Clinical Supervision in Acute Care Environments: Closer Can Be Better (For Both Patients and Trainees)

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Introduction: Closer levels of clinical supervision are increasingly promoted in teaching hospitals to ensure patient safety. However, the current literature fails to establish how a supervisor’s bedside presence influences a trainee’s involvement in patient care and learning opportunities. A supervisor’s ability to respond simultaneously to both patients’ and trainees’ needs in fast-pace, high-stakes clinical environments requires further exploration.

The objectives of this PhD were to:
1- study the effects of level of clinical supervision on patient care and trainee learning during acute care episodes;
2- explore the learning opportunities emerging from the clinical activities performed in acute care environments;
3- better understand the tensions between service and education experienced by the medical trainees and clinical supervisors in acute care environments.

Methods: This program of research combined two sequential studies:

The first, simulation-based, study was a mixed-methods study. Fifty-four residents each completed a first supervised scenario, followed by a second unsupervised scenario, both related to similar medical crises. For the supervised scenario, residents were randomly assigned to one of three levels of clinical supervision (distant, direct, immediately available). Measures of quality of care, trainee’s participation in patient care, and trainee learning were collected for the quantitative analysis. Supervisor-resident interactions were recorded for the qualitative phase of the study.

The second, observational, study was based on constructivist grounded theory methodology. We used purposive sampling and participant observation for data collection. Two observers spent approximately 350 hours in critical care units of two academic hospitals. We observed the interactions between residents, critical care fellows, and attending physicians during 74 acute care episodes. Fieldnotes were collected and analysed using an iterative process and theoretical sampling.

Results: Results from the simulation-based study revealed that a closer level of supervision led to better patient care and decreased resident participation, but had no impact on learning. The qualitative findings of this study explained how trainee and supervisor involvement in patient care was only partially related to the level of clinical supervision. Significant learning opportunities emerged from supervisor-trainee interactions.

The observational study further explored the interactions among supervisors and trainees that focused on learning. We described how these interactions allowed supervisors to promote various degrees of trainee involvement in patient care, and how trainee involvement could become the object of further learning interactions. We also focused on the transitions from patient care to learning (shifting to learning) to identify the main triggers and hindrances of these shifts, and the strategies used to overcome unfavorable conditions for learning. We compared how our participants balanced patient care and learning in different clinical contexts: multidisciplinary rounds and medical crises. Different strategies (in series vs. in parallel) appeared adaptive to different contexts and presented different learning opportunities.

Discussion and Conclusions: Closer level of clinical supervision appears to benefit patient care without negatively affecting learning. Learning and patient care overlapped at times, but at other times were distinct activities that competed for participants’ time and attention. We believe that supervisors, to interact effectively, must not only understand how learning works, but also how the context in which learning occurs can affect their ability to interact.

Developing a socio-constructivist, community of inquiry-based conceptualisation of critical thinking and applying this to investigate critical thinking in problem-based learning tutorials

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Introduction: Critical thinking is considered to underpin clinical reasoning, clinical judgment and decision-making. Promotion of critical thinking is one of several intended learning outcomes claimed for the problem-based learning (PBL) component of medical curricula, but there is relatively little empirical evidence for this. Moreover, existing studies fail to take account of the social interactions of PBL group members and the effect of hard scaffolding (e.g., scenarios, PBL process) and soft scaffolding (facilitative interventions) on enabling or impeding critical thinking. Especially relevant to critical thinking in the context of PBL tutorials is Lipman’s (1) socio-constructivist concept of the Community of Inquiry (CoI). This is a social group characterized by the constructs of cognitive presence (critical thinking); social presence, arising from the social environment and social interactions of group members; and teaching presence, in the form of hard and soft scaffolding. Garrison, Anderson & Archer (2) developed a theoretical framework and coding scheme based on the CoI constructs and used this to analyse computer-mediated communications. An
adaptation of this Framework was developed to investigate critical thinking in the PBL context. Research questions were:
1. To what extent is critical thinking demonstrated by students participating in PBL tutorials in the early years of a Scottish medical curriculum?
2. To what extent does the social environment and social interactions influence whether critical thinking takes place in this context?
3. To what extent does teaching presence influence whether critical thinking takes place in this context?

**Methods**:
Six PBL groups were recruited from the pre-clinical years of a Scottish medical curriculum. For each group, a two-hour PBL tutorial was recorded on audio- and video-tape. Audio-tapes were transcribed. Video-tapes were helpful in identifying speakers. Transcripts were subject to interpretative analysis, using the adapted CoI Framework.

**Results**:
The CoI Framework allowed identification of aspects of critical thinking during different steps of the PBL process, but particularly during the brainstorm of learning issues; and when students shared answers to previously-set objectives. Critical thinking generally manifest as external exploration/information gathering and internal exploration/creative thinking. Both hard and soft scaffolding could enable these aspects of critical thinking. Positive and negative manifestations of social presence were identified, but it was less clear whether these directly enabled or impeded aspects of critical thinking.

