Educational potential of using virtual patients for promoting interprofessional learning between medical and pharmacy students: A qualitative study

Abstract

Interprofessional learning (IPL), involving various professions within healthcare has been proven to improve the quality of patient care by encouraging collaboration between professionals. Careful consideration of appropriate educational tools and content is required in order to facilitate effective IPL. This study aimed to explore medical and pharmacy students' preconceptions of the role of virtual patients (VP) as a learning tool for IPL within their education. A secondary aim was to elicit feedback to inform the development of new virtual patient cases. Two focus groups, (one with medical students and the other with pharmacy students), consisting of six students in each were recruited. Participant perceptions regarding VP-based IPL were explored. Data were analysed using a thematic approach. Participants thought that there were some potential learning benefits of using VPs as part of their curriculum. Pharmacy students held increased value in VPs due to their limited access to patients during their education. Medical students challenged the role of VPs in their clinical development, concerned that it lacks the flexibility required by doctors to use their judgement and work with uncertainty. Limited understanding of team members' roles in patient care and self-reported ignorance of the overlap in curricula, appear to be key barriers for students in valuing the knowledge-base of each other's profession and possible benefits of using VPs in joint learning. This study generated a number of key implications which need to be considered when introducing VP-based IPL.

Keywords: virtual patient, interprofessional education, pharmacy, medical, interprofessional learning, curriculum

Introduction

Interprofessional learning (IPL) is an 'occasion when two or more professionals learn with, from and about each other to improve collaboration and quality of care' (CAIPE, 2002). The literature highlights several barriers to effective IPL between professions including ingrained negative perceptions of other professionals ~~(Leaviss, 2000)~~, the lack of understanding of undergraduates' own future roles and insufficient infrastructure within the curriculum to support teaching (Sicat et al, 2014). IPL within

medical schools has been criticised as ‘merely placing medical students in a room with students from other professions’, without facilitating an authentic IPL experience (Schocken et al, 2014). Greater consideration is required regarding appropriate education tools and content, which are aligned with the learner’s needs; preparing students for their future interprofessional work force (Interprofessional Education Collaborative Expert Panel, 2011). ~~Current suggestions for teaching include placing more emphasis on clinical experiences (Sicat et al, 2014) and using case-based scenarios which reflect the responsibilities of the broader health team in the patient’s journey (Interprofessional Education Collaborative Expert Panel, 2011).~~

The use of Virtual Patients (VP) in medical education has been reported to be a cost-effective tool to support the development of clinical reasoning skills (Walsh & van Soeren, 2011). VP teaching can include patient cases from variable situations and specialties, where skills learned can be transferred to the real clinical setting (Walsh & van Soeren, 2011~~; van Soeren et al, 2011~~). This study was conducted in an institution where IPL is beginning to be established. Faculty across schools of pharmacy and medicine have begun working together to explore ways of establishing IPL and education. Currently, students experience integrated teaching sessions about prescribing and paediatric prescribing, taught by either a medical or pharmacy faculty member.

Methods

This study employed an exploratory case study approach to investigate medical and pharmacy undergraduates’ preconceptions of using VP-based IPL within their curricula.

Data Collection

Two focus groups, each with six students were purposively selected and recruited to maximise a range of preconceptions and were separated according to profession in order to maximise expression of both opportunities and barriers to IPL. The students were selected from a Higher Education Academy (HEA) Institute, based in the United Kingdom, which included schools of Medicine and Pharmacy~~.~~ Through conducting focus groups, we aimed to discursively explore in depth the views of

stakeholders, gaining a meaningful understanding (Black, 1994) to inform the development and implementation of future teaching.

Students were randomly recruited ~~to maximise a range of preconceptions and were separated according to profession in order to maximise expression of both opportunities and barriers to IPL~~.
Each group was digitally recorded and transcribed verbatim.

Data analysis
Thematic analysis (Glaser & Strauss 1967) was used to develop a coding framework. Transcripts were initially coded by JT, then scripts independently reviewed by MO and SP. A thematic coding framework was developed. This deductively interrogated transcripts in relation to the project research questions, but also inductively included themes which emerged from the data. This process involved repeated readings of the transcripts and discussion between authors about emergent thematic categories.

