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Paul N. Baker

South Tees Hospitals NHS Foundation Trust, paul.baker1@nhs.net

Natalie L. Clark

South Tees Hospitals NHS Foundation Trust, natalie.clark17@nhs.net

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Delivery of patient education and support using an online digital platform for patients undergoing primary hip and knee replacement: The patient's perspectives

Paul N. Baker, *South Tees Hospitals NHS Foundation Trust, paul.baker1@nhs.net*

Natalie L. Clark, *South Tees Hospitals NHS Foundation Trust, natalie.clark17@nhs.net*

Abstract

The aim of the present evaluation was to evaluate the use of an online digital platform (ODP) to deliver patient education and support (PES) to patients undergoing total hip replacement (THR) and total knee replacement (TKR) surgery. Six objectives were outlined to assess the following areas: patient engagement; ease of use; understanding of information; quantity of information; aid of recovery; suggestions for improvements. A qualitative service evaluation of the ODP. Participants included patients who were registered to the platform for THR or TKR, were at least 90 days post-surgery and had accessed at least one carepac. Interviews followed a semi-structured schedule and were transcribed and analysed using thematic analysis. A total of 14 participants were interviewed. Three main themes were identified, each with subsequent sub-themes. (1) Health behaviours – internal control of own health, external email prompts, social support. (2) Contribution to recovery – quantity and quality of information available, structured program, suggestions of improvements to better aid recovery. (3) PES delivery – ease of use and accessibility of an ODP, technology advancements, alternative methods of PES. The online PES platform was beneficial for patients undergoing THR and TKR surgery. It aided their understanding of and preparedness for joint replacement surgery, as well as being a supportive tool for rehabilitation and recovery. All patients actively engaged with the ODP and in doing so, developed a greater understanding as a result of the detailed and structured carepacs assigned.

Keywords

Patient perspectives, patient education, patient support, orthopaedics

Introduction

Patient education and support (PES) should be provided to patients during their orthopaedic pathway, to assist with decision-making and preparation for surgery¹ as well as to support post-surgery expectations, rehabilitation and recovery.^{1,2} PES has been strongly evidenced to benefit orthopaedic patients, particularly those undergoing total hip replacements (THR) and total knee replacements (TKR). The reported benefits include, but are not limited to, an improved knowledge and understanding of their condition and subsequent surgery³⁻⁵; improved adherence to post-surgery physiotherapy and the frequency exercises are performed⁶; improved post-surgery patient reported satisfaction levels^{5,7-8}; reduced length of stay in hospital.⁹⁻¹¹

There is a need to develop consistent PES information and delivery through an approach that can meet the individual needs of the patient and address any queries and concerns. A systematic review evaluated the various delivery methods of PES for a number of health conditions as well as evaluating a wide range of teaching strategies.¹² The review concluded that PES should be specific and structured. In addition, PES should be

delivered using a mix of the most effective teaching strategies. These included web-based programs,⁵ audio-visual resources³ and demonstrations. Considering these findings when developing PES materials has the potential to increase the patient's knowledge and satisfaction, whilst decreasing the patient's levels of anxiety.

In order for patients to benefit from PES information, they must be offered information relating to their specific condition, treatment options and expectations. Providing this information encourages a shared decision-making approach, allowing for informed decision-making and consent to treatment. This is in line with National Institute for Health and Care Excellence (NICE) clinical guidelines on patient experience,¹³ whereby patients should be encouraged to be actively involved in discussions surrounding their healthcare therefore, promoting self-management of their own condition. Without appropriate PES information, patients are unable to actively participate and subsequently are unable to make informed decisions. Recent NICE guidelines for primary joint replacements¹⁴ emphasised the importance of offering specific PES information to patients and also their family, friends or carers. These orthopaedic guidelines are also supported by

the wider surgical literature that outlines the need to include information specific to the surgery that covers the potential risks and benefits, alternatives to surgery, preparing for surgery,¹ anaesthesia, pain management,¹⁵⁻¹⁷ wound care, expectations inclusive of returning to work and leisure activities.^{1,2}

