

## ORIGINAL RESEARCH ARTICLE

### An exploratory study of using a digital toolkit designed to support pre-registration health care students to develop awareness of person-centred approaches to care

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Person-centred care (PCC) has become an integral part of health education with many incorporating this into curricula (McCormack et al., 2022). However, PCC can require whole scale revisions of programmes of study, which can lead to difficulties in time and navigating quality processes (Moore et al., 2023). In the UK, continued workforce shortages have led to pressure on health care educators to increase student numbers (NHS England, 2023). This has exacerbated challenges with learning spaces and equipment availability (Powers, 2020) often leading to the introduction of small-scale interventions to increase coverage of PCC without whole scale changes. Digital technology offers potential solutions to these challenges with increasing numbers in health education turning to these approaches (Knudsen Oddvang et al., 2021; Liao et al., 2022).

This article sought to explore the impact of one such small-scale digital toolkit on student confidence and awareness of PCC. Although limited in nature, results indicated positive changes in confidence levels related to PCC overall with a mixed picture when looking at specific aspects. The digital toolkit helped to facilitate discussion related to delivering of PCC and overall provided students with easy access to these resources. A similar intervention may be used for the education of a variety of health care professionals and in support of interprofessional learning (Malone et al., 2022).

**Keywords:** case study; higher education; PCC; digital toolkit

## Introduction

### *Person-centred care*

Person-centred care (PCC) is an approach that prioritises the needs and preferences of individuals receiving care, rather than the systems or processes operating within health or care organisations. Although contested (Moore et al., 2023), PCC has been defined by the Picker Foundation (2024) as:

*An approach that puts people at the heart of health and social care services’.*

PCC aims to change the dynamic between individuals and health care professionals, so that people are seen as equal partners, are encouraged to play an active role in their care and are listened to and respected.

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Internationally, the emphasis on PCC approaches has been growing for some years with the need for discourse at a national, regional and local level to aid decision-making and ensure it becomes well-integrated into delivery (Rosengren et al., 2021). The Australian Commission on Safety and Quality in Health care's 'Patient Centred Care: Improving quality and safety through partnerships with patients and consumers (2011)', and the Health Foundation's (2016) 'Person-Centred Care Made Simple' are examples of policy and guidance, which aims to support changes to health and care professionals' practice. Campaigns such as 'Hello My Name is' (Granger, 2024) and 'What Matters to You', have demonstrated how simple changes to communication between health care professionals and individuals can have a huge impact on the quality of care provided (Hyde & Hardy, 2020).

The balance between providing PCC and working safely within current models of international and UK health care settings is often difficult (Hyde, 2024). Increasing demand for services, overconfidence in health literacy (Canady & Larzo, 2023) and rapid advances in technology, such as artificial intelligence (AI), are reshaping services internationally, and supporting improvements in efficiency (Hyde, 2024). As such, the role of the health care professional can often be focussed on the process or technical aspects of interactions with individuals, which can lead to a lack of attention to PCC (Berjarano et al., 2022).

### ***Teaching of PCC***

To ensure practitioners are fully versed, an emphasis is required on PCC approaches within pre-registration programmes in health care practice. McCormack and McCance's (2017) model for PCC is well regarded by health care educators and linked to a very active International Community of Practice (ICoP) for PCC (McCormack & Dewing, 2019). The model forms the basis for teaching about PCC, covering aspects such as shared decision making, providing holistic care, having sympathetic presence, and working with patients values and beliefs (McCormack & McCance, 2017; McCormack et al., 2020). McCormack (2024) has recently focused their efforts on methods for developing and implementing PCC curricula in health care programmes, adding to the work of McCormack et al. (2022) in embedding a framework for the curriculum, Berjarano et al. (2022) examining attitudes towards PCC in health care students, Malone et al. (2022) looking at PCC via student-led interprofessional practice placements and Rosengren et al. (2018) the development of interprofessional courses in PCC. However, for most programmes, radical rethinks such as this are only possible at validation or revalidation (Moore et al., 2023) and therefore, smaller scale changes are often made, such as the introduction of case studies or simulation.