Ethical considerations
Students completed a consent process. The form assured students that their teaching would not be affected by their decision whether to participate in the study and that they were free to leave the study at any point. The focus groups were conducted by a final year medical student who was familiar with the medical and pharmacy curricula. This was done to make students feel at ease with a peer and minimise the potential power relations between researcher and participants.

Results

Thematic analysis identified six subthemes, which were then categorised into two~~hree~~ themes. This section reports our thematic categories, illustrated with quotations. Participants are identified by number and student group.

Theme 1: Learning opportunities

The patient journey. The most valued aspect of VP learning for both medical and pharmacy students was the opportunity to follow the patient's journey from

presentation through to management, which in clinical practice can have its difficulties with different shifts and firm rotations:

> We can, in a small amount of time... follow a patient and see the next steps in their care and what happens with them, whereas when you're on the wards, patients for us, kind of disappear (Medical Student 5)

~~Pharmacy participants highlighted the potential of VP-based programmes to enable students to appreciate the patient's journey as they move between specialties and different healthcare members.~~

> ~~Virtual patients… might incorporate more of the interprofessional team aspect of patient care within it..the profile could say that the Consultant in haematology has mentioned this...and the nurse says this... and so we can get an understanding of what's going on...other than from a pharmacist's point of view.' (Pharmacy Student 2).~~

VPs complementing clinical preparation. The main difference between medical and pharmacy students in perceived value of VPs, concerned the limited role of VPs in supporting clinical development and communication skills teaching. While both profession student groups acknowledged that VPs are not a substitute for patient contact, pharmacists welcomed VPs as a resource to develop their clinical skills and patient interaction; preparing them for practice.

> Interacting with patients requires a lot of man power, like there are so many of us within our year, VP's are probably a good alternative way to get experience earlier in the course about how we should be problem solving as opposed to rote learning all of our lectures and any knowledge we have (Pharmacy Student 1)

In contrast to pharmacy students, medical students, already accessing patient-based interactions in their education, did not feel VPs were well-suited to develop clinical and communication skills.

> Having VPs where you are asked to write what questions you'd ask in a history...we are all doing that on the wards already, so it's not giving us anything that we are not getting already and you're getting it in a really stilted not natural way, so you're actually learning something badly rather than something new. (Medical Student 2)

~~Theme 2: Standardised teaching materials~~

~~*Consistency in experience.* Students perceived VPs to have benefits as a multi-user resource, valuing its potential provision of fair and consistent education to all~~

~~students, in contrast to potential variability in patient-based clinical teaching during clinical rotations.~~

> ~~There is more time that can be spent on it and accessed by a whole year group unlike getting everyone on the wards. (Medical Student 5)~~

~~*Clinical reasoning.* Students felt that elements such as communication, patient interaction and decision making, did not lend themselves well to standardised teaching, as there was no one defined right or wrong approach.~~

> ~~By standardising everyone ...you can mark us all the same, but so much of the time there isn't a right answer. You feel like the way you are taught to pass exams and the way you are taught to become a good doctor are completely at odds with each other (Medical Student 5)~~

~~The pharmacy students considered the VPs to be suitable for developing clinical reasoning if the VP cases were designed to have different patient outcomes dependent on decisions made by the learner.~~

> ~~Virtual patients need to be set up that whatever input you give it, the output will be different, so if for example I decided to give you something for your diabetes, it will depend whether I give you this class of drugs or that class of drugs...well what happens to you ... will differ (Pharmacy Student 3)~~

> ~~There aren't always necessarily right or wrong answers, which isn't what our exams tell us. There could be a variety of right answers... it's never black and white, but having virtual patients that give people a variety of options where they can see what would happen would be useful (Pharmacy Student 2)~~

Theme ~~3~~2: Them and us – barriers to effective IPL

Both student groups reported encountering barriers to effective interprofessional learning with other professions; mostly due to self-reported ignorance, stereotyping and limited experience of working with each other.

Roles and responsibilities. Students demonstrated a mismatch in understanding each other's professional roles in the health care team. Medical students reported their ignorance regarding the role of the pharmacist and how they would not know how to utilise their expertise within the medical team. Reflecting this, pharmacy students felt their in-depth knowledge was undervalued.

