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This document is the Published Version [VoR]

Citation:

WEBBER, R., PARTRIDGE, Rebecca and GRINDELL, C (2022). The creative co-design of low back pain education resources. Evidence and Policy, 18 (2), 436-453. [Article]

Evidence & Policy • vol 18 • no 2 • 436–453 • © Policy Press 2022
Print ISSN 1744-2648 • Online ISSN 1744-2656 • https://doi.org/10.1332/174426421X16437342906266
Accepted for publication 01 Feburary 2022 • First published online 24 Feburary 2022

SPECIAL ISSUE • Creativity and co-production

practice

The creative co-design of low back pain education resources

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Background: Evidence-based guidelines provide clinicians with best practice recommendations but not the means to implement them. Although co-design is increasingly promoted as a way to improve implementation there is frequently insufficient detail provided to understand its contribution. The presented case study addresses this by providing a detailed account of how a specific co-design approach contributed to an improving back pain education project in line with national guidance.
Aim: The aim was to use creative co-design to produce prototype evidence-based back pain educational resources that were sensitive to context.

Objectives:

- Assemble a group of relevant stakeholders for a series of workshops.
- Use creative activities that encourage divergent and convergent thinking to iteratively understand the problem and develop prototype solutions.
- Thematically analyse outputs of each workshop to determine content of subsequent workshops.
- Present a final prototype ready for implementation.

Key conclusions:

- This approach produced an innovative system of thematically linked back pain educational resources that were contextually sensitive, evidence-based and ready for implementation.
- Research knowledge was successfully blended with stakeholder experiential knowledge.
- The creative methods helped diverse stakeholders develop trusting relationships and ensured everyone's experiences and ideas were included.
- The process of co-creation and the objects created had vital roles in surfacing and understanding stakeholder knowledge, promoting innovation and facilitating implementation.
- The design process facilitated an evolving understanding of a complex problem alongside prototype development.
- It is recommended that these methods be considered by other project teams.

Key words back pain education • co-production • creativity • knowledge mobilisation

Key messages

- To bring about meaningful change, evidence-based guidelines need to be implemented in ways that are sensitive to context and the complexity of healthcare.
- Co-production has the potential to produce better solutions but has its own challenges.
- Creative co-design can be an effective approach for overcoming these challenges.

To cite this article: Webber, R., Partridge, R. and Grindell, C. (2022) The creative co-design of low back pain education resources, *Evidence & Policy*, 18(2): 436–453, DOI: 10.1332/174426421X16437342906266

Introduction

In the UK the National Institute of Clinical Excellence (NICE) produces clinical guidelines based on the best research available, in order to ensure people receive consistent evidence-based care (NICE, 2021). However, despite almost universal agreement among health professionals that clinical practice should be based on best available evidence, guidelines are routinely not used as specified in decisions relating to individual care (Greenhalgh et al, 2014). It has been demonstrated (Gabbay, 2011) that this is not due to a lack of awareness or understanding of the knowledge the guideline represents, but is because clinicians utilise a wider collection of knowledge and problem-solving approaches. This diversity allows greater flexibility to circumstance and the person in front of them. New knowledge from research evidence is part of this, but only after it goes through a social process of amalgamation with tacit and experiential knowledge about real-world context and the complexity of human lives (Greenhalgh, 2017). Harnessing this blended knowledge is increasingly seen as vital to the development of healthcare programmes that can better meet the complex needs of individuals and the society they live in (Holmes et al, 2017).

In this case study a detailed description will be presented of how a specific creative co-design approach was used to blend academic knowledge with stakeholder knowledge, in the development of a complex intervention that addressed a NICE guideline recommendation about information and advice for people with back pain. The vital role of collaborative creativity promoted by this approach will be discussed.

The NICE guidelines for low back pain in over-16s: assessment and management, were published in 2016 (NICE, 2016, NG59). Engaging patients in self-management is an important theme of these guidelines, and consequently they recommend that 'people are provided with advice and information tailored to their needs and capabilities, to help them self-manage their lower back pain with or without sciatica, at all steps of the treatment pathway' (NICE, 2016). However, as with many seemingly simple evidence-based healthcare recommendations, there are significant challenges in translating this into changes of clinical practice that improve patient outcomes. Persistent lower back pain remains a global challenge because it is not a simple disorder (Clark and Horton, 2018). The impact it has on a person's life has been shown to be more dependent on the complex interaction of multiple biopsychosocial factors than underlying pathoanatomy (Hartvigsen et al, 2018). These biopsychosocial factors are highly individualised and modifying them requires the active engagement of the person in the process of change (Foster et al, 2018). For this reason, simple generic information is of limited value and a more person-centred approach is required (Engers et al, 2008).