**Discussion and Conclusions**:
Aspects of critical thinking were enabled by particular types of facilitator intervention, including the asking of probing questions; by scenarios with ethical or social dimensions; and by simple adaptations to the PBL process, such as the numbering (prioritization) of learning issues. To ensure PBL promotes critical thinking, educators should therefore attend to scenario design and minor adaptations of the PBL process, and train tutors to make appropriate facilitative interventions.

**References**:

**9O3 (18967)**
Factors influencing development of professionalism in doctors: Insights from established practitioner narratives

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**Introduction**:
The importance of the hidden curriculum within medical education is well known. During medical training and individual doctors will encounter hundreds of clinicians in teaching roles all of whom contribute to learning in one way or another. More understanding of how the hidden curriculum operates at the grassroots level of clinical learning and teaching is needed. My research explored how notions of professionalism are formed with particular reference to role models and the hidden curriculum.

**Methods**:
The broad theoretical perspective for this study is interpretivism within a constructionist epistemology. The specific theoretical perspective for this research is symbolic interactionism. In depth interviews were audio and video recorded with 12 senior doctors about their notions of the meaning of professionalism they felt they had learned about the concept. Three separate analyses were carried out: thematic analysis of the transcripts looking at the concepts of professionalism for these doctors; narrative analysis exploring the characterisation of the protagonists in the stories told; and a metaphorical analysis of the talk used by the doctors when discussing the nature of medicine.

**Results**:
There are three dimensions relevant to the way professionalism is learned about and practised by doctors:
- Individual professionalism closely associated with professional identity development;
- Interpersonal relationships, including the ‘atmosphere’ existing between people as they interact;
- Environmental professionalism produced by the community, or the culture, in which doctors are working, learning and living.

Doctor role models are influential in passing on the principles of professionalism and were characterised within the narratives in two main ways: those who were kind, daring, clever, capable, enthusiastic, supportive, caring, encouraging and appreciative (heroes); and those who were bullying, abusive, exploitative, belittling, excluding, sexist and dishonest were villains and deemed to be lacking in professionalism. Furthermore influential impressions are made at all stages of life, including childhood.

The metaphoric talk used by participants in relation to the culture of medicine produced six main metaphors: MEDICINE AS FAMILY, MEDICINE AS JOURNEY, MEDICINE AS WAR, MEDICINE AS HIERARCHY, MEDICINE AS SPIRITUAL EXPERIENCE and MEDICINE AS MACHINE.

Collectively my three studies show that for senior doctors, understanding of professionalism is influenced by three main factors: by preconceptions of medicine held from an early age, by the totality of the environment in which learning takes place and by the interpersonal encounters along the way.

**Discussion and Conclusions**:
Professionalism is demonstrated through the actions of doctors whose behaviour is profoundly influenced by the particular culture of medicine to which they are exposed as they study and work. In particular the way doctors and other health professionals are treated in their formative years has a long-lasting effect. A hostile, bullying and hierarchical environment encourages development of anger, frustration and fear. A caring, supportive, challenging and just environment encourages the development of competence and
interviews were conducted with students and a questionnaire was administered (n = 194) and 22 in two medical schools in sub-Saharan Africa. A constructivist, socio-cultural lens informed the Framework and research questions. A constructivist, socio-cultural lens informed the formulation of the research questions: 1) How is PBL designed based on a local cultural complexity and local priorities. Its implementation should be carefully designed based on a local cultural complexity and values that reflect the context in which it was originally developed. Applying PBL in other contexts, specifically in non-Western settings, might therefore be challenging. Considering the current globalization and popularity of PBL across medical schools worldwide, this PhD research aimed to explore the cross-cultural applicability of PBL.

Methodology: Four studies investigated four different elements of the cultural complexity of PBL. Studies 1 and 2 focused on how group discussions and self-directed learning in PBL, respectively, were shaped and shaped learners across contexts were found to develop similar skills and competencies in the social and cognitive domains, which was considered a valuable preparation for practice in diverse contexts. Processes and outcomes differ across cultures.

Results: Main results. Cultural factors were identified, uncertainty and tradition, group relations and face, hierarchical relations, achievement and competition – which, particularly in the non-Western settings, contradicted with cultural values of the PBL approach, and shaped PBL in culture-specific ways. This influence was not straightforward, however, as many mediating contextual factors were identified, such as the nature of secondary education and human and material resources. Complex interactions between PBL, learners, and the context determined the way PBL and its learners were shaped, which differed across cultures. However, although to different degrees, learners across contexts were found to develop similar skills and competencies in the social and cognitive domains, which was considered a valuable preparation for practice in diverse contexts.