### ***Simulation in health care education***

Simulation is often used by health care educators as it provides an opportunity to immerse students within a scenario whilst also developing technical skills, gaining knowledge, critical thinking and building confidence in a realistic but safe environment (Bowden et al., 2021; Denning et al., 2025). These approaches often involve using real life standardised patients (Davis et al., 2013), unfolding scenarios (Oudshoorn & Sinclair, 2015), role-play in ethical dilemmas (Oddvang et al., 2021), ageing suits (Bowden et al., 2021), and high-fidelity human simulation (HFS) (Mills et al., 2014),

or a combination of these, to provide a ‘more realistic representation of clinical practice’ (p. 429, Carson & Harder, 2016). The experiential learning these provide can support the development of complex decision making (Felton & Wright, 2017), clinical reasoning (Herron et al., 2019), empathy (Brunero et al., 2010) and self-confidence (Jefferies & Rizzolo, 2006).

However, although these approaches have shown great promise, simulation has often been limited to small group teaching (Carson & Harder, 2016; Davis et al., 2013). Issues such as increasing class sizes, limited simulation space, increased costs for specialist equipment and personnel (a problem for HFS) have all been identified as barriers (Herron et al., 2019; Powers, 2020). In addition, when mannikins are used, there are signs students struggle to relate to the simulation as a person, making it difficult for them to effectively practice aspects of health care, which require empathy and understanding of the patients’ experience (Guhde, 2010).

### ***Case studies in health care education***

To overcome some of these difficulties, health care educators have often utilised case studies or case-based learning to assist in teaching students in health-based subjects. Case studies allow students to explore specific scenarios and then watch how they play out, whilst reflecting on how their and others practice impacts on the clinical outcome and experience of the patient (Popil, 2011; Smith et al., 2012). With a long history in health care (Thistlethwaite et al., 2012) and increasing use for teaching PCC (Yogui et al., 2024) it creates a safe and secure space to discuss and gain insight into complex clinical scenarios whilst allowing students to explore practices and treatment options without impacting patient care and outcomes. Often embedded in delivering PCC (Price, 2022), this approach supports the patient being at the centre, helping students to develop empathy (Bansal et al., 2022), improve knowledge of approaches to patient involvement in decision making (Oswald et al., 2014) as well as developing values and beliefs for care and compassion (Clouston, 2017). However, its use does not come without its logistical problems with students often finding live patients or experts by experience easier to connect to, with increased dialogue over text-based examples (Kuper et al., 2019).

### ***Digital technologies***

Health care professionals have a long history of turning to digital tools to solve limitations in both simulation and case study delivery, allowing the provision of health care education on a wider scale. An example of this can be seen in the use of video to help tell a patient’s story without requiring the patient to be physically within the classroom. This removes the complications associated with arranging visits and can also help to strengthen the key messages students take away from their story (Costello & Horne, 2001). Snelgrove et al. (2016) also utilised digital stories to capture the patient experience of illness and care, finding that students valued the authenticity within the videos. These digital objects have provided students with the opportunity to cross boundaries between online, campus teaching spaces and clinical settings, helping them relate theory to practice (Weeks et al., 2019) with recent studies focusing on how generative AI might also be used to create simple patient case studies (Bumbach, 2024).

As a result, educators have now started to consider the ways in which digital technology may help to facilitate PCC education within health care, using virtual patients (Orr et al., 2021), flipped classroom (Saunders et al., 2017), online training packages (Liao et al., 2022) and mixed media approaches (Stagno et al., 2016) to develop engagement, student communication skills and support learning at a distance.

However, there is little research that focuses specifically on PCC and how confidence and awareness in this approach can be facilitated through digital means. This exploratory study looks to extend these findings by examining the pilot of an interactive digital toolkit to help engage health care students, building confidence and awareness of specific aspects of delivering PCC. Containing a range of digital resources (video, text and images), it focussed on an individual patient's journey when diagnosed with an acoustic neuroma (a benign tumour of the inner ear). Exploring the patient's thoughts, feelings, and experiences (positive and negative), as well as their physical symptoms and treatment, the toolkit was designed to be used to support learning for a wide range of health care professionals such as nurses, midwives, radiographers, sonographers, operating department practitioners, occupational therapists and health psychologist specialists. This initial evaluation focuses on radiographers and seeks to examine:

- The development of confidence of PCC approaches in pre-registration health care students using a digital toolkit.
- The effectiveness of the toolkit in provoking thought in pre-registration health care students' discussion of PCC.
- The benefits and challenges of delivery of the toolkit by digital means to pre-registration health care students studying PCC.

