



## Patient experiences and desires for recovery after ankle fracture surgery

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### ABSTRACT

**Objective:** This study investigates patients' experiences of commencing weight-bearing after ankle fracture surgery and their recovery priorities to inform a new rehabilitation intervention.

**Methods:** Embedded within the Weight bearing in Ankle Fractures (WAX) trial, this qualitative study conducted semi-structured interviews with patients following ankle fracture surgery. The Behaviour Change Wheel (BCW) framework guided the interview questions to ensure comprehensive domain coverage. A purposive, maximum variation sampling strategy was used for participant selection. Data analysis employed a combined deductive and inductive approach.

**Results:** A total of 29 patients were interviewed, revealing five key themes: understanding the recovery journey, navigating the healthcare system, understanding personal physical capabilities, building confidence for weight-bearing, and resuming daily activities. Themes emphasised the variability in healthcare access, the impact of non-weight-bearing on independence, and the role of self-efficacy in recovery.

**Conclusions:** The study highlighted the diversity in patient experiences and recovery challenges post-ankle fracture surgery. Patients' recovery was influenced by access to consistent healthcare advice, self-efficacy, and the physical and psychological impact of non-weight-bearing. The findings suggest a need for tailored, patient-centred rehabilitation interventions that consider individual recovery trajectories and promote self-management. These insights provide a foundational understanding for developing interventions that more effectively address patient priorities and barriers to recovery.

### Introduction

Ankle fractures are a prevalent and increasingly significant healthcare concern, particularly among the young male population engaged in sports and older women prone to fragility fractures [1,2]. Despite the prevalence of ankle fractures, qualitative research in surgery and orthopaedic trauma remains limited. The past decade has seen some integration of qualitative studies within large, randomised control trials (RCTs), examining a spectrum of interventions [3–5]. However, these studies predominantly focus on participant experiences rather than the development of targeted interventions, limiting the translation of findings to improved patient care.

The Behaviour Change Wheel (BCW) framework is emerging as a pivotal tool in developing effective interventions, having been used to develop and evaluate a wide range of healthcare interventions [6–9]. The

BCW method uses the Capability, Opportunities, Motivation-behaviour (COM-B) model of behaviour to understand and define behavioural problems. This framework allows the linkage of determinants of behaviour (e.g. pain beliefs or resource availability) to behaviour change techniques, which can be used to develop an intervention [6]. This approach aligns with the growing trend of applying behaviour change theory in healthcare, as recommended by the Medical Research Council (MRC) for designing complex interventions [7,10].

This paper aims to explore the real-life experiences of patients recovering from ankle fracture surgery. By understanding the barriers and facilitators in their returning to everyday life, it seeks to identify patient priorities that will inform the development of future rehabilitation interventions.

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## Methods

### Study design

This qualitative study was embedded within the Weightbearing in Ankle Fractures (WAX) trial [11]. WAX was a multicentre randomised control trial which allocated patients to early or late weight-bearing after ankle fractures surgery. The protocol for the WAX trial and this embedded study within a trial has been published [12] and the study was registered on 2nd December 2019, Ref ISRCTN12883981 [13]. The study was given a favourable research ethics opinion by the Oxford A Research Ethics Committee on November 22, 2019 (reference 19/SC/0566). Patients were recruited between 5th February 2020 and 29th October 2021. Qualitative semi structured interviews with patients after ankle fracture surgery were conducted and reported in accordance with the Criteria for Reporting Qualitative Research (COREQ) checklist. [14]

### Researcher characteristics

The interviewer was the first author of this paper, a white male undertaking a DPhil in musculoskeletal sciences at the University of Oxford, having taken time out from a trauma and orthopaedic training programme. The interviewer undertook formal training in qualitative research methods, undertaking a 5-day course, including mock interview practice. There were no personal or professional relationships between the interviewer and the participants, but the participants knew he was a trauma and orthopaedic surgery registrar.