One way to develop person-centred healthcare is co-production, that is, involving service user and service provider stakeholders in a partnership approach to intervention development (O'Cathain et al, 2019). It is felt that this is a way of producing interventions that are more compatible with all stakeholders' needs and adaptive to context (Greenhalgh et al, 2016). However, authentically involving stakeholders in generating, sharing, and understanding diverse perspectives and translating this knowledge into innovative solutions is not straightforward (Williams et al, 2020). Traditional stakeholder consultation methods can fail to take account of the imbalance of power. Expert healthcare professional status and technical language may give some viewpoints and ideas an unfair advantage (Farr et al, 2021). All stakeholders possess valuable lived experience knowledge and ideas, but some lack the confidence or a method to clearly express them (Knowles et al, 2021). An additional challenge is surfacing deeper tacit and latent knowledge about people's values, feelings and creative ideas. This knowledge is vitally important as it often gets to the root of what is really going on and provides direction for solution development (Sanders and Stappers, 2012). Any solution must then overcome the significant challenge of synthesising all this stakeholder knowledge and the existing research knowledge into a workable innovative intervention that is considered better than what currently exists (Greenhalgh, 2017). Even then, innovations with the potential to improve healthcare can fail to be effectively implemented unless deliberate efforts are made to engage with the service workforce and managers (Grol and Wensing, 2004).

In 2018, funding was secured for a National Institute of Health (NIHR), Collaborations for Leadership in Applied Health Research and Care Yorkshire and Humber (CLAHRC YH), Getting Research into Practice (GRiP) service improvement project (Webber et al, 2020). The project would use the specific creative co-design approach (User-Centred Healthcare Design, 2015) developed by the CLAHRCYH Translating Knowledge into action (TK2A) theme, an interdisciplinary team of clinical, social science and design researchers. The creative co-design approach specifically tackles the described challenges of effective stakeholder engagement to improve the educational resources available to people with back pain in Sheffield, in line with the NICE guidance. Creative co-design is a participatory approach where interventions and services are developed 'with' not 'for' those who will use them (Sanders and Stappers, 2008) It uses creative and visual activities drawn from design to facilitate the sharing and synthesis of evidence, such as research and guidelines along with stakeholders' thoughts and ideas, into practical and tangible outputs that are more likely to be usable in practice (Grindell et al, 2020).

The aim of the project was to use these creative co-design methods to develop prototype back pain educational resources for use within an NHS community physiotherapy service in Sheffield, UK. The prototypes would be contextually specific, evidence-based and ready for implementation.

Methods

Establishing the stakeholder group

Project recruitment was initially promoted through generic emails to local healthcare professionals (HCPs), and posters and leaflets placed in local NHS physiotherapy outpatient clinic waiting rooms. However, due to limited response a more proactive approach was taken, with the project team directly approaching clinicians and asking willing physiotherapists to give leaflets directly to appropriate prospective patient participants.

Eight public participants were recruited from the population of adults who had received or were receiving physiotherapy for lower back pain through a local community-based specialist musculoskeletal (MSK) service. This service accepts approximately 9000 GP referrals a year for people with back pain. Participants were provided with travel expenses, refreshments, and a £20 gift voucher for each of the workshops they attended.

Seven HCP participants were recruited from local community and hospital NHS physiotherapy services. Physiotherapists with different levels of clinical and service development experience were purposefully approached and offered the opportunity to take part. All those who volunteered were recruited. The NHS physiotherapy service management group was a key stakeholder in this project and agreed to allow participants to take part within work time. An additional clinician participant who had previously worked as a GP was also recruited.

Because this project was classified as a service improvement project, NHS ethical approval was not required. However, ethical principles were considered throughout the project, local NHS governance procedures were followed, and informed consent was given by all participants.

