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Partnering with patients to design a prehabilitation program for optimizing the patient experience through general surgery

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Research

Partnering with patients to design a prehabilitation program for optimizing the patient experience through general surgery

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Abstract
The objective of this study was to explore patients' experiences when preparing for and undergoing general surgery at a large tertiary hospital. Findings aimed to inform the development of a prehabilitation program to empower patients to optimize their recovery and enhance their experience of general surgery. A qualitative exploratory research approach was utilized. Patients (>18 years) attending for elective general surgery between May and July 2018 were invited to participate. Four focus groups (n=18) and an interview were conducted to reach saturation. Deductive content analysis was used to map responses against theoretical determinants of health behavior change. Patients described their overall experience of general surgery as positive but provided key insights about the surgical journey that impacted their capability, opportunity and motivation to optimally engage and address their recovery. Interaction and information from health professionals, understanding expectations, timely access to treatment and support of family members greatly enhanced their experience. Lack of personalized exercise and nutrition prescriptions, access to shared patient experiences of the surgical journey and not being asked about personal goals were key inhibitors. Patients also expressed feelings of frustration and anxiety regarding hospital procedures, including repetitive gathering of information and poor communication across departments. Patients' experiences of the surgical journey identified gaps that impacted their capability, opportunity and motivation to effectively prepare and rehabilitate, that could be addressed by a multimodal prehabilitation program. Intervention options at patient and policy level were identified for trial to enhance the patient experience of general surgery.

Keywords
Patient experience, partnership, patient voice, patient engagement, patient journey, health behavior change, recovery, quality of care

Introduction

Patients undergoing general surgery are at risk of physical and non-physical trauma including complications from the surgical procedure, general anaesthetic and their stay in hospital. This potential trauma or complications can relate to adverse events such as secondary infection, functional decline and hospital re-admission after discharge, reported as occurring in up to 7% of cases in tertiary hospital patients.[1] Thus preventing potential post-surgical complications and optimizing patient recovery with interventions designed to enhance the patient experience across the surgical continuum of care is warranted.[2, 3]

A range of preventative interventions, termed prehabilitation, aimed at optimizing patients' physical and psychological wellbeing before the stress of their surgery have emerged in the literature.[2, 4-6] Evidence from systematic reviews in patients undergoing abdominal, cancer and joint replacement surgeries[6-8] although not conclusive, suggests that prehabilitation programs mitigate the risk of developing post-operative complications, delivering pain reduction and improved function. However, these differences were small and thus may not be clinically meaningful. Prehabilitation consisting of exercise positively contributed to patient recovery and re-admission rates, particularly in high-risk patients.[2, 9] Despite this promise, prehabilitation programs are not yet standardized as features of regular surgical care, possibly because it is unclear exactly which types of prehabilitation interventions are effective and provide patients with a positive experience. However, a multimodal approach

comprising exercise and physical activity, nutritional optimization and psychological wellbeing are recommended components.[2, 5, 10] In determining what interventions to include in a multimodal prehabilitation program, partnering with the service consumer, the patient, is imperative as gaining the patient perspective enables tailoring of interventions to better meet their needs.[3, 11, 12] This can result in more effective uptake and adherence to interventions[11, 13] and better health outcomes are known to occur when patients are empowered to be active partners in their health care.[3, 14] It has also been reported that in relation to planned health care, understanding patients' expectations and whether they are positively met, may assist in improving their experience of health care.[3, 12] To our knowledge, there is limited evidence of partnering with patients to understand their expectations and co-design effective prehabilitation programs for optimising their recovery following general surgery.

Therefore, the objective of the study was to explore patients' experiences across the continuum of care when preparing for and undergoing general surgery at a large tertiary hospital through to discharge home. Findings from this study will inform the design and development of a prehabilitation program to empower patients' to optimise their recovery and enhance their experience of general surgery.

Methods

Ethics

This study was approved by the South Metropolitan Health Human Research Ethics Committees (RGS715). All patients provided written consent to participate in the study.

Design

A qualitative exploratory research approach using a combination of focus groups and a semi-structured interview was conducted with patients as part of an overall sequential mixed methods study.[15] It was intended that the (first) qualitative phase would inform the (second) quantitative phase of the research. Briefly, the quantitative phase will comprise of a randomized controlled trial piloting the delivery of a patient informed prehabilitation program on patient centred outcomes following general surgery. This paper focuses on the findings of the qualitative phase of the research.