### Setting and sampling

All patients were recruited through the WAX trial [11]. During recruitment to the WAX trial, participants were asked to indicate if they were happy to be contacted for a qualitative interview. Patients who were eligible but declined randomisation into the WAX trial were invited to complete a consent to contact form for a qualitative interview: this was to ensure the sample was maximally representative of an ankle fracture population. Participants were invited to interview approximately eight weeks after surgery. By this time, it was anticipated that all patients would have returned to full weight-bearing and could discuss their experiences of doing so, yet it would be early enough to capture insights about their hospital treatment and experiences whilst non-weight-bearing. A purposive, maximum variation sampling strategy was used to ensure the spread of participant characteristics based on age, gender, occupation, Pain Self-Efficacy Questionnaire-2 (PSEQ-2) score and hospital site. As per recommendations for conducting theory based interviews, ten interviews was the pre-specified minimum, with interviews continued until thematic saturation was achieved [7,15]. Due to time and funding constraints, transcripts were not returned to participants for reflection or feedback.

### Data collection methods

An interview schedule was initially drafted with a multidisciplinary panel of clinicians and researchers. Thereafter the schedule was drafted with two Patient and Public Involvement (PPI) representatives. Questions then were mapped to the Theoretical Domains Framework (TDF) [16] (within the COM-B model) by the interviewer and reviewed by an academic health psychologist. Mapping interview questions to the COM-B model and TDF helped ensure broad domain coverage and facilitated later coding and pairing of barriers and facilitators to intervention functions using the BCW. No repeat interviews were conducted.

### Analysis

All interviews were audio-recorded using a password-protected

recorder, anonymised and transcribed verbatim by the interviewer. Qualitative data were managed using NVIVO [17]. The interviews were conducted by telephone. Data was analysed using a combined deductive and inductive approach based on the framework approach [18]. This approach has been used extensively in previous BCW research and facilitates the translation of interview responses to implementation options during subsequent intervention design. [7,19]

### Deductive coding

The interviewer reviewed each transcript and broke paragraphs down into individual utterances, defined as a phrase or chain of dialogue expressing a single concept. Utterances were deductively coded into the COM-B and TDF domains they most closely represented. The coding framework was reviewed and amended by an academic health psychologist to assist in robust coding according to the TDF. A third researcher independently coded a 10 % sample of transcripts to assess coding reliability. Disagreements were settled by discussion, and the coding framework was updated accordingly.

### Inductive coding

A thematic analysis was then undertaken using established methods described below [7,20]. Utterances which had been deductively coded into their respective COM-B and TDF domains were reviewed and grouped into inductively labelled themes or "belief statements". A belief statement is "a collection of responses with a similar underlying belief that suggests a problem and/or influence of the beliefs on the target implementation problem".<sup>7</sup> Belief statements were presented as barriers or facilitators to the target behaviour, returning to weight bearing and progressing with recovery after ankle fracture surgery. Statements were presented with frequencies related to the number of individual patients that gave an utterance coded into the respective belief statement. This was not intended to provide precise quantitative measurement for analysis because the interview guide was flexible, and not every patient was asked the same set of questions. Quotes were provided to illustrate themes with their corresponding participant (P) number. [21]

*Target themes and beliefs for future intervention development were selected based on three criteria [7,22]*

- 1) frequency of specific themes/beliefs,
- 2) presence of conflicting beliefs, and
- 3) evidence of strong beliefs that may affect the target behaviour

## Results

### Interview participants

506/562 (90.0 %) of recruited patients consented to be contacted for a qualitative interview. Forty-two were invited to interview, of which 25 agreed. Twenty-five patients that declined participation in the WAX trial consented to contact for a qualitative interview. Of these, ten were invited to interview, and four agreed. Overall, 29 patients were interviewed, achieving thematic saturation.

Occupation and PSEQ-2 scores were unavailable for the four patients not enrolled in the WAX trial. Interviews were conducted with patients from 13 different sites; a summary is provided in the appendix (Table 4). The mean age of participants was 49 years (SD 14), and 18/29 (59 %) were female. 15/25 (60 %) were employed, of which 3/15 (20 %) were in manual labour occupations. The mean PSEQ-2 score was 7.6 (SD 3.7) and 14/25 (56 %) had a PSEQ-2 score of eight or higher. Interviews took place a mean of 64 days post-surgery (SD 7) and lasted a mean of 32 min (SD 7). A summary of interview participant characteristics is provided in Table 1, the site is omitted to preserve anonymity.