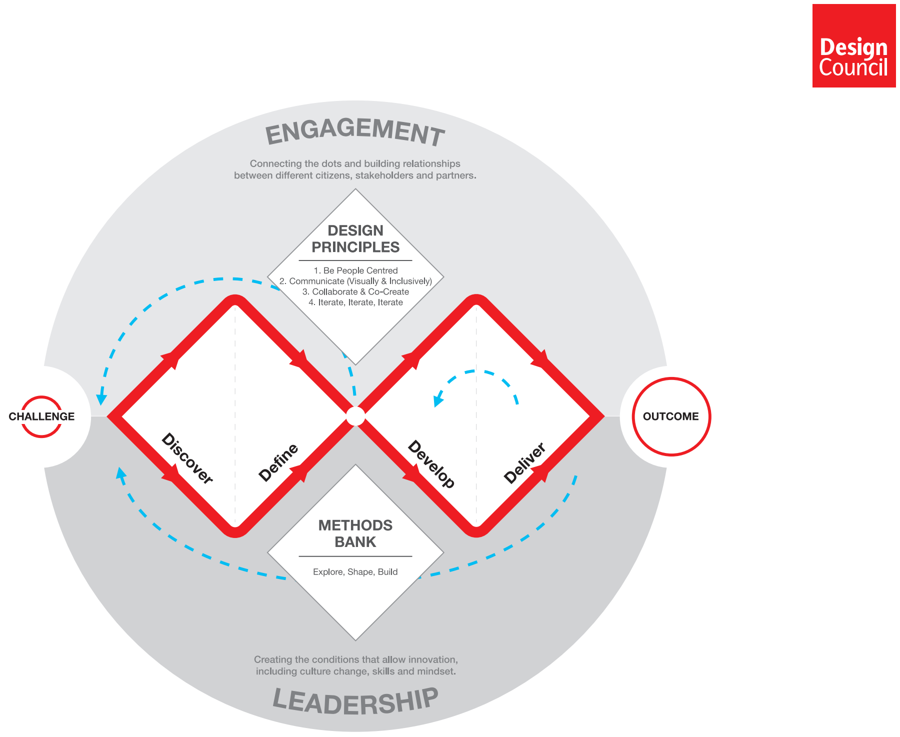
Workshops

The public and HCP participants took part in two half-day workshops. These were run by a project team that consisted of a design researcher (RP), a clinical academic (CG), and a clinical specialist (RW). The workshops consisted of carefully-curated creative activities, specific to the project's aims, that combined visual communication with verbal communication to help participants explore, reflect and consider both their own and others' experiences and ideas.

The workshops followed the User Centred Healthcare Design approach (Dearden et al, 2010), based on Design Councils' Double Diamond process (Design Council, 2021) (Figure 1). Creative group activities were constructed to promote alternating divergent and convergent thinking. This process allowed topics to be explored in depth before the narrowing and prioritising of key concepts, challenges and goals.

The first workshop focused on the participants' experiences; the lived experience of back pain from the service user and the experience of service provision from the HCP's perspectives. As a warmup activity, participants were asked to speak to someone in the group they had not met before, find out about them and produce a sketch drawing of that person. They then used this picture as a prompt to introduce the person to the wider group.

Figure 1: The Design Council double diamond created in 2004



© Design Council 2019

Following this, smaller groups worked together to create visual representations of their experiences of back pain, such as how back pain impacted on their daily life or what HCPs must consider and cover in a consultation. They were encouraged to use a variety of media (such as drawing, sticking images from magazines, words and shapes) to create a collage to illustrate relationships between different aspects and perspectives of back pain. These were brought back to the wider group for presentation and discussion. The creations were then displayed together on the workshop wall as a summary of the groups' shared knowledge.

Experiences of receiving and giving information about back pain were then explored. Participants worked in smaller groups to complete a visually engaging worksheet about where people get information about back pain from, what is useful, what is not, and what they wished they had learned earlier in their journey. This was followed by presentation to the larger group for discussion about the relationships between the ideas expressed. In the third stage of the workshop stakeholders worked in pairs to co-create personas. Personas are archetypal characters designed to widen the perspective to a more inclusive viewpoint and represent voices who are not present in the room (Pruitt and Grudin, 2003). Personas have the added benefit of allowing participants to externalise and anonymise their own personal experience. In this instance they were used to generate further patient perspectives. These allowed participants to reflect on how context influenced their own experiences of receiving and providing back pain information, and also what should be considered to ensure greater inclusivity. Once generated, the personas were introduced to the wider group for discussions about what advice they would give them, where they would direct them for information, and what their physiotherapists should know about them before meeting them. The workshop finished with the group summarising what they had learned.

The second workshop focused on taking the themes from Workshop One and using these as a springboard to generate ideas and create visual representations of these ideas. The session started with a warmup exercise to encourage divergent thinking. Participants were asked to think of as many uses as they could for an object, with prompts to help push people to think of less obvious and more creative ideas. After this smaller groups were invited to create mood boards. Mood boards can take many forms; in this instance they were a collection of curated images, words and drawings that allowed participants to express how they might want a resource to look or make them feel. These were then shared with the wider group and displayed together on the workshop walls. To support idea development and to keep participants in a generative space of 'anything is possible', groups were then given a cardboard cube. This was described as a 'magic box' that could work in multiple ways: that people could put things in and take things out of, that could be passed between people, and had multiple facets. The participants were asked to think about what they would want from their box (a physical representation of a final solution). Groups then attached post-its to their cube, of word and picture ideas, that they would want to be included in a solution. These post-its were grouped into similar ideas for potential solution development. Participants were encouraged to remain unrestrained to keep them in a creative space. They were told that anything was possible without limits such as technology, time, or money, so as not to stifle creativity. The final concepts were not all practically possible within the scope of the project or current technological constraints, but contained connections of ideas that were important, and therefore were not dismissed at this stage so they could be considered and adapted within the design brief. The full group then voted on what solution concepts they felt should be prioritised for further development.

