

Capturing the Combined Clinic: Inter-Professional Multimedia Musculoskeletal Examination as a Teaching Resource

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Abstract

Background: Inter-professional education (IPE) and training to encourage collaborative teamwork in healthcare and medical teams has been widely advocated.

Objectives: The aim of the study was to evaluate post-graduate students' perceptions of the value of IPE and videos modelling good practise on multi disciplinary team (MDT) work and skill acquisition.

Method: Four sports injury assessment educational videos were prepared that model high level IPE team working in the 'Combined Clinic' (a MDT clinic for complex patients). These were used to educate 26 doctors and physiotherapists on musculoskeletal clinical examination (MCE). The participants were then surveyed, and a sample of the group took part in semi-structured interviews that were audio-recorded and analysed by thematic content analysis.

Results: There was an 85% response rate to the survey, with 46% of the group describing their competence in MCE as 'developing skills,' and 50% as having 'some experience'. Attitudes towards IPE and MDT work were positive, acknowledging their benefits as learning tools. Thematic analysis of the interview data revealed an appreciation of the real-time approach with expert instruction of multiple perspectives and perceived behavioural changes of improved MCE technique and enhanced interactive skills.

Conclusion: This study provided evidence that an inter-professional approach can promote learning amongst postgraduate students, resulting in clinical skill acquisition. Further, the videos served to improve students' appreciation of IPE, teamwork, and awareness of other disciplines.

Keywords: Inter-professional education; Musculoskeletal; Multimedia; Learning; Skills

Introduction

Inter-professional education (IPE), "occurs when two or more professionals learn with, from and about each other to improve collaboration and the quality of care" [1]. The Institute for Healthcare Improvement has implemented such collaborative involvement models, however unity within MDTs remains elusive [2]. The Master's programme in Sports Medicine at Queen Mary (QM) University of London takes IPE into account in course delivery as it is well documented that IPE can maximise students' learning potential, and teamwork is essential in clinical sports and exercise medicine. This concept within the QM environment flows from the establishment of the first course in the UK leading to recognition of expertise in SEM (Diploma in Sports and Exercise Medicine, London Hospital Medical College). At that time SEM was not defined, other specialities were essential and so the culture of multi-disciplinary cooperation in teaching one subject was established. Physiotherapy was a core subject but the decision was later made to offer SEM in a nominally separate (but in fact integrated) course for Physiotherapists. The apparent advantages of this situation of doctors and physiotherapists attending the same lectures and learning the same skills led to the current teaching paradigm [1,3,4]. Improved productivity, enhanced job satisfaction and better patient outcomes have also been cited as positive outcomes [5,6]. IPE programmes can improve colleague integration, generate discussion, and ultimately enhance teamwork [7,8].

It is acknowledged that musculoskeletal clinical examinations [MCE] are complex with health professionals often expressing a lack of confidence in mastering these skills [9-11]. Given the rising ageing population, and the recognised high incidence of musculoskeletal disorders, there is a need for expertise in MCE by the MDTs that serve the active population well [12,13].

Methods of delivering effective IPE and MCE skills continue to be refined and the benefits of virtual learning tools (VLTs) in accessibility and reduced demands on clinical educators are proven [12,14]. Their usefulness in MCE skill acquisition in undergraduates has been explored, [15,16] but this study has sought to focus on post-graduates and evaluate the impact of a DVD-based inter-professional MCE learning tool modelling inter-professional working that is employed monthly in the 'Combined Clinic' – an NHS problem patient clinic that has run for thirty years [17,18].

Method

Sample

The sample was drawn from the student cohort on an MSc-level programme in Sports and Exercise Medicine (n=26). Postgraduate medical practitioners from different medical and surgical specialities and physiotherapists all with a minimum of two years clinical experience were selected to take part in evaluating the educational intervention of DVDs that provided skills training in MCEs and showcased MDTs in musculoskeletal medicine. Ethical approval was gained from the University research ethics committee and informed consent was

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Received March 19, 2012; **Accepted** April 12, 2012; **Published** April 18, 2012

Citation: Griffin CJ, Chung C, Tzortziou-Brown V, Westwood O, King JB, et al. (2012) Capturing the Combined Clinic: Inter-Professional Multimedia Musculoskeletal Examination as a Teaching Resource. *Rheumatol Curr Res* S2:007. doi:[10.4172/2161-1149.S2-007](https://doi.org/10.4172/2161-1149.S2-007)

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obtained from all participants for the survey and structured interview stages of the study.