## **Method**

### ***Study design***

This study used an evaluative case study approach (Cohen et al., 2018) to begin to examine the impact of a digital toolkit to support pre-registration radiography students to develop their awareness of PCC, participants' experiences of using digital learning resources. The approach selected provided the opportunity to gain initial feedback on the resources and their potential to support the teaching of PCC practices. A convenience sample of 16 was obtained from a population of 35 Year 1 BSc (Hons) students or MSc (Pre-Registration) diagnostic radiography students who attended a scheduled session exploring PCC were asked to take part in the study with an anonymous questionnaire used as the primary source of data collection.

The digital assets within the toolkit were developed by the authors working collaboratively with the patient, 'Emily', who reflected on their experiences at various points within their diagnosis and treatment. The reflections were captured via text, images and video (talking heads). The reflections included detail about encounters with a variety of health care professionals including nurses, radiographers, doctors (GPs) and surgeons, as well as Emily's immediate reactions to new information presented about the treatment pathway. A total of 20 reflections were captured overall, with an infographic (Figure 1) produced to guide students through Emily's journey and provide links to the resources (Figure 2) hosted online in Microsoft Sway.

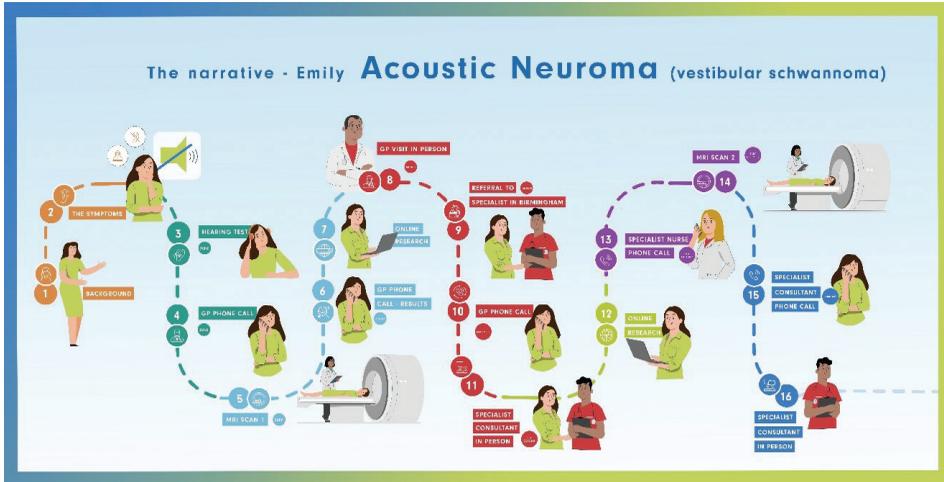


Figure 1. The interactive infographic that helped students to access the different resources within the digital toolkit. (University of Derby, 2021)



Figure 2. A list of some of the different interactive resources within the toolkit in Microsoft Sway. (University of Derby, 2021)

**Ethics**

Ethical procedures were carefully considered for the evaluation with approval received from the university ethics committee before the pilot study commenced (ETH2223-0602). The rights of Emily in the case study were also protected, with a pseudonym used to protect their identity. If requested by Emily, the materials within the digital toolkit would no longer be utilised and deleted. All the materials from the case study were stored securely online and accessible via direct URLs known only to the researchers. Information about the evaluation was provided in advance of its use with student participants, and it was made clear that if they chose not to take part in the evaluation, they would still be able to use the digital toolkit to support their learning with no detriment.