Workshops were followed by a series of prototype development meetings. At these meetings ideas were further developed through testing and discussion of prototype solutions. To remain in the creative co-design space, creative prototyping methods such as role play were used in these sessions. The specific agendas, timing, and attendees for each meeting were determined by the outputs of preceding meetings and the conjoined iterative processes of understanding the problem and finding the solution. Not all workshop participants attended all of these meetings, but everyone was kept regularly updated on progress through email newsletters. Additional meetings were also held with service manager stakeholders.

Data collection and analysis

Data was collected from workshops and meetings in the form of participants' completed worksheets and other creative outputs, flipchart summaries, photographs of participants taking part in activities, and project team field notes. This data was analysed iteratively by the project team throughout the process after each workshop or meeting. Themes and key concepts were constructed by the project team from the data and used to produce guidance, questions and visual representations of prototypes for the next stage of the process. These were then presented back to participants at the next workshop or prototype development meeting for verification. All outputs and data were displayed on meeting room walls to ensure transparency. Additional written and verbal feedback from stakeholders was also collected to assist in the evaluation of the project.

Results

Workshop One

Examples of visual output from Workshop One are presented in Figure 2.
The key themes constructed from Workshop One were:

1. Consistent and effective communication is very important to all stakeholders.
2. Back pain can be difficult to explain and difficult to understand for all stakeholders.
3. Peer support frequently makes a big difference to the recovery process.
4. Early access to evidence-based practical information helps people to do the right thing.

Workshop Two

Examples of visual output from Workshop Two are presented in Figure 3.

Figure 2: Examples of visual outputs from Workshop One

Figure 3: Examples of visual outputs from Workshop Two

The ideas chosen for further prototype development were:

1. face to face peer support
2. one stop online information store
3. visual back pain communication tool
4. pre-assessment questionnaire

Prototype development

Experiential knowledge and ideas from the workshops, and research knowledge from scientific literature about back pain and effective belief and behaviour change, were synthesised to generate broad guidelines for resource development. It was agreed that resources would need to:

1. work together throughout the healthcare journey;
2. provide a consistent and believable explanation of back pain that reflects currents scientific evidence and helps patients make sense of their own back pain problem;
3. aid physiotherapists in the promotion of thinking and behaviours that improve health outcomes for people with back pain;
4. guide patients in the creation of a personal action plan of self-management;
5. use visual communication, peer discussion and activity to encourage open thinking and active learning;
6. create a learning journey that encourages knowledge appropriation and presents practical opportunities for putting new knowledge into action;
7. promote peer support and clinician education;
8. demonstrate they are something service users and clinicians want;
9. be implementable within the current health service and capable of demonstrating value;
10. be flexible enough to take into account individual's unique circumstances;
11. be adaptable to multiple contexts (one to one consultation, group interventions and online).

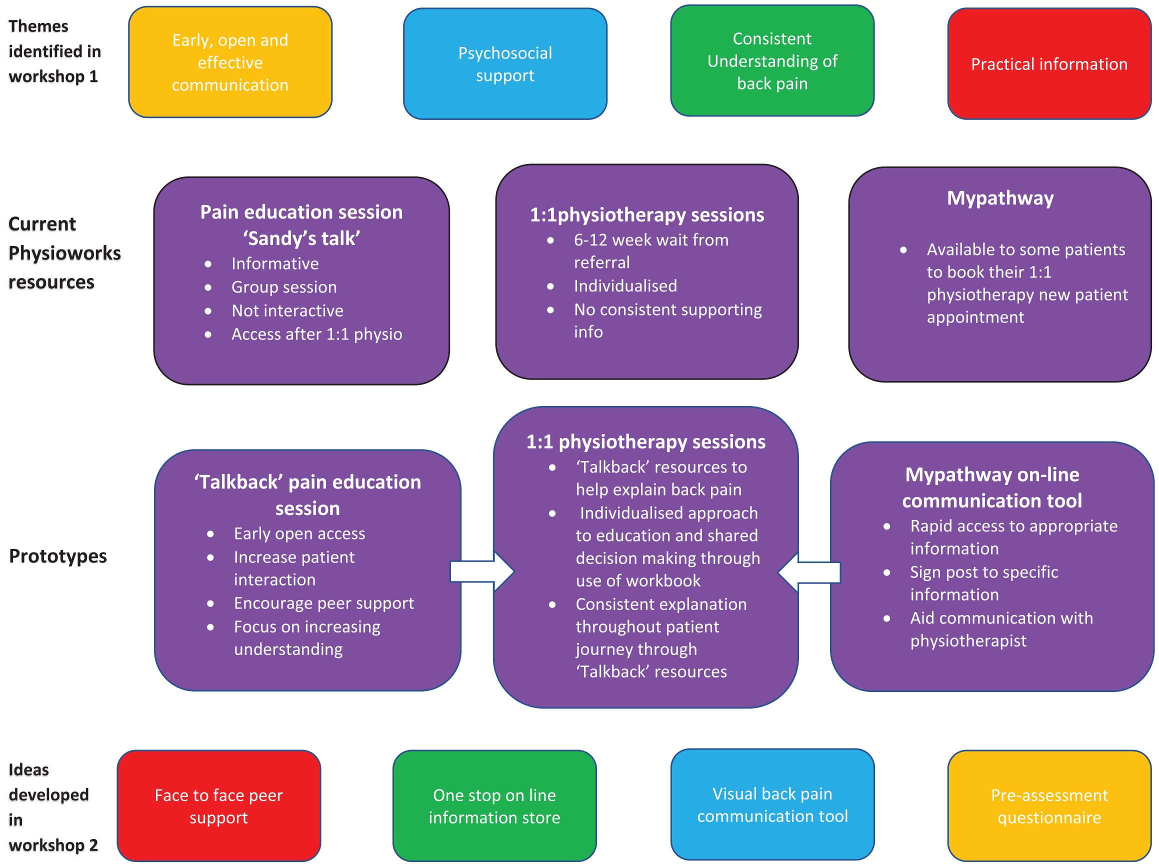
The project team and relevant stakeholders then completed a mapping exercise that linked the underlying themes and ideas to existing service structures that could be adapted to achieve the project aims. Figure 4 gives a visual representation of the mapping exercise that linked workshop outputs to the existing service.