On-line pre-intervention survey

An on-line survey was distributed to all potential participants (n=26) by email prior to the educational intervention [19]. The survey used open and closed questions to gather demographic details, data on professional background, collaborative team working experience, competencies in MCE skills and expectations of courses. The data was analysed using basic descriptive statistics. Open questions were analysed by thematic content analysis (TCA) [20].

Educational Intervention

The entire cohort (n=26) was given four DVDs that featured clinical examinations of the shoulder and the knee on patients with known conditions. These were performed by consultant level sports medicine experts [orthopaedic surgery; musculoskeletal physiotherapy; sports and exercise medicine physician; podiatry and radiology] and designed with an emphasis on IPE. Each DVD was between 30 to 45 minutes in length. Participants were asked to view a minimum of three of the DVDs in order to be included within stage 2 of the study.

Semi-structured interviews

Of the cohort surveyed (n=22), 10 participants took part in semi-structured interviews of around 30 minutes duration. A sampling frame was used to ensure the interview group was representative of the cohort, with respect to age, speciality, and experience of MDT and IPE involvement. The interview topic guide provided some structure, but also allowed sufficient flexibility to facilitate exploration of other relevant topic areas when required. Questions were open ended and focussed on participants' views on the DVD format, i.e. usability, learner experience, suitability as a learning tool and comparison to other learning aids. Interviews were conducted face-to-face or by telephone for the convenience of the participants. They were recorded and then transcribed verbatim. Analysis of the interview data was a collaborative process amongst authors using TCA. Furthermore, a fellow researcher trained in qualitative methods cross-checked the emerging themes to confirm the accuracy of interpretation and to support the dependability of findings.

The topics used during the semi-structured interviews are summarised in Table 1. The data was analysed manually by TCA and a framework developed [20], then examined for any overlapping or similar categories. These categories were further refined and reduced until a final list of themes was formulated. One chart was developed for each major theme.

- The DVD format and usability
- **DVDs structure, improvements, ease of use**
- Structure of the DVD content
- **Re-structuring**
- Impact on learning
- **Learning experience, understanding**
- Influence on behaviour and skills
- **Knowledge, change in skills**
- Comparison of the DVDs to other learning aids
- **Reflection**
- Multi-professional specialists in the DVD and impact on learning
- **Inter-professional approach, sharing of skills and knowledge**

Table 1: Semi-structured interviews: Topic guide.

Results

The multi-disciplinary nature of the participants on the Masters programme provided an ideal opportunity for studying the impact of an education intervention and views on IPE. The response rate was 85% (n=22) for the survey. Table 2 illustrates the demographic and multi-disciplinary characteristics of the groups who were surveyed and took part in the semi-structured interviews. The majority were white British males, distributed across primary care, hospital medicine, and physiotherapy.

Interview Data One chart was developed for each major theme summarised below

Theme 1: Access to learning opportunities and enhanced performance

The prevailing beliefs were that MDT working benefits practice by affording a range of learning opportunities and facilitating communication, idea exchange and discussion of treatment options.

'Bringing different skills together'

'Access to different expertise'

'Learning from one another'

It was suggested that inter-professional exchange enhances decision-making and patient care is improved by improved decision-making.

'Coordinated care, meeting all the needs of the patient'

'Contribute in the diagnosis and management of the patient'

'Improved outcome for the patient'

Theme 2: Management issues affecting performance

Some perceived disadvantages of MDT working were also identified especially with regards to leadership, management and accountability. Some participants felt that lack of clarity could lead to conflict and diminishing decision-making with regards to patient management.

'Unhelpful stereotypes and hierarchies'

'Disagreement on where the patient's management should lie'

'Sometimes one discipline takes over'

Equally, it was also acknowledged that effective communication could significantly enhance team performance.

