques were disrespected and were considered poorly qualified.

“I think clinical reasoning is something that distinguishes us. Anyone can do massage, ultrasound or a hot pack, but we are thinking about the problem. We are not there only to apply procedures or to alleviate the symptoms. We are thinking about what is at the origin of that problem, and this will distinguish us”. (Group 3, p6)

For the participants, the main outcome of the clinical reasoning process was to achieve a clear understanding about the patient’s clinical problem and its probable cause: a diagnosis, and through this, provide a basis for an effective management strategy. This understanding was reflected in the way the students approached practice and learned through practice, as presented in the following themes.

3.2. Theme 2: a clinician centred process

Given the strong association between clinical reasoning and diagnostic reasoning perceived by the students, clinical reasoning may be seen as essentially a thinking process that belongs to the clinician.

Clinical reasoning is something that belongs to us, but it is dependent on what patient tells us. So it is something that is affected by the communication and by the way a person can or can't say what he is feeling, what the problem is, or how he/ she lives...”. (Group 3, p3)

Accordingly, final year undergraduate students considered the patients’ main role to be provision of accurate and useful information during subjective and objective examination. After discovering the source of patients’ symptoms or disabilities and potential contributing factors (process owned by the clinician), students talked about their concerns about adapting therapeutic goals and treatment plans to the individual characteristics of patients. Patients’ needs were equated with the need to bring abnormal medical symptoms back as close to normal as possible. This meant...
listening to patients’ needs and expectations considering their previous degree of functional activity and social participation. However, when asked to describe this process it was not clear how patients’ perspectives were incorporated into the assessment and treatment plans:

"...In my opinion and during our assessment we have to arrive...at the source of the patient's problem, and have an idea about its prognostic... After that, is when we conciliate our goals with the patient goals... like, your problem is this one, you will need this time to recover, you will need to do this and this... so what do you think, what do you expect...?". (Group 4, p5)

3.3. Theme 3: a knowledge dependent process

These final year undergraduate students indicated that they thought effective clinical reasoning was dependent on a deep sound theoretical knowledge and cognitive skills, followed by clinical experience. They emphasised that their current actions and focus of reasoning are essentially guided by this knowledge and that future experience will give them the tools they need to improve clinical reasoning abilities. Data collection and data analysis skills helped clinicians to consider all potential causes involved in a given clinical situation, to interrelate those factors and to reach the origin of the patient's problem.

"If you think about a knee pain, probably the pain doesn’t come from the knee, you know? We have to think that the patient is not only his knee. Sometimes I feel that we made mistakes, a knee pain could come from a lumbar problem, you know? And we are used to think on separated drawers- a knee is a knee and probably we don’t think in other alternatives, in other possible origins for that pain...?". (Group 2, p25)

Participants identified experience as a significant prerequisite for effective clinical reasoning. Experience was related to exposure to different clinical situations and to the resulting experiential knowledge stored in the clinicians’ mind. If they had experienced a similar clinical condition in the past they would expect similar results. One group described this by saying:

"...experience is very important, especially when we have a clinical condition similar to other that we had in the past, and we know that with a specific treatment we will achieve good results". (Group 1, p18)

Experience allows the development of knowledge and understanding of clinical problems but also of the diversity of persons physiotherapists are likely to encounter in their clinical practice. This experiential knowledge is of great importance to understand each patient’s individual specificities. A participant from the fourth focus group used the following words:

"I think that we need several different patients to know how different people behave. People are different from each other and with our limited experience we probably know one type of person, so I think we need to have a wide range of people, people that behave differently, who have different ways of interacting. This experience allows me to think about what would be important to do with a specific patient...". (Group 4, p21)

3.4. Theme 4: a context dependent phenomenon

Participants seemed to be aware of the different contextual factors that could impact on their clinical reasoning processes. They depicted clinical reasoning as a complex and demanding process influenced by several different factors that could limit or constrain the effectiveness of the process. These included, clinicians’ and patient’s characteristics, contextual factors and the type of clinical condition. For example for some students the quality of their reasoning and practice seemed to be dependent on the time available to assess and treat their patients. One student said:

"...If I have, for example ten people to treat at the same time, it's impossible to give the attention the clinical condition deserves, the person deserves, and this limits a lot our intervention". (Group 3, p9)

Another common idea shared amongst participants was the difference they found in the demands of the clinical reasoning process when they face diagnosed or non-diagnosed clinical conditions. Students used words like “pure” or “real” to define the situations where they thought clinical reasoning really happened. These situations usually corresponded to non-specific clinical conditions, such as, neck or low back pain, where the students felt that they had the opportunity to apply all the clinical reasoning skills they possessed in order to identify the underlying source of the patient’s problem (diagnosis) and to establish what they thought the appropriate treatment plan should be.