In a series of further smaller group workshops, solutions were iteratively developed using visual representations (Figure 5) of prototypes as devices to talk through and act out how things would work in the real world.

Initial testing and evaluation

A small-scale evaluation of the new resources was carried out. A trial of the proposed new education and peer support session was attended by a selection of workshop participants and Physioworks patients and staff. Within the session, attendees took part in group learning activities, used the workbook, and viewed examples of resources

Figure 4: A visual representation of service mapping exercise



in the form of leaflets. Feedback via a short questionnaire, that included likert scale and open text responses, was gathered. This included participants' thoughts and comments about the acceptability, format and quality of the presentation, as well as understandability of the information in the workbook. Questions also explored participants' experience of the practical use of the information, both about individual sections and overall content. The attendee feedback was generally positive and is presented in Figure 7.

Talkback educational resources

The final output of the project was named 'Talkback' and is a package of interacting resources that form a complex intervention that patients and physiotherapists engage with throughout the healthcare journey. Resources for patients include leaflets, online information, an interactive education session, and a workbook that includes action planning and goal setting. Resources for physiotherapists include guidance on using Talkback and training on how to improve back pain communication. Together these resources generate a believable, logically consistent explanation of back pain that makes sense and has utility. The resources use active learning strategies and easy to understand explanations, and provide opportunities for people to relate the information to their own circumstances and create a personal action plan. They will be available to use in physiotherapy sessions, online and in a new education and peer support session. An example leaflet resource is shown in Figure 6.

Talkback was presented at a launch event at the participating NHS hospital trust. This event was attended by NHS managers, HCPs, representatives from a national arthritis charity, project participants and members of the public. The event consisted of a number of displays hosted by staff and public project participants who were available to talk through the design and development process and discuss the value of their involvement.

Sustained engagement

Seven out of eight of the public participants returned for the second workshop and continued with the project until the end. Written and verbal feedback from stakeholders about their experience was positive:

> 'It was an extremely enjoyable and enlightening experience, meeting people who had something in common; like me, they suffered with lower back pain. What was most enjoyable is that we were able to interact with clinicians and discuss the many pros and cons the current system has and could, working together, improve the overall experience… I would certainly recommend getting involved, if you don't then you don't know what you have to give or to learn'. (Patient stakeholder)

As well as taking an active role in promoting Talkback at the launch event, clinician stakeholders instigated and ran a training session for the local physiotherapy service, introducing the resources and associated underlying theory. They continue to have an active role in the delivery and development of Talkback. For example, during COVID-19 they created a series of videos and an online session that could act as