**Table 1**  
Interview participant characteristics (patients).

Interview ID	WAX participant?	Age (years)	Gender	PSEQ-2 score	Occupation	Days post-surgery	Interview duration (mins)
1	Yes	30	Female	12	Sedentary	73	21
2	Yes	34	Female	12	Sedentary	65	30
3	Yes	34	Female	10	Sedentary	72	26
4	Yes	30	Female	4	Sedentary	65	24
5	Yes	60	Male	11	Not employed	64	35
6	Yes	68	Female	4	Not employed	60	34
7	Yes	50	Female	3	Sedentary	63	35
8	No	44	Female	NA	NA	66	30
9	No	20	Female	NA	NA	63	36
10	Yes	63	Female	10	Intermediate	61	36
11	Yes	37	Male	9	Not employed	66	46
12	Yes	41	Female	0	Intermediate	60	33
13	Yes	32	Male	8	Intermediate	63	32
14	Yes	63	Male	2	Not employed	62	36
15	Yes	41	Male	4	Sedentary	60	24
16	Yes	47	Female	6	Intermediate	59	25
17	Yes	67	Male	12	Not employed	62	32
18	Yes	68	Female	8	Not employed	68	39
19	No	59	Male	NA	NA	57	43
20	Yes	65	Female	12	Not employed	63	32
21	Yes	35	Male	12	Labour	69	24
22	Yes	69	Female	5	Not employed	56	39
23	Yes	56	Male	8	Sedentary	74	42
24	Yes	52	Female	6	Intermediate	69	22
25	Yes	43	Female	4	Not employed	63	25
26	Yes	68	Female	10	Not employed	64	40
27	Yes	42	Male	12	Labour	76	36
28	No	37	Male	NA	NA	85	26
29	Yes	57	Male	6	Labour	49	19

### Double coding

The Kappa value for the double coding was 0.54, showing moderate agreement between researchers for the coding of utterances into TDF domains [7,23].

Five themes were identified from the data:

- i) Understanding the road to recovery
- ii) Utilising and trusting the healthcare system,
- iii) Understanding their own physical capabilities,
- iv) Building confidence capabilities,
- v) Returning to activities of daily living

Each theme is sequentially discussed and supported by representative quotes. Deductive coding corresponding to COM-B and TDF domains are reported in the Appendix. Table 2 shows the target themes and beliefs prioritised for future intervention development and their corresponding TDF domains, using the selection criteria described in the methods section.

### Theme 1: understanding the road to recovery

Not knowing what to expect during recovery was a common theme

and most patients felt that their weight-bearing and rehabilitation progress was slower than they had expected. Where healthcare professionals (HCPs) had given advice about what to expect, this was usually welcomed and reassuring for patients.

A prominent uncertainty was knowing if symptoms that patients were experiencing were a normal part of recovery or a cause for concern. Patients' described uncertainty regarding visual changes such as a change in skin colour and expressed a desire to know that if they developed complications, there is someone who can be contacted. Many patients could draw on knowledge from previous injuries and family and friends. A common finding was that when patients were provided with information resources, they found them of limited benefit because they did not know if the resources were specific and suitable for their individual circumstances.

*The funny thing is, is it there are people who break their ankle who are in their eighties that might be quite frail and then my people that are young and they may have different needs. (P11)*

Some specific areas of uncertainty were not understanding what weight-bearing means. Another area of uncertainty was about knowing when to progress rehabilitation exercises, particularly when exercises were painful. Patients held a range of beliefs about the consequences of

**Table 2**  
Target TDF domains and themes/ beliefs for the future interventions.

TDF domain	Theme/ belief
1. Knowledge	Patient-specific knowledge; Not knowing what to expect/ set expectations early; Provide timeframes for recovery
2. Skills	Swelling; Wound concerns; Gradual build-up of Weight-bearing; Pain limiting/ not limiting progress; It's easier to WB if allowed to touch foot down for balance
4. Beliefs about capabilities	Conflicting advice between Healthcare Professionals; Anxiety limiting Weight-bearing, not pain; Self-efficacy driving progress; Healthcare Professional Trust; Value of seeing X-rays
9. Goals	Hobbies; Work; Seeing future exercises
11. Environment context and resources	Conflicting advice between Healthcare Professionals; Lack of information between appointments
13. Emotion	Fear of re-damaging ankle; Anxiety limiting Weight-Bearing; Fear of not knowing what is normal; Difficulty Weight-bearing after some time; The need for a safe environment

TDF: Theoretical Domains Framework

their behaviours. A common belief was that excess weight-bearing or activity could cause further damage to their ankle. Similarly, there was a feeling that non-weight bearing (NWB) allows the ankle to settle and heal. Conversely, some felt that early weight-bearing (2 weeks post-op) (EWB) improves healing and reduces stiffness:

*With weight-bearing and I think I've recovered quicker and I have. I think if I had been non-weight-bearing the movement will have been pretty much; it was obviously quite stiff to start off with, but I can't imagine what it would have been like. I mean, it would have taken a lot longer. (P27)*

#### Theme 2: utilising and trusting the healthcare system

There was variability in access to healthcare professionals, in particular physiotherapists. In some hospitals, there was consistent and ready access to physiotherapists, which patients highly valued 'it's very difficult to beat spending time with a trained professional, trained physio' (P19). In others, no physiotherapy was offered, and comments such as this were common: 'I'd heard that waiting lists can be reasonably long, so I just had it privately' (P28). For certain patients, they felt physiotherapy was not required, and they were happy to work on their recovery independently. In some cases, patients did not feel the need for advice on specific exercises but more for generic advice: 'I just thought. I just did. Just want to know the do's and don'ts' like am I making it worse?' (P27).

Some patients felt overwhelmed when they were given information in clinic.

*I don't think I actually asked enough questions because obviously, I was still in a bit of shock. So I probably just didn't think to ask enough questions myself. (P8)*

Others remarked that providing information on the hospital ward, pre or postoperatively was an excellent time to give written information because they didn't have much else to read at the time.

Most interview participants received a paper WAX exercise booklet with a Specific, Measurable, Achievable, Relevant and Time-bound (SMART) diary at the back. This feature was intended to help patients track their recovery and plan and attain their goals. While some patients initially engaged with the diary, few participants continued. However, patients that didn't receive a booklet felt a desire for additional information:

*'Even just a little leaflet would be good. A little leaflet. To say you're getting back on your feet, the does and don'ts' (P28).*

Despite a desire for additional support, many felt the need to cope 'without wanting to pester the NHS at this time' (P8). COVID-19 may have contributed to this feeling, but the idea of not wanting to overburden NHS resources remained a prevalent finding. Lack of information between appointments and this hampering recovery was a common theme:

Another common finding was that patients often felt rushed by surgeons during their clinic appointments, which was often just 'a 2-minute conversation' (P9):

Tied to this concept of the value of coming back for surgical follow-up appointments is the effort involved in attending appointments. Some patients had the sentiment 'it's a hassle for me to get to there. I still don't like going' (P21).

Virtual consultations were discussed as solutions to some of the above difficulties, for which there were mixed opinions.

*I would find it very difficult because obviously I can't drive and to go to an appointment and relying on other people for lifts and things. So this telephone appointment will be better for me, and it was talked about if needed, a video call, and that would be very useful if needed, so that works well. (P25)*

Others had less favourable views of telephone or virtual appointments, ranging from technical issues to feeling less confident in the HCPs ability to make a thorough assessment.

Despite the difficulties with surgical follow-up discussed in this

section, there was a sense that the trust in the surgeon that actually did the patient's operation remained the gold standard for providing confidence in HCP advice.

Some patients were already using mobile phone Applications (Apps) for various reasons, most commonly to track exercise activity and give reminders. There was also a desire for a bespoke recovery App:

*'I think again with the App that would be such a good idea...Because that's what we're doing now, even with all sorts of lessons online and I know if I'm unsure about doing anything, I YouTube it...Rather than reading through stuff, it is easier if they are showing you. (P7)*

Some patients also suggested that facilitating a peer-support network would be helpful:

*'I've kept in touch with a lady on the ward who had the exact same as me. We've kept in touch, sort of with our progress, which has helped tremendously. You know we text one another to see how we're getting on, and she's sort of in the same boat as me. (P24)'*

#### Theme 3: understanding their own physical capabilities

Patients expressed a range of physical concerns. The most common concerns were swelling around the ankle and ankle stiffness. Other common concerns were wound healing problems and tingling around the wound. Two patients reported delays in receiving medical attention for a wound infection and described the toll of the physical and psychological setbacks.

Patients were asked if they got pain at the precise moment their foot made contact with the ground and their body weight went through their ankle: a higher proportion of patients reported that they did not. Similarly, in most cases, pain was not a prominent feature that limited patients' rehabilitation progress.

The majority of patients had a preference to commence weight-bearing earlier. Participants typically had negative experiences with non-weight-bearing, and it even brought on 'a bout of depression' (P21) in some.