> We don't actually know what the pharmacists' role is and I don't really know what their knowledge might actually be (Medical Student 5)

> They (medical students) don't think of it as 'as medical students we've only done 3-6months of pharmacology where as they've done 4 years, they (pharmacists) are someone we could really learn from (Pharmacy student 2)

*Educators and the Curriculum.*The medical students were less aware of the extent of the overlap of each professions' curriculum, whereas the pharmacists reported familiarity with the shared knowledge of each student group.

> Just the other day we were doing a case on renal clearance, and I had a friend doing medicine and he said 'I didn't know pharmacists know this or have to know this stuff (Pharmacy student 2)

From their experiences of IPL sessions, students reported that they often felt their teachers also had limited understanding about each professions' role. Students felt that the sessions, therefore, did not meet the learning needs for each student group, often being more focused to one profession's needs.

> ~~We had the integrated session and even the guy teaching us who was from a medical profession, he said 'I don't know what pharmacists do, do you even do this? (Pharmacy student 4)~~

> One session I remember, maybe I was just unfortunate in my group, or maybe they [pharmacy students] were too early on in their clinical experience, but they didn't seem to contribute very much to the discussions we were meant to be having (Medical Student 5)

Discussion

~~Educational opportunities of VP-based learning have been well documented in the literature (Cook and Triola, 2009).~~ Our study, adds the dimension of using VPs to encourage students to consider situations with vulnerable patients and stigmatised patients groups; preparing them for future challenging encounters. When contrast with lecture-based teaching, students valued available connections with clinical practice, reducing student anxiety about certain patient interactions. The VP cases were perceived by students as useful ways to challenge prejudices and potential inequalities in patient care, including for example patients with epilepsy or mental health disorders.

Students felt that VPs are not well suited to develop communication and patient management skills. This opinion was strong among medical students, who had

already accessed patient-based teaching, recognising limitations in VP-based teaching.. The pharmacy students however, welcomed the VP experience to prepare them for future patient management . This is likely to reflect the differences in proximity to patients in each professions' education. Clinical medical students currently have regular exposure to patients during their clinical rotations, compared with pharmacy students who have limited access to patients during their four year undergraduate course. Medical students early in their undergraduate course might, therefore, value VP-based learning more than senior students.
Valued-based collaborative practice, described by Thistlewaite (2012), aims to involve the patient, family, professionals and the team in decision-making and management (Thistlewaite, 2012). We suggest that VP-based IPL can be used as a stepping stone towards collaborative practice for pharmacy students with limited patient - based learning and medical students early in education.

~~The design of virtual patient resources is likely to shape whether it is perceived by students as an acceptable and useful resource within the curriculum, or perceived as a 'tick box exercise'. Students valued features of VP learning such as programme ability to take alternative routes in managing a patient dependent on their decisions; better reflecting clinical practice where there is not always one algorithm for patient care.~~

All students perceived their current experiences of interprofessional learning as poor, despite in principle recognising its importance in future patient care. In line with the literature, key barriers include students' self-reported ignorance of the roles of other professions, unenthusiastic stereotypes surrounding team members and poorly constructed lessons which do not meet the needs of both student sets (~~Leaviss, 2000;~~ Sicat et al. 2014).

~~Subject to its design, students could independently learn about each team members' contribution to the patient journey to overcome lack of knowledge about others' work.~~

~~Encouraging different professions to use VP learning together, could help facilitate discussions which clarify professional roles, explain thought processes behind decisions and demonstrate expertise that can be utilised by other team members.~~

Introducing this dynamic early in each professions' education could potentially overcome some of the cultural stereotypes demonstrated by students in our study. It could also facilitate interprofessional communication skills in the context of a patient case, preparing students for future patient management when they qualify.

This study was only conducted in one HEA institution. There may be other relevant issues raised by students in other universities with different curriculum structures and educational styles. This study was conducted in the UK and may not directly relate to the values of medical and pharmacy students in healthcare systems outside the National Health Service.

~~This is a small qualitative study exploring attitudes of students from one university. Duplicating this work with pharmacy and medical students in different settings including different stages within their education as well as different universities would be a useful next step. It would also be interesting to explore the perceptions of other stakeholders including both medical and pharmacy faculty staff.~~

Declaration of interest

The authors declare that they have no conflict of interest.

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