Experience-based co-design of an intervention to manage acute pain after surgery with surgical patients and healthcare providers

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Background: The rising prevalence of opioid misuse post-surgery has prompted a need for innovative interventions to optimise post-operative pain management. Early discharge from hospital following surgery has shifted pain management responsibilities to primary care, highlighting the importance of medicines review post-discharge for patients on strong opioids.

Objectives: This study aimed to co-design a digital intervention to support safe opioid tapering after surgery in primary care through a structured, behaviourally informed, and collaborative design process involving both patients and healthcare professionals.

Methods: A qualitative study using Experience-Based Co-Design (EBCD) methodology was conducted. Adults aged 18 years and older who had undergone surgery and been prescribed opioids were recruited alongside various healthcare professionals. Separate focus groups with each stakeholder group explored experiences and challenges in post-operative opioid use and tapering. Data were thematically analysed and mapped to the Theoretical Domains Framework (TDF) to identify behavioural determinants. These findings informed the selection of appropriate Behaviour Change Techniques (BCTs) for inclusion in the intervention. A trigger film based on patient narratives was created to facilitate discussion of shared experiences and stimulate discussion. Two co-design workshops and a hybrid celebration event were held, bringing together patients and clinicians to shape the purpose of the intervention collaboratively.

Results: Five key TDF domains were identified: environmental context and resources, skills, knowledge, social and professional role and identity and beliefs about consequences. Patients described receiving limited guidance on tapering opioid treatment, a lack of follow-up support and concerns about dependence. Healthcare professionals highlighted inconsistent practices, role ambiguity and communication barriers between primary and secondary care.

Participants reached a consensus on key design priorities for the intervention (eTAPER tool). These included: (1) clear, timely communication with patients (2) integration into existing workflows (3) structured tapering plans and (4) accountability shared across multidisciplinary teams.

Five evidence-based behaviour change techniques were embedded into the prototype: prompts and cues (e.g. automated follow-up alerts), practical social support (e.g. pharmacist involvement), shaping knowledge (e.g. educational materials), highlighting natural consequences (e.g. explaining risks of long-term use), and behavioural rehearsal (e.g. guided tapering conversations). These features were co-designed to facilitate safer opioid reduction and improve patient-clinician communication.

Conclusion: This study demonstrates how EBCD can translate lived experience into a usable and scalable digital health tool. Further research is needed to assess the clinical impact, usability and broader implementation potential of eTAPER in supporting opioid tapering after surgery.

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Background:

- The rising prevalence of opioid use post surgery has prompted a need for innovative interventions to optimise post-operative pain management[1]
- Early discharge from hospital has shifted pain management responsibilities to primary care, highlighting the need for interventions targeted post discharge[2,3].

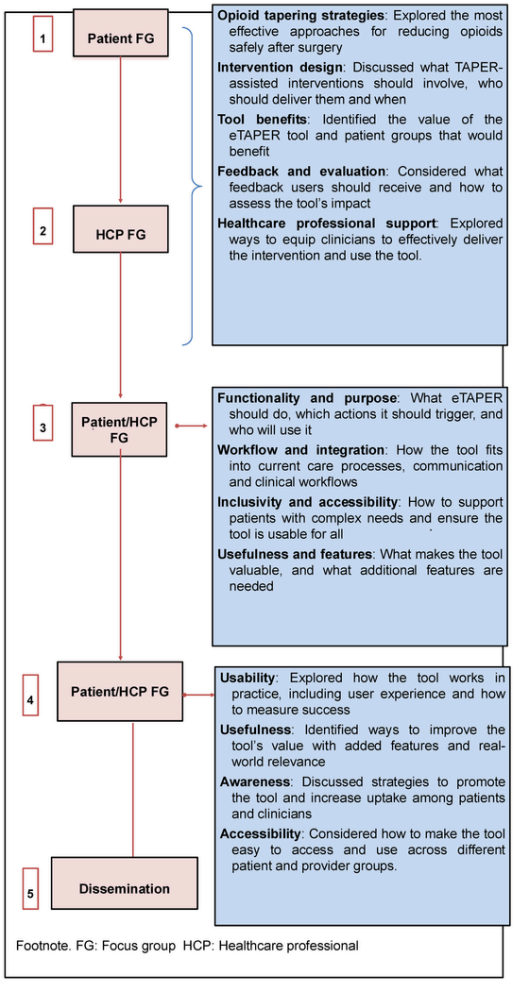
Aim:

- This study aimed to co-design a digital intervention (eTAPER) to support safe opioid tapering after surgery in primary care through a structured, behaviourally informed and collaborative design process involving both patients and healthcare professionals.

Methods:

- A qualitative study using the Experience Based Co-Design Methodology (EBCD) was conducted
- Adult patients ≥ 18 years who had undergone surgery and been prescribed opioids were recruited alongside healthcare professionals with an interest in pain management
- Separate focus groups with each stakeholder group explored experiences and challenges in post-operative opioid use and tapering (Figure 1)
- A trigger film based on patient narratives was created to facilitate discussion of shared experiences
- Two co-design workshops and a hybrid celebration event were held, bringing together patients and clinicians to shape the purpose of the intervention collaboratively (Figure 1)
- Data were thematically analysed and mapped to the Theoretical Domains Framework (TDF) to identify behavioural determinants. These findings informed the selection of appropriate behaviour change techniques (BCTs) for inclusion in the intervention.

Figure 1. The EBCD Process of developing the eTAPER tool



Footnote. FG: Focus group HCP: Healthcare professional

Results:

- Analysis revealed significant barriers faced by patients, including a lack of continuity in care, inadequate preoperative preparation and insufficient guidance on opioid tapering
- Healthcare professionals reported barriers associated with deficiencies in knowledge, skills and environmental resources, particularly workforce constraints and ineffective communication across care settings
- Notable enablers included pharmacist-led medication reviews and the adoption of digital technologies to enhance education and support tapering
- Following the two co-design sessions, five key TDF domains (Table 1) and five key BCTs were identified (Table 2) that should be incorporated within the tool.

Table 1. TDFs identified from the co-design sessions

Theoretical domain	Frequency (Co-design sessions)
Environmental context and resources	**164**
Skills	**61**
Knowledge	**38**
Social / professional role and identity	**48**
Belief about consequences	**17**
Intentions	13
Reinforcement	4
Social influences	12
Belief about consequences (patients)	8
Goals	5
Memory, attention and decision process	5
Behavioural regulation	1

Table 2. BCTs identified from the theoretical domains

BCT identified	Example of interventions
Prompts / cues	Providing timely reminders and notifications to encourage adherence to opioid tapering plans
Social support (practical)	Facilitating support from healthcare professionals to guide patients through the tapering process.
Shaping knowledge (category)	Enhancing patient and clinician understanding of opioid reduction strategies
Natural consequences (category)	Emphasising the potential benefits of opioid reduction to motivate behaviour change
Behavioural practice / rehearsal	Encouraging patients to engage in alternative pain management strategies

Conclusion:

- This novel study identifies behaviour techniques required to support effective post-operative pain management
- It reveals key barriers and enablers to effective pain management after surgery
- It demonstrates how EBCD can translate lived experience into a usable and scalable digital health tool
- Further research is needed to assess the clinical impact, usability and broader implementation potential of eTAPER in supporting opioid tapering after surgery.

References:

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