Theme 3: Learning: Skills, knowledge and idea exchange

Gaining new skills was considered as being easier through direct observation of other professionals, allowing MCE skills to be reinforced or enhanced, together with a broader range of insights into other's ideas, skills, diagnostic techniques and treatment options.

'Better teaching of examination skills'

'Improve own skill'

'Different ways of approaching a problem'

'Insight to findings for different therapies'

'Sharing of knowledge'

'Comparison of techniques'

The perceived disadvantages of learning MCE skills in a multi-

Demographic characteristics of participants: On-line pre-intervention survey Total number of participants (n=22)							
Gender		Ethnicity		Age ranges		Speciality	
Male	17	White British	18	21-30	8	General Practitioner (GP)	7
Female	5	South Asian Indian	2	31-40	10	Hospital doctor	7
		Black African	2	41-50	4	Physiotherapist	8

Demographic characteristics of participants: Semi-structured interviews Total number of participants (n=10)							
Gender		Ethnicity		Age ranges		Speciality	
Male	7	White British	8	21-30	4	General Practitioner (GP)	3
Female	3	South Asian Indian	1	31-40	3	Hospital doctor	4
		Black African	1	41-50	3	Physiotherapist	3

Table 2: Participants in the study, and their demographics.

professional setting concerned the difficulties of the starting level of understanding and experience, such that training was not always relevant, i.e. too easy for some, and too hard for others. This highlights the importance of knowing the skills set of the students in a session and the difficulties of differentiation between learners of varying backgrounds.

Initial competence and experience in MCE skills

Around 46% of respondents described their competence in MCE skills as 'developing skills', of the others, 50% had 'some experience', and 31.8% saying they were highly experienced (Figure 1 and Figure 2).

Skill enhancement with a greater appreciation of others' roles, and learning hindrances

Participants were generally positive about the course delivered using IPE, suggesting that the mixing with clinicians from different disciplines can be an aid to learning. Indeed the use of an evidence-based approach to discussions was valued. Generally, participants with greater experience of MCE skills and MDT working believed they did not receive as much benefit but described the DVD learning tool as a 'useful supplement', that reinforced current understanding, knowledge and skills. Students who were less experienced admitted that the DVDs made a perceptible impact on knowledge, understanding and skills' as well as insights for future implementation of skills.

'Learn more about the role of other members of the MDT'

'Mix with very experienced clinicians'

'Appreciate how others make decisions'

Observation and learning from different experts' skilful examination under real time conditions and on real patients was perceived as largely beneficial across the whole group. The DVD approach offered an opportunity to observe musculoskeletal practice in real-life clinical settings, and participants thought that it facilitated the development of clinical reasoning skills which could be reflected upon for developing their own practice. From the outcomes of the discussions, it was observed that despite their differences, the demonstrating practitioners could come to a consensus.

It was acknowledged that this type of learning focused on reaffirming techniques rather than acquiring new paradigms and irrespective of experience, helped participants to learn new behaviours and improve their practice as a result. Participants felt that the DVD presentation and the observed patient interaction helped them to identify personal issues that would facilitate a more patient centred approach.

Discussion

The study sought to evaluate a platform for learning skills in an

inter-professional setting by using DVD learning materials for the demonstrations of MCEs. The data provided evidence of perceived enhanced learning of MCE skills amongst post-graduate students, and contributes to the emerging body of literature on the assessment of VLTs as a valuable teaching resource within the MCE setting.

Prior to the intervention it was identified that IPE and MDT work were highly valued, and the benefits outweighed perceived disadvantages. Moreover, it was judged that inter-professional exchange provided for learning opportunities for skills competence training and a deeper appreciation of other health professional roles for decision-making and patient care. This resonates with the literature on IPE and interdisciplinary teamwork [3,4,21]. Indeed, the initial on-line survey identified a willingness to use virtual learning tools for skills training. However, the need to customize the level and complexity of the learning sessions to the skills set of the students was also identified and this has been highlighted in previous studies on IPE [22,23]. It may be that this positive foundation contributed to the results of the study, and future interventions should take account of intended recipients.