To achieve the aims of a structured standardised PES that embraces the philosophy of using different approaches and media formats to deliver the essential information recommended by NICE guidelines,¹⁴ the South Tees NHS Trust implemented an online PES program using the Go Well Health (GWH) platform for patients undergoing THR and TKR surgery. Within the GWH platform, the team created a library of content in various formats (videos, interactive forms, PDFs, etc.) that addressed the information and care needs of the patient. The GWH platform allows individual items of content to be assigned to patients or for multiple items of content to be combined and structured in a time-lined manner, creating a standardised “carepac” that is delivered over a defined period of time. The flexibility of the carepacs allows information to be organised in whichever way the healthcare team feel is most appropriate. This means it can be tailored to the individual needs of patients, whilst the structured element allows information to be delivered at a rate suitable to their condition, helping to reduce the overwhelming aspect of receiving health-related information. Additionally, the platform features a secure and confidential communication module, enabling two-way communication between patients and their care team.

This evaluation aims to determine, from a patient perspective, the value of the online digital platform (ODP) in delivering PES to patients undergoing THR and TKR surgeries. The qualitative service evaluation outlined six objectives in order to assess: (1) the level of patient engagement with the platform; (2) the ease with which patients were able to access the platform; (3) how well the patients understood the information provided to them through the platform; (4) the quality of the information provided through the platform; (5) how well the platform aided the patients’ recovery after surgery; (6) suggestions for improvements to the platform.

Method

Design

The qualitative evaluation utilised a semi-structured interview schedule. The schedule was informed by the objectives outlined above. The questions were phrased in a way that allowed participants to elaborate on their personal experiences of their THR or TKR surgery in the context of the ODP.

Participants

Patients were deemed eligible to participate if they were registered to the ODP, were at least 90 days following either THR or TKR, and had accessed at least one carepac assigned to them within their online program. Further screening confirmed the mental capacity status of eligible patients since their discharge. It was determined a volunteer sample of 15-20 participants would be a sufficient sample size to allow saturation of themes within the qualitative analysis.

All patients registered on the ODP provided written consent to be registered. This consent process included consent to be contacted to assist with the evaluation of the platform. Thirty-eight patients were invited to participate in the evaluation via email; 14 patients subsequently responded and provided additional verbal consent to be interviewed. This lower number of participants was accepted as data saturation was achieved. The age of the participants involved ranged from 56 to 74 years old, with an average age of 63.4 years, of which 11 of the participants had a THR and three had a TKR. Additional participant demographics can be viewed in Table 1.

Data collection

The semi-structured interviews were conducted over the telephone at a previously agreed upon time that was convenient for the participants. Additional materials included a digital voice recorder to record the interviews and aid the transcription process. Ethical documentation, inclusive of a participant information sheet was sent to participants alongside the email invite to participate and a verbal consent form was read to them and signed by the interviewer.

Research approval

The project was registered as a service evaluation with the local Research and Development department, ‘061219NC – Evaluation of the Go Well Health platform from patients’ perspectives.

Data analysis

The interviews were transcribed and analysed using Braun and Clarke’s¹⁸ six-phase thematic analysis. The analysis followed a theoretical/deductive approach with themes being identified at a semantic/explicit level. Once familiarised with the transcripts, initial codes were generated and collated to identify preliminary themes. These themes were then reviewed and refined into overarching themes and sub-themes in order to accurately represent the data and address the outlined objectives. The coding of the transcripts was performed by a single coder; therefore, it was not felt necessary to assess the reliability of the coding with a second coder due to the low complexity of the interviews and data.

Table 1. Demographics of the patients interviewed

Demographics					
Age	Mean	Range			
	63	56-74			
Gender	Male	Female			
	8	6			
Marital status	Married	Single	Divorced	Other	
	9	2	1	2	
Education	GCSE	A Level	Bachelors	Postgraduate	None
	2	6	3	2	1
Employment	Full-time	Retired	Other		
	4	8	2		
Religious beliefs	Christian	None	Other		
	10	3	1		
Racial group	White				
	14				
Operation	Hip	Knee			
	11	3			
Time spent (hours)	<5	>5			
	8	6			

Results

A total of 14 interviews were conducted between 10th and 24th January 2020. These interviews were then transcribed and analysed; the average length of each interview was 18 minutes. Following the guidelines of Braun and Clarke's¹⁸ six-phase thematic analysis, three main themes emerged with additional sub-themes as presented in Table 2. These main themes were 'Health behaviours,' 'Contribution to recovery,' and 'PES delivery.'