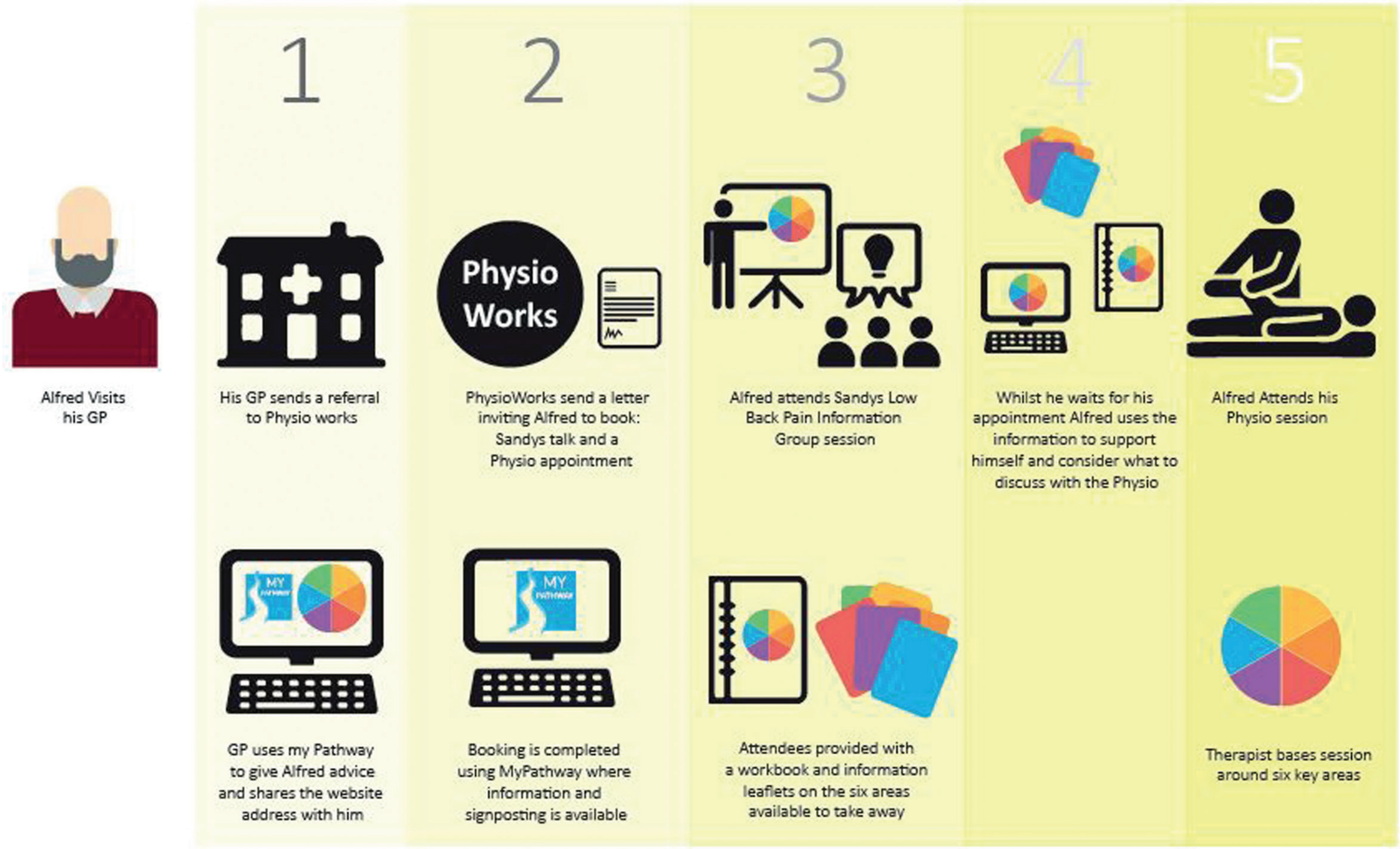


Figure 5: A prototype visual representation of Talkback

Figure 6: A Talkback leaflet

Talkback

Sheffield Teaching Hospitals
NHS Foundation Trust

How can back pain
affect you?

Pain is an unpleasant feeling that affects us emotionally and limits our movement.

When we get pain, the body responds by tightening muscles, increasing the sensitivity of the pain system, changing the way we move and making it difficult to focus on anything else.

Although helpful in the short term, if these responses continue they can get in the way of recovery.

Back pain makes it difficult to do the things that are important to us including work, sport, hobbies and socialising. We might even begin avoiding these things for fear of causing pain or doing more damage.

It can affect our relationships with partners, families, friends and work colleagues. Sleep is often disturbed.

The effects of pain can lead to stress, low mood and anxiety.

Recognising how pain is affecting us and communicating this to others is important. Understanding how the effects of pain are contributing to the problem can help your back pain recovery plan