Furthermore, self-perceived experience and competence of MCE skills' pre-intervention found that the majority (46%) described their competence in MCE as 'developing skills', and 50% with only 'some experience'. These findings are concerning, but agree with other research, in that multi-professional clinicians express the least confidence and competence within musculoskeletal medicine [10,11].

Following the multimedia instruction, students' perception of the value of IPE and the perceived benefits of learning through this form of delivery was relatively consistent across the group; regardless of the level of clinical experience. The less experienced participants claimed to learn more through direct peer observations, interactions and skilful assessment under real time conditions, whereas, participants of all experience levels learned through the inter-professional discussions. Participants generally agreed that IPE could enhance an appreciation of others' roles which should lead to better delivery of patient care. This is consistent with previous research which supports IPE delivery within a VLT [3,4].

A distinct advantage of on-line DVD-based instruction is that it does ameliorate time pressures for educators, and could replace or at least augment formal face-to-face instruction [3,4]. Participants felt that a DVD would be a helpful adjunct, rather than a replacement for teaching.

There have been few studies showing MCE skill acquisition through multimedia instruction, and interestingly, such studies used varied methodologies and sample populations but all generated positive findings to support MCE skill acquisition through VLT use [16,24,25]. Further studies are needed to evaluate the efficacy of VLT within other

Self-Perceived Competence of MCE Skills

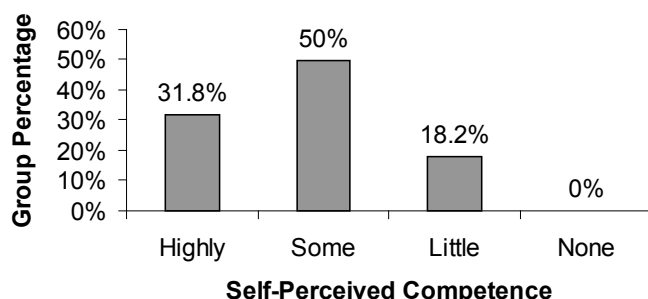


Figure 1: Self-Perceived competence in MCE skills.

Self-Perceived Experience of MCE Skills



Figure 2: Self-Perceived experience in MCE skills.

student groups. The VLT used in this study could also be used for other education programmes, and for continuing professional development.

Although this was a small study with postgraduate students with a predominant gender bias [largely white males] and all having an interest in sports medicine, it is possible that the DVDs used may have wider applicability. The concept of VLTs within the setting of IPE and MCE skills' warrants further investigation, so that its efficacy can be evaluated on a wider scale. Using objective outcome measures to demonstrate the acquisition of skills and knowledge as opposed to self-perception may also be a subject for future research.

Conclusion

This study has provided evidence for enhanced learning of MCE skills through an inter-professional DVD simulation amongst postgraduate students; contributing to the emerging body of literature on the application of VLTs within the MCE setting. The DVDs improved students' self-perception of clinical skill acquisition, resulted in greater appreciation of healthcare teamwork and increased awareness of other disciplines. Further research is needed to see if similar benefits are found in other geographical locations and clinical specialities. The use of real clinical scenarios, based on years of joint practise in eth combined clinic was a key element of the intervention and future work might be well advised to access proven resources of this kind.

Acknowledgements

All the staff who appeared in the videos, especially Professor Nicola Maffulli, Dr. David Perry, Dr. Nat Padhiar, Dr. Tom Crisp, Mr Matteo Europeo, Dr. Rosy Jalan, Dr. Sujit Vaidya, Dr. Muaaze Ahmad, the physiotherapy team and the students at the combined clinic. Funding was kindly supplied by a QMUL CETL grant.