“There are situations where the patients arrive without a medical diagnosis, so we do not have any information about the problem. So the person comes and we have to do this kind of practice, we have to look to evidence, to our knowledge, and in those situations I think we have to apply clinical reasoning from the beginning, we have to try to understand the all picture. This is the kind of situation where I think we practise clinical reasoning. I think it is pure clinical reasoning". (Group 2, p5)

In contrast there were situations in which medical diagnosis was provided or the clinical situation was clearly defined. Participants reported that well-defined clinical problems, in which the clinician knew both the problem and the solution, might require only simple pattern recognition for the solution to be identified and implemented. To some students, this type of clinical problem does not need “real clinical reasoning”.

"...we use clinical reasoning in some types of clinical problems and not in others. The problem is that for some pathologies we have a specific pattern of intervention, so when you get there you assess what you have to assess, but then our treatment is standardised...". (Group 1, p8)

Others considered that despite similarities between the types of problems expected in well-defined clinical conditions there were other kinds of problems specific to each individual that should be addressed through clinical reasoning.

"...a joint replacement for instance is a condition where the diagnosis is already established. However, although joint replacements could be similar, different patients will have different impairments. The problem will affect differently each patient, so I think we have a specific clinical reasoning for each individual. So I considerer that is important to use clinical reasoning in any of the conditions, even if they are standardised clinical conditions...". (Group 1, p11)

4. Discussion

This study’s findings indicate the instrumental nature of clinical reasoning and highlight the emphasis placed on theoretical knowledge and technical skills shared by this sample of Portuguese students. Accordingly, the primary role of clinical reasoning consisted of assisting musculoskeletal physiotherapists in the diagnosis and treatment of clinical problems, and in facilitating efficient management of their practice. These findings are
consistent with other evidence reported in the literature (Wessel et al., 2006; Hendrick et al., 2009; May et al., 2010). Undergraduate students and novice therapists tend to focus on patients’ symptoms, impairments, and functional problems, instead of integrating patients’ problems with their needs, life styles and environment. As a result, they tend to use a disease-oriented model as their theoretical frame of reference and are more committed to standardised clinical protocols (Mattingly and Fleming Hayes, 1994; Wessel et al., 2006). They are also consistent with the findings reported in a previous phase of the study reported here. This involved experienced Portuguese musculoskeletal physiotherapists, and the findings suggested that the current professional culture in Portugal is focused on providing the patient with the best technical abilities and scientific knowledge (Cruz et al., 2012).

This study’s findings challenge the current educational practice used to promote clinical reasoning capabilities in the physiotherapy courses in Portugal. Research on clinical reasoning in musculoskeletal physiotherapy has shown that to optimize patients’ outcomes, clinical reasoning requires an individualized patient-focused approach to patient’s needs and characteristics, not only in terms of the physical aspects, but also that the impact the problem has on the patient’s life (Smith et al., 2008). This requires that physiotherapy courses explicitly promote other competences beyond the technical profession-specific content; for example, critical thinking, reflective and dialogical thinking, allowing students to better incorporate patients’ knowledge and experience, and to learn through patients’ illness experience.

The results of the study should be considered in the light of its interpretative nature. Therefore, generalisability is not a goal of this study. However, the detail of the study’s context and data provided could be judged in terms of its transferability to similar contexts of reasoning and practice. These findings are also the result of a shared interpretation between the researcher and the study’s participants. Although the outcomes of these focus groups interviews were coherent in thoroughness between all groups, students self-reported their clinical reasoning process away from the clinical context which might influence their interpretation of their reasoning process.

5. Conclusions

This investigation aimed to explore current perspectives on clinical reasoning held by Portuguese physiotherapists. The findings suggest that there are key aspects in the acquisition of clinical reasoning capability, which are fundamental to students becoming proficient physiotherapists. Currently these are not properly addressed in Portuguese physiotherapy undergraduate courses, in particular, those related to incorporation of patients’ needs and experience in the clinical reasoning process. As clinical reasoning is such an important component of clinical competence, more research needs to be conducted to explore how clinical reasoning develops, and what are the best strategies to enhance the development of this important set of skills.

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