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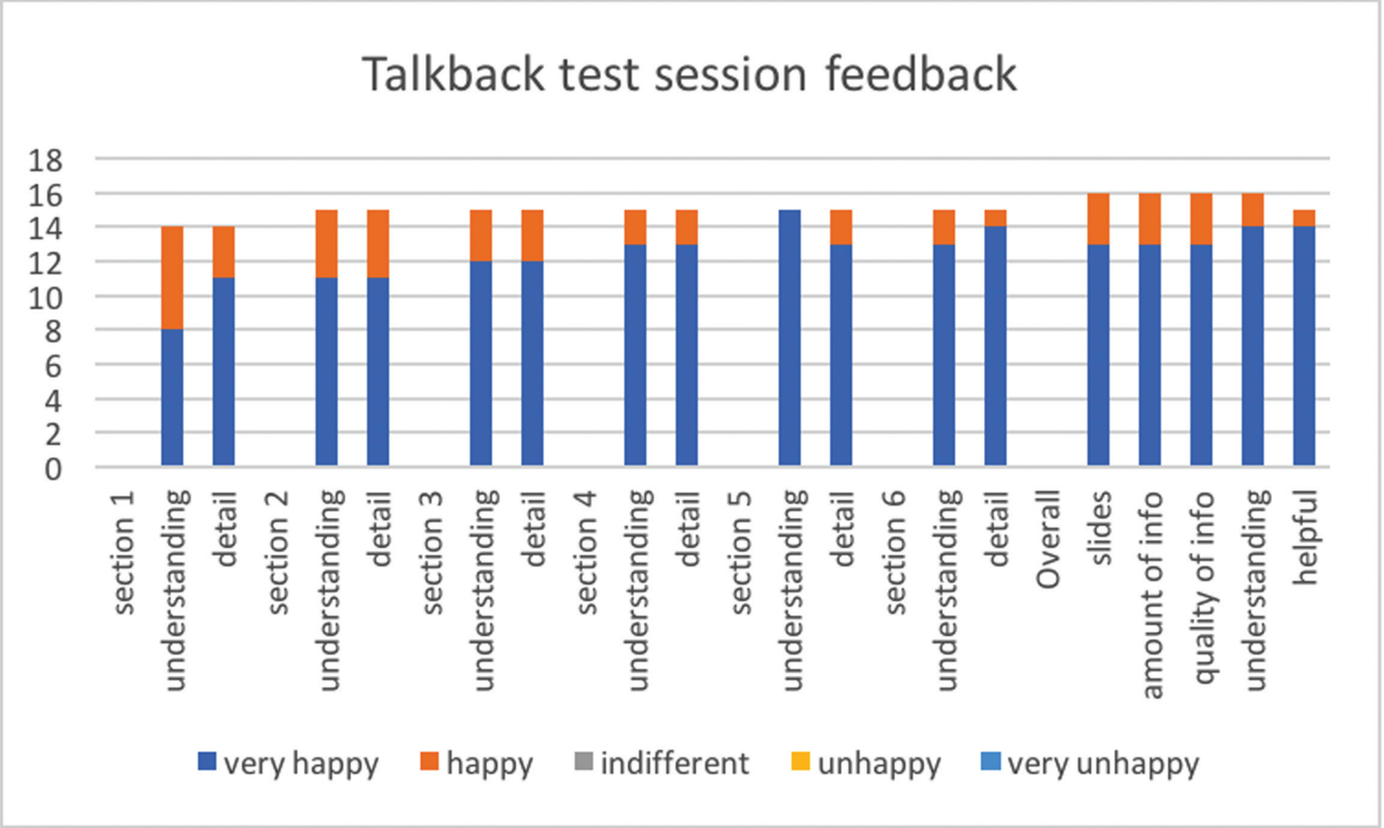
PD10190-PIL4359

Date of issue: April 2019. Review Date April 2022

Figure 7: Interactive education session feedback



temporary replacements for the face to face group. These have now been incorporated into the Talkback package.

Implementation

The imperative goal for this project was real changes in practice that improved patient care. To help ensure this happened regular meetings with service leaders were included in the planning, execution and follow-up of the project. The co-created visual outputs from project workshops were used within these meetings to discuss and explore our evolving understanding of this complex problem and how the prototype solutions developed with stakeholders might work. In this way managers gained confidence in the value of the project and were able to contribute their knowledge of the wider perspective to the creative process. "It took me on a journey, in a way that when we do other pieces of research it can feel disconnected" (Service Manager).

This close alignment meant that at the end of the project Talkback was ready to become a wanted and needed part of the service. In the two years since the end of the project over 3000 patients have received the online resources, 400 have attended interactive education and peer support sessions, and 50 clinicians have received additional training in effective communication. The planned next stage of Talkback development is to complete a realist evaluation that identifies the outcomes Talkback produces, the mechanisms through which these are generated, for whom and under what circumstances. These findings will be used to further refine Talkback and co-design prototype implementation resources for other potential users.

Discussion

The results from this project demonstrate how the creative co-design approach successfully developed a back-pain education system that is contextually-specific, evidence-based, and ready for implementation. The creative activities encouraged a collaborative problem-solving, non-hierarchical approach which allowed heterogeneous knowledge to be successfully generated, shared and synthesised into a practical, tangible and usable product (Langley et al, 2018). We suggest that the creative co-design approach used in this project helped to overcome some of the challenges often seen in co-production, such as power, uncertainty, innovation and implementation.