A loss of independence was common, and reliance on crutches also produced aches elsewhere in the body, such as the hands and back. Often patients lacked the strength to use crutches and had to use a wheelchair during their non-weight-bearing period. In many cases, they felt it was safer to walk without using crutches. Some patients reported an episode where their crutches would slip, and they would land heavily on their injured ankle.

Most found that once permitted to weight-bear, it was a relatively straightforward and intuitive process. A common theme, from advice patients received from HCPs and reflections from their own experience, was that building up weight-bearing gradually over time was the best way to approach it. Another theme was the feeling that the longer patients spent non-weight-bearing, the harder it was to commence walking normally.

#### Theme 4: building confidence

Fear and anxiety were common when commencing weight-bearing. The most common area of anxiety related to a fear of damaging the ankle, resulting in long-lasting disability or the need for further surgery. In many cases, it was not pain itself but the fear of pain that limited weightbearing in the early stages of recovery.

*It was quite frightening at first. When you've been in the cast for a few weeks and then you get transferred into the boot...it is quite frightening because it's been protected and you know your ankle has been fixed, but you feel worried. (P25)*

The most common finding was that patients felt that it was confidence that was the primary barrier to commencing weight-bearing. Several patients reported "Eureka" moments when they found themselves inadvertently weight-bearing, often in the shower, which then gave them the confidence to try in other situations.

*For progressing rehabilitation beyond the initial decision to commence weight-bearing, patients felt that it was often self-efficacy that drove their progress; 'mind over matter I think' (P6).*

However, many patients felt that they lacked the capability to make this judgement:

*'Because I didn't know whether I was causing more damage or not doing enough' (P27).*

There were various examples where the behaviour and comments from HCPs influenced the patient's beliefs in their capabilities. For example, pessimistic or off-the-cuff comments from HCPs about the severity of patients' injuries could often limit their expectations and their ability to progress their recovery. Conversely, when HCPs made optimistic or encouraging comments, this often bolstered patients' belief in themselves.

There also appeared to be a perceived benefit of being shown their X-rays. Patients seem to respond positively to seeing and understanding the metalwork that was holding their ankle bones in place, demystifying and quelling the anxiety of the unknown:

*'It was reassuring to have the X-ray...seeing that it was all in place gave me confidence, the confidence not to worry about it' (P12).*

#### *Theme 5: returning to activities of daily living*

The desire to return to sports and hobbies was the most common goal that patients would work towards. Returning to work and driving were also common shorter-term goals. Many patients integrated exercises into their daily routine as a means to reach their goals and some used technology to assist them:

Breaking goals into smaller steps and increasing gradually was also common:

*I'm trying my best to set little goals for myself like this week, I was trying to do more only using one crutch and then maybe doing a few steps without any crutches. (P25)*

The most common problems people faced were preparing and carrying food and drink, as well as showering. Difficulty with stairs and feeling unsteady on uneven ground were also common problems. Patients came up with various solutions and adaptations to make tasks easier and aid their recovery, from purchasing bed pans and wheelchairs to exercise bikes and stretching aids.

## **Discussion**

The patient interviews and analysis have generated a range of themes regarding patients' experience of ankle fracture recovery. The burden of non-weight-bearing periods has been highlighted with a loss of independence and reliance on family and social networks. The anxiety of the unknown, fear of re-injury and a lack of expectations added additional emotional suffering to an already traumatic time. Once patients were permitted to weight-bear, they often found this a straightforward process. Variability in access to healthcare professionals and consistent advice was a common source of frustration and a potential area to target for improvement.

Several themes corroborate findings from other qualitative studies examining the ankle fracture population. A loss of independence and difficulties with adhering to weight-bearing restrictions were common [24,25]. Physical symptoms, notably swelling, was a consistent complaint among patients in this study as well as in previous studies [24–27]. Difficulty with activities of daily living, in particular washing and showering, was also a persistent finding [24,27]. While the finding that patients struggle to perform ADLs is not new, the safety and convenience benefit afforded by being able to rest the injured foot down for balance is stark.

Previous studies shared findings that patients have diverse functional

goals and desire individualised rehabilitation advice and time-frames to return to work and hobbies [25,27]. For many patients, having sight of goals and the next steps in their rehabilitation (such as which exercises to progress to) was a powerful source of motivation. McKeown et al. also found that patients value seeing their own X-rays [25]. Jensen et al. [27]. shared the findings from this study that patients often had explicit trust in their operating surgeon: harnessing that relationship within available resources could be useful.

