Framework for teaching clinical reasoning skills to under-graduate physiotherapy students and models for learning

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Snapshot (<150 words)

Various methods and principles of clinical reasoning and decision making processes were being taught in the undergraduate physiotherapy programme (BPhty). It is anticipated that defining and agreeing a framework for clinical reasoning, integrated between classroom and clinical practice, should facilitate students' learning. This project used a Delphi study method and focus groups to reach consensus about clinical reasoning across the BPhty teaching staff. It was agreed clinical reasoning skills are embedded within the development of generic professional skills and behaviour, reflection and learning and theory is integrated into clinical practice. Skills are demonstrated with decreasing supervision and scaffolding and increasing depth, frequency and autonomy with progression from the pre-clinical phase to the end of Year 4. There was consensus that the World Health Organization International Classification of Function be used as a common framework. Development of teaching and learning resources to support clinically-relevant reasoning and decision making is on-going.

Introduction

Principles of clinical reasoning in Physiotherapy are generally taught separately in lectures, practical laboratories and clinical practice within each of the three main disciplines: Cardiopulmonary Rehabilitation, Neurorehabilitation, and Musculoskeletal Rehabilitation. While there are common principles for concepts of reasoning across these disciplines, they may be taught using different models and terminology. Variability in terminology and in the extent to which the clinical reasoning skills are made explicit by educators (lecturers, tutors, clinical educators and supervisors) can confuse students. Defining a common clinical reasoning framework that can be integrated between classroom and clinical practice and across the physiotherapy disciplines should facilitate students' learning. Alternatively, increased awareness by educators of different methods used for teaching clinical reasoning across the BPhty programmes would assist the educators to facilitate students' understanding.

The aim of this study was to gain consensus on a common structure and framework for teaching clinical reasoning at undergraduate physiotherapy level that is agreed to by the educators. The study consisted of three phases, with the following aims:
Phase 1: to identify key elements that educators consider to be important for teaching clinical reasoning to undergraduate physiotherapy students;
Phase 2: to construct a curriculum pathway for clinical reasoning that shows the increasing complexity of teaching methods and clinical reasoning skills from Year 2 to Year 4;
Phase 3: to develop teaching resources to facilitate development of clinical reasoning skills as part of the Bachelor of Physiotherapy (BPhty) programme.

Methods

Educators (n = 41) who had been involved in Year 2 to 4 teaching for at least one full academic year were invited to participate. The study was approved by the University of Otago Human Ethics Committee (Ref D14/096).

Phase 1: A modified Delphi approach with three rounds of online questionnaires was used. For Round 1, the research team defined four open-ended questions to explore the views of the educators about clinical reasoning and their own expectations of undergraduate students. Data from Round 1 were used to design the questionnaire for Rounds 2 and 3. Educators were invited to rate the importance of each question in Round 2 using a Likert scale. Results of that round were summarised and fed back to all educators for Round 3. Consensus for both rounds was determined if the following pre-specified criteria were met: median rating $\geq$4, and percentage agreement (rating 4 or 5 on the Likert scales) $\geq$70%.

Phase 2: Teaching staff members were invited to attend a focus group to define a progressive pathway, using results from the Delphi study as a basis. Nominal group analysis was used for the focus group discussions to develop a progressive framework.

Phase 3: The framework was presented at a meeting with teaching staff and developed further. Development of teaching resources that are applicable across laboratory- and clinically-based teaching is on-going.

Key findings

Responses from the questions posed in Round 1 of the Delphi study (Phase 1) were categorised into the following themes: (1) definition of clinical reasoning; (2) clinical reasoning methods; (3) personal attributes, knowledge and skills; (4) models that provide a framework for clinical reasoning; (5) essential components for clinical reasoning; and (6) contextual factors. Consensus was reached by the group to use the World Health Organization (WHO) International Classification of Function (ICF)[i] as an overall framework for clinical reasoning when the scenario describes the patient as a whole.

During the focus groups (Phase 2) clinical reasoning was discussed as being a process which includes progressive levels of skill from pre-clinical to the end of Year 4. The following categories of skills were defined: (1) Generic professional skills and behaviour; (2) Searching, interpretation and analysis of information; (3) Planning, application and modification of management, (4) Integrating theory and clinical practice, and (5) Reflection and learning. These categories were then developed into a model (Figure 1) as follows:

The overall ICF framework and clinical reasoning methods (hypothetico-deductive reasoning and pattern recognition) are used to gather and interpret information from the patient, plan and apply management. Throughout these processes, theory is integrated into clinical practice. Those skills are embedded within the development of generic professional skills and behavior, reflection and learning. All skills are demonstrated with decreasing supervision and scaffolding and increasing complexity, depth, frequency and autonomy with progression from the pre-clinical phase to the end of Year 4 of study.