References

- (2010) Defining IPE. CAIPE.
- Zwarenstein M, Reeves S (2000) What's so great about collaboration? *BMJ* 320: 1022-1023.
- Brown T, Williams B (2009) The use of DVD simulation as an interprofessional education tool with undergraduate occupational therapy students. *The British Journal of Occupational Therapy* 72: 266-274.
- Williams B, French J, Brown T (2009) Can interprofessional education DVD simulations provide an alternative method for clinical placements in nursing? *Nurse Educ Today* 29: 666-670.
- Humphris D (2007) Multiprofessional working, interprofessional learning and primary care: a way forward? *Contemp Nurse* 26: 48-55.
- Grumbach K, Bodenheimer T (2004) Can health care teams improve primary care practice? *JAMA* 291: 1246-1251.
- Molyneux J (2001) Interprofessional teamworking: what makes teams work well? *J Interprof Care* 15: 29-35.
- Barr H, Hammick M, Koppel I, Reeves S (1999) Evaluating interprofessional education: two systematic reviews for health and social care. *British Educational Research Journal* 25: 533-544.
- Raj N, Badcock LJ, Brown GA, Deighton CM, O'Reilly SC (2006) Undergraduate musculoskeletal examination teaching by trained patient educators—a comparison with doctor-led teaching. *Rheumatology (Oxford)* 45: 1404-1408.
- Queally JM, Kiely PD, Shelly MJ, O'Daly BJ, O'Byrne JM, et al. (2008) Deficiencies in the education of musculoskeletal medicine in Ireland. *Ir J Med Sci* 177: 99-105.
- Oswald AE, Bell MJ, Snell L, Wiseman J (2008) The current state of musculoskeletal clinical skills teaching for preclerkship medical students. *J Rheumatol* 35: 2419-2426.
- Leroux I, Dionne CE, Bourbonnais R, Brisson C (2005) Prevalence of musculoskeletal activity limitation and associated factors among adults in the general population in the 1998 Quebec Health Survey. *J Rheumatol* 32: 1794-1804.
- Wardrope J, English B (1998) Musculo-skeletal problems in emergency medicine. Oxford University Press 1: 20-24.
- Insalaco D, Ozkurt E, Santiago D (2006) Attitudes and knowledge of students in the allied health professions toward their future professional team members. *J Allied Health* 35: 142-146.
- Coady D, Marshall R, Clarke S (2003) Evaluation of a "regional examination of the musculoskeletal system" (REMS) teaching video amongst final year medical students in two medical schools. *Rheumatology* 42: 68.
- Vivekananda-Schmidt P, Lewis M, Hassell A, The Arc Virtual Rheumatology CAL Research Group (2005) Cluster Randomized Controlled Trial of the Impact of a Computer-Assisted Learning Package on the Learning of Musculoskeletal Examination Skills By Undergraduate Medical students. *Arthritis & Rheumatism* 53: 764-771.
- Wilson AS, Goodall JE, Ambrosini G, Carruthers DM, Chan H, et al. (2006) Development of an interactive learning tool for teaching rheumatology—a simulated clinical case studies program. *Rheumatology (Oxford)* 45: 1158-1161.
- Walsh K, Farrow S (2007) Development of educational tools to improve the knowledge and problem solving skills of primary care professionals in rheumatology. *Work Based Learning in Primary Care* 5: 71-79.
- (2010) Survey about inter-professional education (IPE)
- Ritchie J, Lewis J (2003) Qualitative Practice: A Guide for Social Science Students and Researchers. Sage publications, London.
- Santy J, Beadle M, Needham Y (2009) Using an online case conference to facilitate interprofessional learning. *Nurse Educ Pract* 9: 383-387.

22. Carbonaro M, King S, Taylor E, Satzinger F, Snart F, et al. (2008) Integration of e-learning technologies in an interprofessional health science course. *Med Teach* 30: 25-33.
23. Mattick K, Bligh J (2005) An e-resource to coordinate research activity with the Readiness for Interprofessional Learning Scale (RIPLS). *J Interprof Care* 19: 604-613.
24. Avern H, Maraschiello M, van Melle E, Day A (2009) Evaluation of a web-based teaching module on examination of the hand. *J Rheumatol* 36: 623-627.
25. Reimer S, Hörnlein A, Tony HP, Kraemer D, Oberück S, et al. (2006) Assessment of a case-based training system (d3web.Train) in rheumatology. *Rheumatol Int* 26: 942-948.

This article was originally published in a special issue, **Musculo Skeletal Examination** handled by Editor(s). Dr. Olwyn Westwood, Barts & The London School of Medicine and Dentistry, UK