Creativity, trust and power

Developing participant trust and openness is considered an important factor for successful co-production (Knowles et al, 2021). Preexisting power dynamics and assumptions about who knows best, what works best, and what others think and feel, can be a barrier to constructive communication (Farr et al, 2021). Within this project we believe the blending of visual and verbal communication, through a series of carefully curated creative activities, allowed dialogue to occur on a more level playing field. Participants used the visual outputs developed together as something to talk 'to' and 'about'. This approach externalises thoughts, feelings and experiences in a way that makes them accessible and provides a safe way to share (Langley et al, 2018). It was through the trusting and open environment this created that we heard people's stories and began to understand the importance of peer support in people's recovery journey and clinicians' uncertainties about their ability to explain the complexities of back pain.

Creativity and communication

The visual objects created within the workshops were important tools for communication and thinking throughout the project. Stakeholders used the ambiguity of meaning in their created objects to explore, discuss and explain how things interconnect and how different perspectives could exist in the context of the complex whole. This is in keeping with studies in other settings which have shown that discussing the multiple meanings of creative objects can increase empathy, awareness and sensitivity (Reilly et al, 2005).

Having your idea turned into a physical, tangible thing demonstrates that what you say has been listened to and acted upon (Cooke et al, 2017). This was embodied in the displaying of participant outputs around the room during the session, reinforcing that everyone's input was equal, included and visible. This was very empowering for the participants and gave them the confidence to express influential ideas throughout the project. Conflict resolution is considered a significant challenge in co-production (Williams et al, 2020), but with these methods the created objects allowed ideas to be externalised, providing a focus for negotiation and conflict resolution. Literally creating a bigger picture encouraged an additive rather than an oppositional approach to expression and allowed ideas to be connected in non-linear and non-hierarchical ways.

Creativity as an iterative process

Iteratively creating and testing prototypes is a key activity within these co-design methods, and is considered a valuable tool in intervention development as they help focus decision making about content, format and delivery (O'Cathain et al, 2019). In this project the initial ideas about integration, adaptability, and connection came about through displaying visual outputs of the workshops together. This allowed participants to see the process as an interacting whole rather than a series of separate events and relationships. These ideas were then explored and developed alongside evolving prototypes to create solutions that were sensitive and agile enough to work in a real-world environment.

Creativity, innovation and implementation

The methods used in this project deliberately created circumstances conducive to producing innovative real-world solutions. Work cultures that encourage behaviours such as questioning common wisdom, associating ideas from different pools of knowledge, exploring in detail what is happening, connecting people with different perspectives, and experimenting, are strongly associated with innovation (Dyer et al, 2011). Throughout this project the creative activities used facilitated these behaviours and created a culture in which the participants took increasing ownership of a project they believed was going to make a genuine change in the care people receive.

Talkback, like most programmes, borrows heavily from what has gone before. However, how Talkback's resources work together and create a common language, through which a patient and their physiotherapist can make sense of the problems and find solutions together based on evidence and individual circumstances, is an important innovation. The factors which determine whether an innovation gets integrated into every practice are complicated, but success is more likely if a purposeful, agile and interactive approach is taken (Greenhalgh et al, 2004). For this project, a significant implementation facilitator was the increasing leadership the clinician participants took on as they saw their ideas transformed into tangible prototypes. Because of this empowerment they continued to develop Talkback during implementation, and were a vital connection between the project and the clinicians who would go on to use Talkback.

Conclusion

The final output of this creative co-design process was an innovative back-pain education system that was implemented and integrated into everyday practice. Creative co-design was crucial to the success of this project. Working together to produce visual representations of ideas encouraged creative and open thinking about the problem and a solution-focused approach to solving it. It was as a direct result of the experiential knowledge gained through the workshops that a whole system-based approach was chosen, and peer support and education for clinicians were identified as essential components. As the stakeholders saw their ideas converted into tangible prototypes, they took increasing ownership of what they saw as their project, and this greatly increased the quality of the final product. It is highly recommended that other project teams consider these methods when developing solutions to implement evidence-based guidelines in complex healthcare settings.

Funding

This work was supported by a National Institute of Health (NIHR), Collaborations for Leadership in Applied Health Research and Care Yorkshire and Humber (CLAHRCYH), Getting Research into Practice (GRiP) service improvement project award.

Research ethics statement

The authors of this paper have declared that research ethics approval was not required since the paper does not present or draw directly on findings from empirical research.

Contributor statement

RW wrote the first and subsequent drafts of the manuscript with contributions from CG and comments from RP. RW and CG conceptualised the project. RW, CG and RP led the project and conducted data analysis and interpretation.

Acknowledgements

Thank you to the stakeholders who contributed to the design and development of Talkback, and the Physioworks managers who supported the project.

Conflict of interest

The authors declare that there is no conflict of interest.

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