Discussion and Conclusions: Discussion and implications. Applying PBL seems to be more challenging in non-Western settings, but its outcomes seem valuable for work contexts across the world. Insights from this research in the cultural complexity of PBL show that PBL is applicable across diverse cultures, but not across all medical schools. Its applicability and desirability depends on cultural and contextual factors and local priorities. Its implementation should be carefully designed based on a local cultural complexity analysis, and it should be acknowledged that PBL processes and outcomes differ across cultures.

904 (18672)
The cultural complexity of problem-based learning across the world

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Introduction: Problem formulation: Problem-based learning (PBL) can be conceptualized as an educational approach carrying cultural norms and values that reflect the context in which it was originally developed. Applying PBL in other contexts, specifically in non-Western settings, might therefore be challenging. Considering the current globalization and popularity of PBL across medical schools worldwide, this PhD research aimed to explore the cross-cultural applicability of PBL.

Method: A constructivist, socio-cultural lens informed the formulation of the research questions: 1) How is PBL shaped across cultures? 2) How does PBL shape learners across cultures? These questions are based on the socio-cultural assumption that learning is influenced by the (cultural) context in which it takes place. In this context, learners and PBL shape, or construct, each other in a complex web of interactions. The framework enabled insights in this ‘cultural complexity’ of PBL across cultures.

Results: Main results. Cultural factors were identified, uncertainty and tradition, group relations and face, hierarchical relations, achievement and competition – which, particularly in the non-Western settings, contradicted with cultural values of the PBL approach, and shaped PBL in culture-specific ways. This influence was not straightforward, however, as many mediating contextual factors were identified, such as the nature of secondary education and human and material resources. Complex interactions between PBL, learners, and the context determined the way PBL and its learners were shaped, which differed across cultures. However, although to different degrees, learners across contexts were found to develop similar skills and competencies in the social and cognitive domains, which was considered a valuable preparation for practice in diverse contexts.

Discussion and Conclusions: Discussion and implications. Applying PBL seems to be more challenging in non-Western settings, but its outcomes seem valuable for work contexts across the world. Insights from this research in the cultural complexity of PBL show that PBL is applicable across diverse cultures, but not across all medical schools. Its applicability and desirability depends on cultural and contextual factors and local priorities. Its implementation should be carefully designed based on a local cultural complexity analysis, and it should be acknowledged that PBL processes and outcomes differ across cultures.

905 (18894)
Assessment of virtual patient design in undergraduate medical education: A qualitative and quantitative study of participation, interaction, and learning

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Introduction: Virtual patients (VPs) are widely used online electronic teaching cases for medical education. International collaboration has produced standards published by Medbiquitous® (2010), all allowing sharing between authors and institutions. This represents a paradigm shift in VP development. However, we do not know how VPs should best be designed. My research question is: how do VP design principles influence students participation, interaction, and learning from VP cases.

Methods: This research adopts both qualitative and quantitative methods in a two-stage research process.
All VPs were authored for the research using the software DecisionSim®, compliant with the Medbiquitous® VP standard. The first stage is a grounded theory study into VP design at one centre, Warwick Medical School, UK. Participants are undergraduate medical students. I used focus groups in a classic grounded theory approach. Participants completed two VPs before participating in a structured one-hour focus group. I used iterative sampling and a constant comparative analysis, facilitated by digital recording and computer assisted qualitative data analysis. Using open, axial, and selective coding I abstracted a model describing the impact of VP design properties on students. The second stage of the research was a multicentre randomised 2x2 factorial study design exploring student experiences with VPs in three UK Medical Schools: Warwick, Birmingham and Keele. The two design variables in the VPs were chosen: (1) branching in the VP cases; and (2) structured clinical reasoning instruction (SR), present or absent. We invited students to complete cases followed by a self-reported evaluation tool (the EViP questionnaire). Primary outcome measures included clinical reasoning performance in an integrated VP assessment, user metrics across all centres. I collected summative clinical and written assessments from one centre (Warwick Medical School). This study was funded by Arthritis Research UK, Grant 19330, and has institution review board ethics approval.

Results: In the qualitative component, from six focus groups (n=46) I abstracted a three layer model describing how design influences learning. The model describes the interaction between student factors, VP design properties, and organisational and environmental factors, and how they influence learning and behaviour. In the quantitative study, 591/719 students consented, completing 1773 VPs, returning 1229 evaluations (69%). In total 296 students (50.1%) completed all four cases. The key findings were that although students preferred SR present, presence or absence made no significant differences in global VP performance (P>0.3) or evaluation scores (p>0.3, ANCOVA adjusted for institution, gender, and VP). As predicted by the model, institution factors did influence performance, use and evaluation (P<0.05).

Discussion and Conclusions: This is the largest prospective multi-centre study into VP design conducted to date, and has the potential to inform authors, faculty and institution on how to adopt, design, repurpose, and integrate VP cases into undergraduate education. The model and all research cases are available for open access use, and are published under a creative commons licence.