The use of ‘virtual patients’ as part of a blended learning approach for the teaching of pre-clinical musculoskeletal physiotherapy

A qualitative evaluation of student experience

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Virtual patients: What are we talking about?

- Meaning varies
- Most common form used in healthcare education: ‘Interactive patient scenarios’ (Kononowicz et al, 2015)
- Problem solving designs or narrative
- ‘Virtual patients’ allow students to practise assessing and managing patients in a safe environment (Cook & Triola 2009; Aghili et al, 2012)
- ‘Active learning’
- Can help develop diagnostic reasoning skills (Wilson et al, 2006; Cook & Triola, 2009; Begg, 2010; Saleh, 2010; Aghili et al, 2012; Shoemaker et al, 2014)
BSc (Hons) Physiotherapy
Year 2, Musculoskeletal studies (pre-clinical module)

Case based learning
Development of clinical reasoning

Independent study
- Access & interact with a ‘virtual patient’ case
- Supporting lectures & other resources

Attendance
- Practical: Objective examination & management techniques
- Tutorial: Discussions about clinical presentations & evidence based management

Physiotherapy UK 2017
Evaluations (2015): Students liked case based learning but issues with limited functionality

Potential to develop the learning resources further

- more branching cases
- more interaction & decision making
- regular feedback to facilitate the development of clinical reasoning
Technical Requirements

- Non-specialist software
- Standard skill set
- Accessible
- Windows
- Apple
- Computers
- iOS devices

Developed by
A ‘typical’ academic on a standard PC
&
Easy to update

Microsoft PowerPoint
Interactive Case Study
Jane Williams

Directorate of Physiotherapy
School of Health Sciences
Referral Letter

Mr Bloggs, Consultant Foot and Ankle Orthopaedic Surgeon, University Hospital Aintree has provided this referral letter.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of birth &amp; age</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>June Williams</td>
<td>62</td>
<td># left lateral malleolus 7 weeks ago, POP removed today, Rehab please</td>
</tr>
</tbody>
</table>

PMH

SH

Xray results

Satisfactory healing

Discharge summary

Date/Signature of referrer
I fell off a stool when I was cleaning my windows a few weeks ago and broke my left ankle. It was the outside bone I think. The doctors told me the fracture was in an OK position so they just put my ankle into a plaster. The plaster went as far as my knee so I couldn't bend it all the way. It was taken off 6 days ago after the doctors did another X-ray to check the healing. I've been putting a bit of weight on my leg with the crutches but it hurts a bit. I'm a bit worried about this but the doctor said it was okay to take weight on it as the pain allows.
A transverse, displaced fracture of the left lateral malleous.

A spiral, displaced fracture of the left malleous.

A transverse, undisplaced fracture of the left lateral malleous.

An oblique, comminuted, displaced fracture of the left lateral malleous.
How would you describe the fracture?

A spiral, displaced fracture of the left malleous.

No, this is incorrect. Please try again.
What would you like to ask next?

You’ve asked about the history of the present complaint (HPC), viewed Jane’s X-ray and reflected on the information you have obtained. What would you like to ask next?

1. I’m going to ask about the present complaint in more detail as I need to find out more about the behaviour of symptoms.

2. I’m going to ask about PMH and DH next to find out if there is anything in Jane’s history that may affect my ability to physically assess her or affect the way she can be rehabilitated.

3. I’m going to find out about Jane’s home and work situation.
What is your current thinking?

Click on the option below which best summarises your current thinking.

**Option 1**
Jane’s type of fracture has an excellent prognosis. At this stage of healing, pain is not a concern and is likely to be ‘mechanical pain’, triggered by loading the fracture site or stretching surrounding soft tissues. She can increase weight bearing now and can discard the crutches and begin fully weight bearing as soon as she likes (as long as the pain isn’t too bad).

**Option 2**
Jane’s type of fracture has an excellent prognosis and the pain she is getting on weight bearing is likely to be mechanical pain, triggered by loading to fracture site or stretching surrounding soft tissues. She needs to continue partially weight bearing at this stage as the fracture is unlikely to have fully consolidated. Full weight bearing (FWB) will be allowed in a few weeks as consolidation progresses.

**Option 3**
Jane’s type of fracture has an excellent prognosis but if she is getting pain on weight bearing then there is probably too much loading through the healing fracture. This is not desirable and a bit of a concern. I may need to suggest only minimal weight bearing for now and will discuss this with my educator.
Evaluation of the Virtual Patient resources

- Developed and implemented five virtual patients into the module (2016/17). Focus groups pre & post placement (n=9)

- Research aim:
  - To explore the student learning experience in relation to the use of virtual patients as part of a blended learning approach

- Objectives:
  - Identify how useful the students found the virtual patients in developing their musculoskeletal clinical reasoning skills
  - Assess whether the teaching approach helped prepare them for musculoskeletal practice
Focus group 1 pre placement: Thematic analysis

- Virtual patients
  - Encourage Reflection
  - Encourage engagement and active learning
  - Are perceived as facilitating a positive learning experience
  - Are used in different ways
  - Have inherent limitations

- Preparedness for placement
- Technology
- Future development ideas
Themes

- Virtual patients encourage engagement and active learning

  “..and you could pretend there was a person instead of like ‘these are the symptoms, this is the condition, this is what you can and can’t do’. You really had to work it out for yourself .... more like an actual patient.”

  “…you might have two different conditions but then there are little clues which indicate more towards one than the other. It's quite good like that…”

- Virtual patients encourage reflection

  “…I liked the way that the interactive PowerPoints explained to you ... if you clicked the wrong one they explain why that's not exactly correct.... It was sort of like ‘yes you are on the right lines but maybe you want to think about doing this first’. And it was just nice to see that you were along the right lines”
Themes

- Preparedness for placement

“…. sort of prepared you for placement and how, straight away, the first one made you consider Past Medical History, Drug History, Social History…they got those headings in straight away. And the weeks after that you sort of knew and you got used to the need to write this in this column, write this in this….it gets you in that mind set…”
Focus group 2 post placement: Thematic analysis

Virtual patients

- Are perceived as facilitating a positive learning experience
- Are useful to help prepare students for placement
- Have inherent limitations

Future development ideas
Themes

Positive learning experience/preparedness for practice

“The case studies we did...they went through, like, different stages...and that helped sort of break down information...then you can understand how you get to an end point which is helpful really because that’s what you need to try and do when you’re on placement

Inherent limitations

“...the case studies were good for the simple patients ... I do think as well that it would be really difficult for case studies to cover the more complex patient interactions. We could have more patient cases that look at complex patients ...but still, it’s totally different when you’re in there and with a real patient so I’m not sure...”
What now?

- **Overall:**
  - Well received
  - Virtual patients and blended learning activities allowed students to feel fairly well prepared placement
  - Inherent limitations to the use of this resource (best for the development of ‘early’ reasoning?)

- **Future development:**
  - Refine later cases to increase branching nature and allow further interaction
  - Develop some cases which incorporate video but maintain the focus on the development of diagnostic & reasoning skills
References