**Data collection**

To facilitate data collection for the exploratory study, the authors arranged for the digital toolkit to be used as an activity during a teaching session about PCC. The session started with an introduction to PCC, which drew upon research by Hyde and Hardy (2021a, 2021b, 2021c) into PCC in diagnostic radiography. The session

completed several learning activities exploring aspects of PCC through watching and discussing the case study in the digital toolkit. Due to the nature of the teaching session and the exploratory character of the study, measures were designed only to take place after the intervention.

Students were provided with a participant information sheet, with potential publication of the study and information about how to withdraw at different stages. After informed consent was obtained, a mixed method questionnaire (Cohen et al., 2018) (see Figure 3 for an example question) was designed to gather both closed and open-ended responses from students exploring their confidence around aspects of PCC as well as ease of use of the digital aspect of the intervention.

The questionnaire was submitted anonymously, with participants being allocated a number for their response to aid withdrawal. A debriefing document was provided to all participants upon completion of the questionnaire. It was possible that the nature of the case study may have brought up issues that the participants could have found distressing and therefore support was signposted in the debriefing. Data from the questionnaire was analysed using descriptive statistics with the small amount of qualitative data analysed using thematic analysis (Cohen et al, 2018) through MS Excel. The participants were informed that their data are stored securely for 7 years, to comply with the General Data Protection Act, 2018.

## Results

A total of 16 students chose to participate, which was a 46% response rate from the overall convenience population of 35. The response rate varied within each question with some participants choosing not to respond to some questions. Table 1 provides an outline of the results from the evaluation, which are then discussed in further detail.

### *Confidence in aspects of person-centred care*

The questionnaire results indicated confidence levels of participants ( $n = 16$ ) in delivering PCC varied (see Table 1). Most participants felt 'moderately confident' (56%)

6. On a scale of 1 to 4, how confident do you currently feel about supporting a patient who has recently had a diagnosis of a life-changing condition? Please **select** the relevant number.

1 Not at all confident	2 Somewhat confident	3 Moderately confident	4 Very confident
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Comments:

Figure 3. One of the questions used for the evaluation.  
(University of Derby, 2021)

Table 1. A summary of results of questions related to PCC and rating confidence.

Questions	N	Very confident	Moderately confident	Slightly confident	Not confident at all
How confident do you currently feel about delivering person-centred care?	16	38%	56%	6%	0%
Questions	N	Very confident	Moderately Confident	Somewhat confident	Not confident at all
How confident do you currently feel about supporting a patient to prepare for a treatment, intervention, or surgical procedure, and any answering any questions they may have about it?	16	13%	31%	38%	19%
How confident do you currently feel about supporting a patient who has recently had a diagnosis of a life-changing condition?	16	0%	12%	75%	12%
How confident do you currently feel about signposting a patient to different sources of information to help them understand their presenting condition or diagnosis?	16	19%	12%	38%	31%
Questions	N	Yes	No		
Thinking back to your confidence levels before you used the toolkit, do you see a change in your confidence levels in the aspects of person-centred care.	13	69%	12%		
Questions	N	Very effective	Effective	Minimally effective	Not effective
How would you rate the case study resources (including the embedded videos) in provoking thought and discussion about person-centred care?	15	40%	60%	0%	0%
Questions	N	Very easy	Easy	Difficult	Very difficult
How easy were the case study resources to access?	15	40%	40%	20%	0%
Questions	N	Yes	No	Possibly	
Would you go back and access the case study resources again?	15	86%	7%	7%	

or 'very confident' (38%), with only 6% feeling 'slightly confident' and no participants selecting 'not confident at all'.

However, the questionnaire data also showed that confidence levels for some aspects of PCC were much lower in some elements than others.

When asked about participants' confidence ( $n = 16$ ) in supporting a patient to prepare for treatment, intervention, or surgical procedure (see Table 1), a significant number of participants felt 'somewhat confident' (38%) or 'not confident at all' (19%) with some selecting 'moderately confident' (31%) and 'very confident' (13%). Overall suggesting a lower level of confidence on this aspect of PCC than the overall ratings in Table 1.

This reduction in confidence in aspects of PCC when compared with the overall confidence rating is more evident when participants were asked about their confidence in supporting a patient who has recently had a diagnosis of a life-changing condition ( $n = 16$ ) (see Table 1). The majority of participants selected 'somewhat confident' (75%), with a few selecting either 'not confident at all' (12%) or 'moderately confident' (12%). It is interesting to observe that no participants selected 'very confident' unlike in the overall rating, where 38% of participants selected this option.