Theme 1: Health behaviours

The first theme considers how the patients differentiated in their attitudes towards their own health behaviours. These differences became evident depending on how patients interacted and engaged with the ODP to access information.

Internal control of own health

The platform is first offered to patients at the outpatient consultation when the decision is made to list the patient for THR or TKR surgery. Two patients expressed strong initiative to take advantage of the online PES opportunity presented to them.

"...my thoughts were anything to help things like this I'm quite happy to participate" [1-04, 36-37]

"I think it was when I was having a consultation at the clinic, and you could opt to, opt to go for the online computer sort of yeah, they would help provide information about the operation and what have you and I do speak computer so I thought I would take advantage from it" [1-06, 25-28]

Providing patients with the opportunity to access PES information via an ODP encourages them to be actively involved in their own healthcare, though ultimately it is the patient's decision to consent to be registered. Once patients have consented and been registered to the platform, it is then their responsibility to activate their account and follow the program assigned to them. One patient reported that they actively read the information provided.

"Well initially I went on it and I read as much as I could on it" [1-10, 103]

Whilst another patient described that they "religiously" [1-02, 48] performed the pre-operative and post-surgery exercises within their program.

"... they sent me it online and it was just a matter of, they sent me all these exercises that may help your mobility so I did them that all referred to hips religiously" [1-02, 46-48]

Table 2. Main theme and sub-themes derived from the thematic analysis of the interviews

Main theme	Sub-theme
Health behaviours	Internal control of own health External email prompts Social support
Contribution to recovery	Quantity and quality of information available Structured program Suggestions of improvements to better aid recovery
Patient education and support (PES) delivery	Ease of use and accessibility of an online digital platform (ODP) Technology advancements Alternative methods of patient education and support (PES)

This is an example of how when offered the opportunity and encouraged to participate, patients will actively engage with an ODP that delivers PES with the aim of improving their post-surgery rehabilitation and recovery.

External email prompts

Though some patients are more active participants in their healthcare, others can be characterised as being passive participants. These particular patients may require prompts to ensure they are actively engaged with their program and thus motivated to achieve the best possible health outcomes following joint replacement surgery. The carepacs were designed to account for this, incorporating time-lined emails that reminded patients of the upcoming content, encouraging patients to stay focussed on their program. These prompts were successfully recognised by patients.

“...you were prompted ‘cause I was sent emails so that would have got me to go and look” [1-08, 62-63]

These email prompts were additionally effective at getting patients to access their joint replacement PES programs.

“I waited until I got a message to say there was something new and then I accessed it every time I got a message” [1-02, 102-103]

“...it was very useful because it sort of reminded me of what I should be doing and what was coming up next...” [1-01, 51-52]

Regardless of whether patients were passive or active participants in their healthcare, all of the patients interviewed had accessed the majority, if not all, content provided to them. Therefore, these patients in particular remained sufficiently informed through the platform and well prepared for their upcoming joint replacement surgery.

Social support

The design on the PES delivered in collaboration with the platform allows patients to add a family member, friend or carer to their program as a, “Support Person.” A couple of the patients reported to have used this feature.

“Yeab I added my wife to the carepacs” [1-04, 147]

“I signed up my sister as well as my husband...” [1-09, 367]

The purpose of this feature is so those closest to the patient are able to access and view the same carepacs the patients are assigned. Subsequently, both the patient and those closest are equally as informed, enabling for shared decision-making and effective planning of the home environment for the patient’s post-surgery rehabilitation and recovery. In addition, the Support Person feature acts as another form of external encouragement alongside the email prompts embedded within the carepacs.

Theme 2: Contribution to recovery

The second theme encompasses how patients utilised their online program to prepare them for THR or TKR surgery, subsequently contributing to their overall recovery. The theme also considers, from a patient perspective, suggestions of how content could be developed to improve preparation, support and recovery for future THR and TKR patients registered to the platform.

Quantity and quality of information available

The carepacs for THR and TKR offer a variety of content in a range formats. Understanding of their condition and treatment is essential as it forms an important component of the consenting process. One patient described developing a, “greater understanding” [1-04, 81], of the information that was verbally discussed in the initial

consultation, as a result of the information then being reiterated online.

