IN PHYSIOTHERAPY PRACTICE

ROLA AJJAWI BAppSc(Physiotherapy)Hons

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PUBLICATIONS ARISING FROM THIS RESEARCH

Peer reviewed journal articles

Ajjawi R & Higgs J (2007). Learning clinical reasoning: A journey of professional socialisation. Advances in Health Sciences Education pp.1-18 DOI 10.1007/s10459-006-9032-4.

Ajjawi R & Higgs J, Using hermeneutic phenomenology to investigate how experienced practitioners learn to communicate clinical reasoning. The Qualitative Report (accepted)

Edited book chapters

Ajjawi R & Higgs J (2007) Learning to communicate clinical reasoning. In J Higgs, M Jones, S Loftus and N Christensen (Eds.), *Clinical Reasoning in the Health Professions*, (3rd Ed.). Oxford: Butterworth-Heinemann.

Higgs, J., Trede, F., Ajjawi, R., Loftus, S., Smith, M. & Paterson M. Journeys from philosophy and theory to action and back again: Being critical and creative in research design and action. In Higgs, J., Titchen, A., Byrne Armstrong, H. & Horsfall, D. (Eds) *Being Critical and Creative in Qualitative Research* Hampden Press, Sydney (*in press*).

Occasional paper

Higgs J, Trede F, Loftus S, Ajjawi R, Smith M, & Paterson M (2006). *Advancing clinical reasoning: Interpretive research perspectives grounded in professional practice*, CPEA, Occasional paper 4. Collaborations in Practice and Education Advancement, the University of Sydney, Sydney, Australia.

PUBLISHED ABSTRACTS AND CONFERENCE PRESENTATIONS

Higgs J & Ajjawi R (2006), Advances in Clinical Reasoning, Paper presented at the APA NSW State Branch Conference: Paving the Way with Evidence, 14th October, Sydney, Australia, p. 14.

Ajjawi R, & Higgs J (2006), Teaching and learning clinical reasoning in physiotherapy practice. *In ANZAME Conference Proceedings:* Fill the Gaps. ANZAME: The Association for Health Professional Education, June 29-July 2, Gold Coast, Australia, p. 141.

Ajjawi R, Higgs J & Hunt A, (2005), Learning to communicate clinical reasoning in Physiotherapy practice. *Higher Degree Research Students Colloquium, Faculty of Health Sciences, The University of Sydney*, Dec 1-2, p.19.

Ajjawi R, Higgs J & Hunt A, (2005), Facilitating learning to reason within communities of practice. *College of Health Sciences EdHealth Conference: Innovation to Practice, The University of Sydney*, 16-17 November, Terrigal, NSW, p.57.

Ajjawi R, Higgs J & Hunt A, (2005), Understanding and learning to reason in cardiothoracic physiotherapy. Australian Physiotherapy Association 9th National Cardiothoracic Conference, October 13-15, Melbourne, VIC, p.61.

Ajjawi R, Higgs J & Hunt A, (2005), Communicating clinical reasoning: a learning challenge. *In ANZAME Conference Proceedings: Mind the Gaps*, ANZAME: The Association for Health Professional Education, June 29-July 2, Auckland, New Zealand, p.18.

Ajjawi R, Higgs J & Hunt A, 2005, The challenge of learning to communicate clinical reasoning. In *Dean's Research Seminars: Delivering Better Health Care*, Faculty of Health Sciences, The University of Sydney, May 11, p. 68.

Ajjawi R, Higgs J & Hunt A, (2004), How do experienced physiotherapists learn to communicate clinical reasoning. *In College of Health Sciences Research Conference Proceedings: From Cell to Society Conference, The University of Sydney*, 3-4 November, Leura, Blue Mountains, NSW, p.30-7.

Ajjawi R, Higgs J & Hunt A, (2004), Learning to communicate clinical reasoning within communities of practice – the influence of Vygotsky and Wenger. *In ANZAME Conference Proceedings: Maintaining Momentum: Anticipating, Innovating, Facilitating, Participating, Evaluating*, ANZAME: The Association for Health Professional Education, June 24-27, Flinders Press, Bedford Park, SA, p.18.

Ajjawi R, Higgs J & Hunt A, (2004), Learning to understand and communicate clinical reasoning – a journey of professional socialisation. *In ANZAME Conference Proceedings: Maintaining Momentum: Anticipating, Innovating, Facilitating, Participating, Evaluating*, ANZAME: The Association for Health Professional Education, June 24-27, Flinders Press, Bedford Park, SA, p.17.

Ajjawi R, Higgs J & Hunt A, (2003), Choosing a research method to examine learning to communicate clinical reasoning. *In Australian Qualitative Research Conference Proceedings: Qualitative Research: Creating Spaces for Understanding*, July 16-19, Sydney, Australia, p.30.

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ABSTRACT

Effective clinical reasoning and its communication are essential to health professional practice, especially in the current health care climate. Increasing litigation leading to legal requirements for comprehensive, relevant and appropriate information exchange between health professionals and patients (including their caregivers) and the drive for active consumer involvement are two key factors that underline the importance of clear communication and collaborative decision making. Health professionals are accountable for their decisions and service provision to various stakeholders, including patients, health sector managers, policy-makers and colleagues. An important aspect of this accountability is the ability to clearly articulate and justify management decisions.

Considerable research across the health disciplines has investigated the nature of clinical reasoning and its relationship with knowledge and expertise. However, physiotherapy research literature to date has not specifically addressed the interaction between communication and clinical reasoning in practice, neither has it explored modes and patterns of learning that facilitate the acquisition of this complex skill. The purpose of this research was to contribute to the profession's knowledge base a greater understanding of how experienced physiotherapists having learned to reason, then learn to communicate their clinical reasoning with patients and with novice physiotherapists.

Informed by the interpretive paradigm, a hermeneutic phenomenological research study was conducted using multiple methods of data collection including observation, written reflective exercises and repeated semi-structured interviews. Data were analysed using phenomenological and hermeneutic strategies involving in-depth, iterative reading and interpretation to identify themes in the data. Twelve physiotherapists with clinical and supervisory experience were recruited from the areas of cardiopulmonary, musculoskeletal and neurological physiotherapy to participate in this study.

Participants' learning journeys were diverse, although certain factors and episodes of learning were common or similar. Participation with colleagues, peers and students, where the participants felt supported and guided in their learning, was a powerful way to learn to reason and to communicate reasoning. Experiential learning strategies, such as

guidance, observation, discussion and feedback were found to be effective in enhancing learning of clinical reasoning and its communication. The cultural and environmental context created and supported by the practice community (which includes health professionals, patients and caregivers) was found to influence the participants' learning of clinical reasoning and its communication. Participants reported various incidents that raised their awareness of their reasoning and communication abilities, such as teaching students on clinical placements, and informal discussions with peers about patients; these were linked with periods of steep learning of both abilities.

Findings from this research present learning to reason and to communicate reasoning as journeys of professional socialisation that evolve through higher education and in the workplace. A key finding that supports this view is that clinical reasoning and its communication are embedded in the context of professional practice and therefore are best learned in this context of becoming, and developing as, a member of the profession. Communication of clinical reasoning was found to be both an inherent part of reasoning and an essential and complementary skill necessary for sound reasoning, that was embedded in the contextual demands of the task and situation. In this way clinical reasoning and its communication are intertwined and should be learned concurrently. The learning and teaching of clinical reasoning and its communication should be synergistic and integrated; contextual, meaningful and reflexive.