This trend can also be seen in participants' responses ( $n = 16$ ) to confidence in signposting a patient to different sources of information to help them understand their presenting condition or diagnosis. Although the responses vary more than in the previous question (see Table 1), most participants selected a lower confidence rating with 'somewhat confident' (38%) and 'not confident at all' (31%) selected most often. Fewer participants selected 'very confident' (19%) or 'moderately confident' (12%) but this was higher than in the previous question (see Table 1) with three more participants selecting these higher confidence levels indicating more variety in response to this aspect of PCC.

### ***Experience of digital toolkit case study***

Participants were also asked several questions (see Table 1), which directly related to the use of the toolkit to support their learning. The first question focused on whether the use of the toolkit had impacted their confidence in relation to delivering PCC ( $n = 13$ ). Most participants selected 'yes' (69%) with some selecting 'no' (12%). A follow-up space was provided for participants to indicate what might have changed and why. One participant responded to the questions and noticed that they did not feel knowledgeable enough to provide answers to patient's surgical procedures related to their treatment but felt confident in PCC within their field of radiography as they have had more practice in these areas.

Participants ( $n = 15$ ) were also asked about how they would rate the digital toolkit and the case study resources in provoking thought and discussion about PCC. All participants rated the case study resources as either 'effective' (60%) or 'very effective' (40%), with no participants rating this as 'minimally effective' or 'not effective'.

In an open-ended question, participants were asked 'In what ways, if any, do you feel the toolkit prepared you for delivering PCC during your practice placements?' Responses to this question varied with participants highlighting it stimulated thinking about PCC, providing them with further knowledge and context about these practices and the impact on the patient journey. It supported putting themselves in the patient's position becoming aware of how the patient may be feeling, how practitioners' actions impact the patient outcomes and looking at patient care from a different perspective.

*'...being more aware of patient's feelings'.*

*'...highlighted importance by putting myself in patients' shoes'.*

*'...in so many ways, hearing how the patient felt and how the healthcare professionals dealt with her, made me look at it in a different way'.*

Participants also indicated that it helped them to be prepared to deliver PCC and understand the practices, which help to keep the patient calm and feel comfortable.

*'I can see more areas that I need to improve on more clearly'.*

*'allowed me to understand what keeps a patient stay calm and feel comfortable'.*

Participants ( $n = 15$ ) were asked to rate how easy the resources within the digital toolkit were to access (see Table 1). Most rated it as 'very easy' (40%) or 'easy' (40%) with a few (20%) rating it as 'difficult', with none rating it as 'very difficult'. Where participants were asked to provide details of the problem, they indicated the content was 'slow' or 'didn't load' and the videos were 'too long'.

Despite some participants indicating they had difficulties accessing the resources (see Table 1), when asked whether they would go back and access the digital toolkit again ( $n = 15$ ), most participants indicated 'yes', they would (86%) with fewer indicating 'no' (7%) or 'possibly' (7%). Participants were prompted to provide a reason for why they responded yes or no with responses indicating they would revisit the resource for reflection and to support assessments. A key quote from this question emphasises the emotional connection with the patient's journey:

*'I'd like to find out if the person in the case study received treatment and is on the road to recovery'.*

Participants were asked in an open-ended question if there was anything else, which could be added to the toolkit to support their understanding of PCC. They focused on the content of the case within the toolkit indicating inclusion of different patient journeys such as patients who are unconscious, living with dementia, as well having specific phrases used rather than general terms. They also commented on the in-session activities, which accompanied the use of the toolkit and indicated including the use of group activities between listening and reading resources from the toolkit.

## Discussion

The study aimed to begin exploring the use of a case study within a digital toolkit to increase confidence and awareness of PCC in pre-registration health care students. The evaluation was useful in exploring important themes such as the development of attitudes to and confidence in PCC (Bejarano et al., 2022) and how a case study can be delivered successfully via digital means (Powers, 2020).