"I was getting a greater understanding from [the ODP] 'cause when you're sitting with the doctor and going through it all with you, it goes in one ear and out the other, and I'm thinking oh my God, got to get this done, whereas then it reinforces it" [1-04, 81-84]

The reinforced information meant this patient in particular was more knowledgeable about their procedure. Whilst another patient was evidently satisfied with the quantity of content their program on the ODP was able to provide, suggesting there was a sufficient amount of content that effectively addressed any patient queries or concerns.

"Oh yeah there was an abundance of information on there" [1-10, 98]

As well as providing information to strengthen the patients understanding of the THR and TKR surgery itself, the program also provided important health management information. This included specific information regarding the importance of physical preparedness in relation to joint replacement surgery. Patients clearly understood that being physically fit prior to surgery as well as losing weight are important factors that contribute to positive outcomes following joint replacement surgery.

"...I think the fitter you are when you have an orthopaedic operation like that the easier it is for you to recover" [1-06, 128-130]

"...I'm now trying to address things by losing as much weight as I can so that I can take the pressure off my hip and joints..." [1-01, 181-182]

Structured program

The majority of patients favoured the structured layout of the carepacs, as it ensured that they were not overwhelmed with information. It allowed patients to remain focussed and engaged with their joint replacement program, receiving the most essential items of content at a pace appropriate to the individual needs of the patients.

"The advantages with [the ODP] was, when I had it done, the day by day how can I say, day by day progress with is what I need to do, this is what I need to fill, that was helpful" [1-04, 64-66]

However, patients are not restricted to this time-lined schedule of content. If it suits the patient, they are able to advance their program. Patients are also able to review any items of content retrospectively, if they feel they need to reaffirm anything they may have been unsure about.

"...it helped me recover yeah because it was like having a, if there was certain aspects that I wanted to find out information on, whether it was further ahead in my recovery or behind, I could spin through each day, like day 22, I could spin ahead and sort of think oh yeah I

understand that now and go back to the day I was supposed to be on" [1-04, 133-137]

This element of flexibility within the carepacs acknowledges the different needs and paces of patients and does not conform to a one-size-fits-all approach.

Suggestions of improvements to better aid recovery

The semi-structured interview schedule allowed patients to elaborate on their personal experiences of their joint replacement journey. This meant patients were able to make suggestions as to what they believed would aid future patients registered to the ODP.

Some patients suggested developing existing items of content to provide further understanding and reassurance. The first suggestion related to the content on anaesthesia. One patient was undoubtedly anxious about having a spinal anaesthetic.

"So anyway, when they said I was having the spinal, I thought oh my god I'm going to see everything, I'm going to feel everything..." [1-03, 108-109]

The second suggestion related to, "pain management" [1-12, 123]. The patient went on to say that they resorted to contacting the pain management team in order to source this additional information and address their query.

Another patient suggested improving some of the video content for occupational therapy and physiotherapy. The videos currently used within the carepacs used healthcare professionals as the models. However, the patient claimed that this is an unrealistic representation and would prefer the models to be patients.

"...you want to talk to people who are actually trying to do it" [1-09, 175]

They believed that this improvement would contribute to better managing the post-surgery expectation levels of patients. Another patient had reported post-surgery expectations as an area that was lacking in content.

"I think there needs to be a lot more on expectations" [1-11, 131]

A final suggestion noted from the interviews was to create content that would assist in making patients more aware of all the features available within the ODP in order for them to fully benefit from their online program. Additional features within the platform include "My Goals" and "My Notes"; these are not explicitly interlinked with the carepacs. One patient in particular reported using these features, however, did not receive specific guidance on their exact purpose.

“...one of the items is my goals which is sort of the exercise bit and I looked to see how I could use this and then I was told it isn't actually part of the program, but was never told that from the beginning” [1-09, 92-95]

The patient was able to easily work out how to use these features effectively, in a way that contributed to their recovery and rehabilitation.

Theme 3: PES delivery

The final theme considers the use of an ODP as a method of delivering PES. This included assessing how easy the platform was to use, the audience the ODP is aimed at, and a comparison against alternative, standardised methods currently used within healthcare practices.

Ease of use and accessibility of an ODP

The vast majority of patients described the ODP as easy to navigate. Patients were also appreciative of the information being available *“in one place” [1-10 55]* and *“like an online library” [1-12, 46]*. Only a small number of the patients interviewed reported some difficulty navigating the platform. However, this was something they were able to quickly resolve themselves through perseverance.