Anxiety around causing further damage to the ankle and an inability to judge what pain to "push through" during rehabilitation was a common finding. Wound management is a concern unique to operatively treated ankle fractures and remains a diagnostic challenge for both patients and HCPs. Knowing what spectrum of swelling, skin colour changes and pain is normal and when to seek medical attention is an emotive area for which patients require more support.

The anticipation of pain and the assumption that being told not weight-bear for at least two weeks means that weight-bearing must be a painful and potentially damaging process appears to be a far more potent barrier to weight-bearing than pain itself. Often "Eureka" moments and the realisation that weight-bearing is not painful are all patients need to rapidly progress their recovery and regain their independence. This ties to findings in upper limb research [28,29] that self-efficacy is the key driver of progress, and patients that took responsibility for their rehabilitation had better experiences and a swifter return to independence and life roles.

The benefit of support from family and friends cannot be overstated, and patients without this often had a very difficult and even depressing experience. Peer support is a potential alternative, with several patients stating the value of being able to share experiences and practical tips for recovery with patients in similar situations. Peer support has a broad evidence base for mental health conditions but is a relatively new concept in musculoskeletal health [30,31].

Wide variability in physiotherapy provision and lack of information between appointments have been highlighted as targets for meaningful improvement in NHS ankle fracture rehabilitation. Preferences for alternative methods of healthcare provision, including virtual consultations and patient-directed follow-up have been explored. While key tenants such as reducing conflicting advice between HCPs have been established, the findings from this study have reinforced the message from previous studies that one size is unlikely to fit all for ankle fracture rehabilitation [25,27].

#### *Strengths and limitations*

This study included interviews with double the number of operatively treated ankle fractures compared to any other individual study, most of which interviewed a balanced mix of operative and non-operatively treated patients [24–27,32]. The previous studies cited interviewed participants from one or two hospitals (or did not say), compared to 13 in this study. Additionally, the largest study of 36 patients (15 treated with ORIF) included only patients aged 60–80 years. [24]

Accordingly, this study provides new insights into recovery from ankle fractures, exploring in greater depth the behaviour of returning to weight-bearing and the provision of healthcare from a wide variety of settings. While this study achieved a comprehensive geographic and demographic sample of participants, some important population groups were not included. No non-English speaking participants were successfully recruited, and data on ethnicity were not collected or analysed due to demographic data being sourced from WAX trial CRFs. Due to the COVID-19 pandemic, all interviews were conducted remotely: this enabled a large number of participants from a wide range of hospitals. However, the lack of face-to-face (F2F) interaction may have limited some of the psychological insights gleaned in other studies [24,26]. Repeatedly in the reflexivity diary, it was noted that there was a limit to the depth of discussion around certain topics, such as belief and trust in

the treating HCPs and patients' opinions of the outcome measures used to assess recovery.

The positionality of the interviewer as a surgeon may have also posed a barrier to the discussion of these more sensitive topics that a researcher or patient representative, independent from a healthcare role may have been able to explore more candidly. However, the mean interview duration of 32 min in this study is similar to that reported in previous qualitative studies in this field [24,26,27]. The single-time frame for interviews (approximately two months post-surgery) limits insights into the longer-term experiences and challenges faced, in particular the return to manual labour occupations.

## Conclusions

Patients experienced recovery from ankle fractures in many different ways. Some harnessed their physical strength, social networks and self-efficacy to navigate decisions and challenges they faced, making their recovery relatively straightforward. Others dealt with uncertainty, loneliness and surgical complications that made recovery a nightmare. The needs and preferences of patients varied widely, and they desired information and services unique to their circumstances. This study has found themes and beliefs to target during intervention development. It has also begun to build a repertoire of barriers and facilitators to recovery that can be incorporated and addressed with future resources and interventions.

## CRedit authorship contribution statement

**Christopher P. Bretherton:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Tejas Kotwal:** Writing – original draft. **Harbinder Sandhu:** Writing – review & editing, Methodology, Conceptualization. **Janis Baird:** Writing – review & editing, Methodology, Conceptualization. **Xavier L. Griffin:** Writing – review & editing, Methodology, Conceptualization.

## Declaration of competing interest

HS is a Director of Health Psychology Services Ltd, providing Psychological and wellbeing services. CPB, TK, JB, XG declare no conflicts of interests.

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## Supplementary materials

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