The results from the study reveal potentially interesting trends in relation to the participants' responses to awareness of PCC and the impact this may have on a health care professional's practice. Although the participants expressed some positive improvements in confidence in relation to PCC overall, with certain aspects of

PCC such as supporting the patient for treatment, intervention or surgical procedure or life-changing diagnosis and signposting of information, indicated differences with participants, demonstrating lower confidence (McCormack & McCance, 2017). This may indicate the presence of the Dunning-Kruger effect (Canady & Larzo, 2023) with participants starting out by overestimating their awareness and confidence in PCC but once questions began delving into key aspects, there were more honest answers indicating lower confidence with specific aspects.

It may also indicate their specialism, with radiography students being more confident with certain aspects of PCC that they are more likely to encounter within their specialism (Hyde, 2024; Moore et al., 2023). The case study possibly exposed them to PCC aspects not encountered before or provided insight into where to improve clarity (Berjarano et al., 2022). As we have seen, participants found that the toolkit impacted their confidence in delivering PCC and would also access the resources again. The participants were also asked whether the toolkit promoted discussion about PCC and helped them to prepare for practice placements by putting themselves in the patient's position (Malone et al., 2022). Suggested improvements to the toolkit indicated cases that cover a variety of subjects, which highlighted complex health issues as well as reforms to the way in which the toolkit was delivered through group activities allowing discussions on professional practice (McCormack et al., 2022).

The digital aspect of delivery demonstrated the potential to overcome areas already identified such as increased student numbers, costs associated with specialist equipment, limited space and the need to have the patient physically present (Carson & Harder, 2016; Daviset al., 2013; Herron et al., 2019; Powers, 2020). The study, however, did not examine specific connections with the patient, with only one student indicating unprompted they would like to know the outcome (Bansal et al., 2022). This suggests that although some of the toolkit involved videos of the real patient, going forward examining student empathy in relation to the use of the digital toolkit would be an aspect to explore to aid the teaching of PCC (McCormack & McCance, 2017). Equally, although some participants experienced issues with Wi-Fi connectivity, it was clear participants also found advantages to the use of the toolkit including reflection and completion of assignments (Herron et al., 2019; Jeffries & Rizzolo, 2006).

## **Limitations**

This was an exploratory study looking at a small-scale digital intervention and therefore it had limitations within the research design. However, these limitations also identified areas for further investigation with increased sample size and a multi-disciplinary stance such as nurses, midwives, occupational therapists and operating department practitioners as well as interprofessional learning providing a wider and more diverse data set to explore (Malone et al., 2022). Confidence measures were also not taken prior to the use of the digital toolkit on aspects of PCC making it harder to judge whether changes occurred, leading the researchers to consider whether a direct comparison to physically meeting the patient, compared to a digital toolkit, delivery focused on PCC may allow examination of the advantages and disadvantages of the approach.

## Conclusion

Although this is a small-scale exploratory study, it gives an insight into themes that would be useful to explore further. The use of a toolkit clearly encountered some teething problems with connectivity but it overcame some of the logistical problems, which others have encountered, when attempting to relate this to a real patients journey (Guhde, 2010). In fact, participants suggested subjects for further case studies would enable them to explore other patients' journeys with a focus on different health care conditions. The digital nature of the resource not only provides the opportunity to deliver the case study online in the future (Liao et al., 2022) but also raises questions on this approach when teaching PCC, requiring further exploration of timing and learning activities regarding its use and comparison to patients sharing experiences in person (Bejarano et al., 2022).

The study has provided initial evidence of the need to explore this resource to support interprofessional learning (Malone et al., 2022). Rolling this out to a wider group of learners would not only provide a larger sample size but also, as expressed by the participants themselves, it would provide them with an opportunity to encounter health care professionals outside their specialism helping them to explore aspects of PCC not considered previously (Hyde, 2024). This could be particularly valuable for students newer to their profession to help bridge some of the gaps in participants' knowledge about PCC related to conditions, procedures, treatments and interventions (McCormack & McCance, 2017). This would help the researchers consider whether the results of the study would be different with a mixed or single group and with further studies and examples, exploring the differences between these and how a digital toolkit case study may enhance student confidence and awareness of PCC.

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