“I think it was fairly self-explanatory, you know there was one or two things I didn't understand the first time then I sort of got the hang of it” [1-05, 46-48]

“...I seem to remember it wasn't completely straight forward but yes I did manage to follow it” [1-07, 86-87]

Patients identified the number of ways the platform can be accessed through *“phone” [1-01, 61; 1-02, 61]*, *“tablet” [1-01, 62]*, and *“computer” [1-02, 61; 1-05, 35]*. The ability to access the platform on a variety of technological devices suits individual preferences. One patient explained how they would alternate between using the computer to initially view the information but would then favour using their phone when practising the exercises.

“I got it on my computer but then I picked it up on my phone 'cause I couldn't remember the exercises so if I got them on my phone then I could lay it on the floor and look at them” [1-02, 61-63]

Technology advancements

Patients expressed an understanding and appreciation of the development of an ODP for delivering PES.

“I think it's a good idea if people aren't intimidated by IT, I think it's a good idea being back up with the personal 1:1 stuff 'cause you know everything is tending to go online these days” [1-01, 281-283]

All patients interviewed did not explicitly express any objections to the development and use of an ODP to deliver the joint replacement PES. Instead, they acknowledged that this method would be much more

efficient and effective for healthcare services and ultimately patient care.

“...I mean it's the way to go and to make your job more efficient, you're obviously going to develop such things” [1-06, 161-163]

Several patients, however, did have apprehensions regarding the use of technology among the older generations. This is a societal challenge, whereby the older generation have not been brought up with the advanced technology that is available nowadays. Though, this may not be representative of all.

“I think especially for older people, I don't know whether they would go for [the ODP]” [1-13, 194-195]

“...I suppose the average age of your cliental comes down, it'll be used more. I can't see you know an older generation, because they don't use it as much. I mean some of them do, you've got your old silver surfers and I suppose they're alright...” [1-06, 153-155]

Although, it is likely the older generation will have family members and/or friends who are technologically advanced and can thus assist them using the platform as well as signing themselves up as a “Support Person” on the patient's program. Despite the reported apprehensions, one patient further recognised that as time progresses, this is less likely to be a barrier for the use of such platforms.

“...bearing in mind most are older people but then again as time goes on are they all computer savvy because you need to be” [1-07, 204-205]

Alternative methods of PES

Patients were asked to consider where else would they have sought PES if the ODP was not available to them. One source would have been the hospital itself. Patients explained that they would have actively asked their orthopaedic surgeon questions.

“I'd have had to ask the consultant for some letter with the information on, I think that's the only way” [1-10, 47-48]

Or they would have contacted the orthopaedic department via telephone to enquire.

“Probably phoned the hospital or expected to get something from the hospital anyway” [1-01, 69-70]

Alternatively, patients would have relied on what the healthcare professionals told them at their various hospital appointments, not actively asking for further information.

“Alls I would have had to go on is what the hospital would have told me” [1-14, 67]

A second source of information would have been the internet. One patient reported using social media

platforms, joining a support group on “FaceBook” [1-03, 116] with other patients who had been through the same joint replacement procedure. The same patient actively searched for videos of the surgery on “YouTube” [1-03, 145]. Other patients described how they would have resorted to aimlessly searching for information on “Google” [1-04, 60; 1-07, 209; P1-09, 147]. This would have led patients to access a variety of sites linked to their search.

A third source of information would have been through written formats.

“I would’ve gotten leaflets” [1-12, 55]

Patients would have expected these written formats to have been either supplied at their hospital appointments or through the post. One patient reported receiving exercises via a written format alongside the exercise videos and PDFs available on their online program.

“...I got a booklet of exercises to do after the surgery” [1-02, 84]

In these circumstances, it is important to ensure both the written information and the information provided online is consistent with one another, so patients do not receive conflicting messages.

More pressingly, some patients simply would have not been aware of where or how to source the same quantity and quality of content that is supplied through their online program. This would have resulted in patients being significantly less informed about their joint replacement surgery, therefore, less prepared with what to expect and how to properly plan for their post-surgery recovery.