Discussion and implications

This study provided opportunity to collate views and methods of teaching clinical reasoning skills across the physiotherapy disciplines contributing to the BPhty programme. All educators were invited to participate and using the Delphi method and focus groups ensured an inclusive approach. The ICF framework can be used across all disciplines, however, methods for clinical reasoning and decision making are influenced by patient-, physiotherapist- and other contextual-related factors thus need to remain individualized. This project enabled information and resources to be shared amongst colleagues working in different geographical areas and across the spectrum of physiotherapy disciplines. While a common teaching resource has not

yet emanated from this research, the study has increased the awareness of the ranges of different approaches used in teaching by colleagues. It is anticipated that raising awareness of the different approaches may increase the willingness to work towards a more unified approach to teaching and learning opportunities for students, in a sense, providing student- and patient-specific teaching and learning in the laboratory and clinical environment.

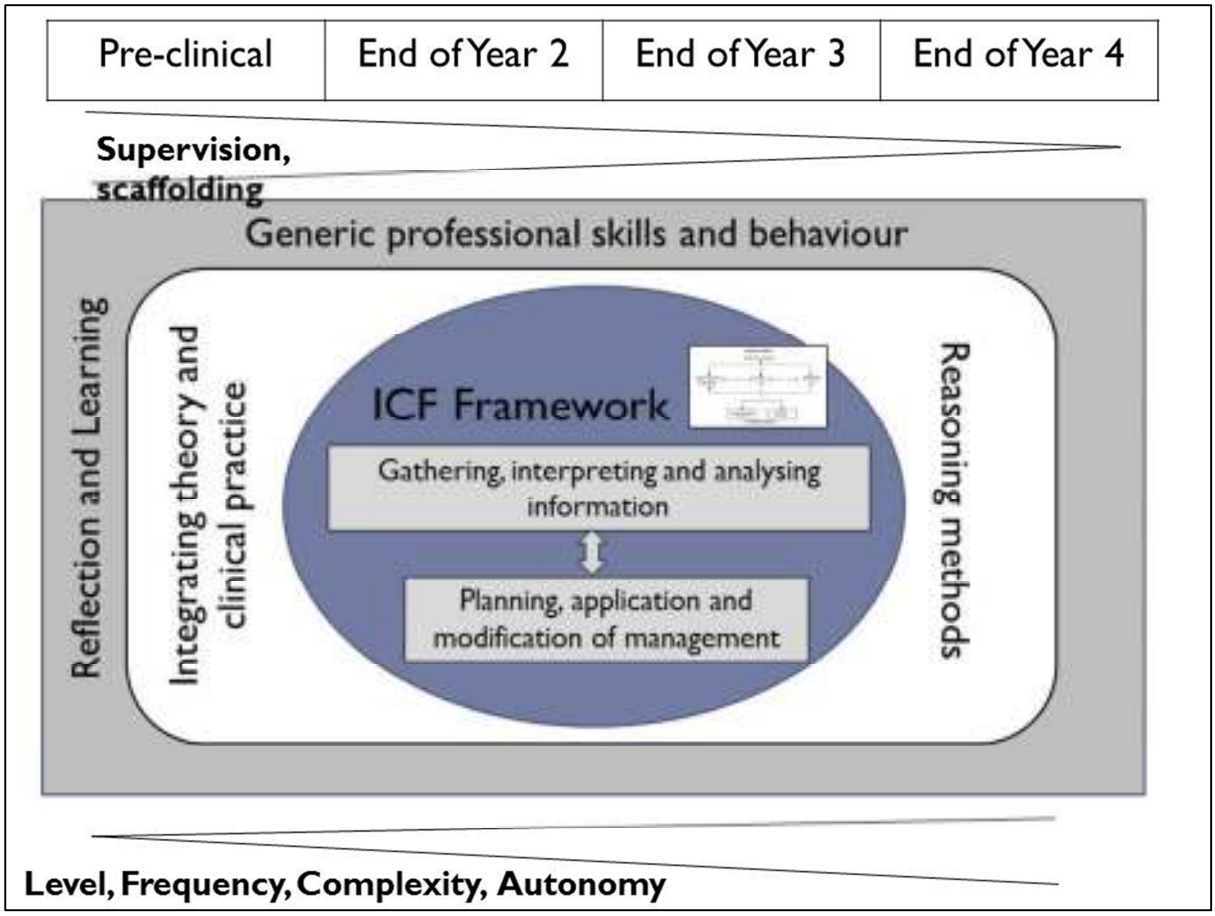

Figure 1. Model for clinical reasoning for clinical reasoning skills of the undergraduate physiotherapy programme. The core (blue circle) reflects use of the World Health Organisation International Classification of Function (ICF) Framework to structure gathering, interpreting and analysing information relevant for the patient, planning, application and modification of management. This is surrounded by integration of theory and clinical practice and reasoning methods, which should be seen circulating around the ICF framework, rather than holding static vertical positions. These are further embedded within circulating generic professional skills and behaviour, reflection and learning.

[i] FIFTY-FOURTH WORLD HEALTH ASSEMBLY WHA 54.21 World Agenda item 13.9 22 May 2001 International classification of functioning, disability and health http://apps.who.int/gb/archive/pdf_files/WHA54/ea54r21.pdf?ua=1