“I wouldn’t have had a clue to be honest with you” [1-04, 57]

“I wouldn’t have known about it” [1-02, 77]

Discussion

It was evident from the interviews that patients had developed an increased understanding of their joint replacement pathway as a result of the PES provided in the form of carepacs delivered through the ODP. The current evaluation suggests that the online programs were more successful at increasing understanding than alternative methods, such as verbal discussions. Previous studies have similarly supported this current finding when delivering PES using audio-visual tools³ and an online program.⁵ Audio-visual tools have additionally helped to increase the frequency in which patients practice their post-surgery exercises.⁶ This finding was supported within the current service evaluation where one patient in particular described performing the exercises assigned to them “*religiously*.” Therefore, this increase in patient knowledge and adherence to their physiotherapy exercises

will have positively impacted the patients’ post-surgery outcomes. Though, a more longitudinal evaluation of the ODP would be beneficial to confirm this.

The online digital program successfully meets the recommendations outlined in NICE guidelines¹⁴ as well as the recommendations suggested by the systematic review on how to effectively deliver PES.¹² The content is provided in a variety of formats to suit the individual needs and preferences of the patients whilst encouraging engagement with the platform. Patients described their online programs to be like “*an online library*,” appreciating the variation in content, the ease of accessibility and convenience. Providing the information in a variety of formats will have contributed to the patients’ aforementioned increased understanding and knowledge.¹² Additionally, patients did not have to seek information from alternative internet sources, something a number of patients confessed they would have resorted to if an ODP was not offered to them. This has reduced patients being exposed to inaccurate information as well as reducing the anxiety towards the joint replacement surgery that aimless browsing might increase, if not unnecessarily provoke.

Patients were also encouraged to suggest any improvements to the content they received to aid development of the programs in order for future joint replacement patients to continue to benefit from the ODP. Consistent with previous research, patients stated that the existing information on post-surgery pain management needed to be expanded¹⁵⁻¹⁷ whilst another patient suggested redesigning the physiotherapy and occupational therapy video content whereby the models used should instead be willing patients. Taking these suggestions into consideration would perhaps create a more realistic representation of post-surgery expectations and would provide additional reassurance for patients. Otherwise, there were no reports of information specific to the joint replacement pathway missing, as one patient commented, there was an “*abundance*” of information provided. However, patients stated that they would benefit from more training on using the platform. Tutorials have since been created and incorporated within the carepacs.

Delivering PES through an ODP has also been implemented in other healthcare settings.^{5,7} Patients within this evaluation appreciated the development of such platforms. However, similar to previous findings, patients did express apprehensions relating to technology developments, older generations and individuals who may not be computer literate. Considering the demographics of the patients currently registered to the platform, age itself might not be the issue. The challenge is more likely to be access to and familiarity with technology, like computers and mobile phones. It is encouraged that family, friends or carers are actively involved with the patient’s joint replacement pathway, as supported by previous research¹⁷

and recommended by NICE guidelines.^{13,14} With the patient's consent, members of their support network are able to provide their own email address to register on behalf of the patient if they do not have one. Alternatively, if the patient does have an email address and is unsure of how to navigate the platform, the "Support Person" feature allows the patient's support network to also sign up and receive the same level of information as the patients would. This ensures the patient and those closest to the patient are well-informed with the latest information to aid decision making and preparation, as well as recovery and rehabilitation.

Limitations

The volunteer sampling method used in the evaluation may have prevented patients from being more engaged with the interview due to a reduced sense of anonymity. Alternative methods, such as a survey, may have encouraged patients to engage more. Utilising a survey would have also targeted a larger audience as the sample itself was also only a small percentage of the large number of THR and TKR patients registered to the platform, currently over 1,200. In order to determine the true value of implementing an ODP, future evaluations could focus on the patients that did not provide consent to be registered as well as the patients that, when registered, did not actively engage.

Conclusions

Overall, the ODP has proved to be a beneficial aid for patients undergoing THR and TKR surgeries, whilst in line with the most recent NICE guidelines for primary joint replacements¹⁴ and the clinical guidance for adult patient experience.¹³ The general feedback from the 14 patients interviewed was that the ODP was a welcomed, informative tool to aid understanding of and preparedness for joint replacement surgery, as well as being a supportive tool for rehabilitation and recovery. Patients, irrespective of appearing to be active or passive participants in their own care, suitably engaged with the platform and in doing so developed a greater understanding as a result of the detailed and structured care plans assigned to them. Though, as briefly discussed, we would benefit from a more longitudinal evaluation to determine the extent of the benefit to patients.

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