Participants and Setting

Patients attending a large tertiary hospital in Western Australia for elective general surgery (Categorized as 1 – urgent surgery within 30 days, or 2 – semi-urgent surgery within 90 days) were invited to participate in the focus groups. Patients were eligible to participate if they were: over 18 years of age, able to converse in English, had attended a pre-operative surgical clinic awaiting surgery, currently a ward patient post-surgery or had been discharged home (community setting) following surgery within the past six weeks. One participant from the focus groups was invited for interview regarding their entire experience across the continuum of care, namely the journey through pre-operative clinic, general surgery and discharge home. This participant was selected based on their ability to offer a holistic perspective contributing to triangulation of the focus group findings.[15]

Data collection and procedure

Patients were either invited to participate in person or via telephone by members of the clinical research team (DE, AB-L); when booked for surgery, attending a pre-operative assessment clinic appointment, on the surgical ward post-operatively or at home following discharge. Patients were given a verbal explanation regarding the purpose and conduction of the study and were either provided, e-mailed or mailed a written patient information sheet prior to consenting. The focus groups were conducted in a private meeting room at the hospital and ran for approximately one hour each, acknowledging and following the recommendations for effective focus groups.[16] This venue was considered convenient for participants who attended as either in-patients or out-patients as it was close to the general surgical wards and outpatient clinic. The researchers (JFC, AMH, CB) were skilled in qualitative data collection approaches. The focus groups were facilitated by the principal researcher (JFC) and moderated by a second researcher (AMH). The researchers also documented elements of the discussion that were unable to be captured by the audio recording alone, such as body language and emotions. The facilitator commenced the focus group by obtaining written informed consent from each participant after discussing the study purpose and requirements. Subsequently participant introductions, an icebreaker activity and an explanation of the focus group procedure were completed.

Guiding questions for the focus groups and interview were constructed around items in the Consumer Quality Index (CQI) Inpatient Hospital Care[17, 18] and determinants of health behaviors.[19] The topic guide comprized of:

- Pre-operative information/education received by patients
- Patient goals
- Perceived information or skills necessary to facilitate recovery
- Motivations for recovery
- Helpful support or resources
- Improvements for the patient experience

Data Analysis

Digital recordings from the patient focus groups and the semi-structured interview were transcribed verbatim and all data de-identified. A provisional coding approach was implemented in the first cycle using a 'start list' of researcher-generated codes based on preparatory investigations and the constructed focus group topic guide.[20] Transcripts detailing patient responses were scrutinized by the first researcher (JFC) and second researcher (AMH) with any disagreement arbitrated by a third researcher (CB).[20] In the second cycle the two researchers (JFC, AMH) coded the data segments using an iterative reflective process to understand the health behaviors contributing to optimizing patient recovery following general surgery. Data segments were categorized based on the capability, opportunity, motivation - behavior (COM-B) model's determinants of health behavior change.[19] Applied to our study, the COM-B model postulates that understanding the health behaviors related to patients' capability, opportunity and motivation to actively engage in preparation and rehabilitation through surgery could assist the design of the prehabilitation program. Subsequently using the COM-B model allows the constructs of COM-B to be directly linked to behavior change techniques by use of an implementation framework (theoretical domains framework, TDS).[21-24] The TDS is an integrative framework of synthesized theories of behavior change that recognizes implementing evidence-based practice may be dependent on changing behavior at individual (patient) level and/or organizational (policy) level.[19,21-24] Therefore, health behaviors identified as needing to change were mapped to potential intervention options at patient and policy levels with suggested behavioral change techniques.[21, 24] Qualitative data was managed using QSR NViVO 12 for windows (NViVO qualitative data analysis software; QSR International Pty Ltd. V.12, 2018). Research rigor was demonstrated by adherence to the consolidated criteria for reporting qualitative research (COREQ) guidelines[25] as documented in Appendix.

Results

Overall, 34 invitations were issued. Of those, a total of 18 general surgery patients participated in four focus groups conducted between May and July 2018, demographic characteristics are described in Table 1. Reasons for declining were travel restrictions, other appointments and work commitments. Patients provided key insights based on their experience of the pre-operative, in-hospital and post-operative journey that impacted their capability (knowledge and awareness), opportunity and motivation to optimally address their recovery and enhance their experience of general surgery. They reflected that some of their experiences on this journey enhanced their recovery, while others were inhibitors or gaps pertaining to information or assistance they would like to have received (Figure 1).

Patients' capabilities to optimise their experience of general surgery

Patients described interactions with staff as key facilitators in their capability (knowledge and awareness) prior to their surgery. Patients interacted with many health professional staff prior to their surgery, specifically anaesthetists, surgeons, physicians, clinic nurses, pharmacists and physiotherapists. The type of information patients received pre-operatively varied, even allowing for different surgical procedures. At primary clinic appointments, all patients felt they were well informed regarding understanding their surgical procedure, anaesthesia and pain management that instilled feelings of empowerment. This enabled them to be prepared to work with their treating team to optimise their recovery. P7 *"I saw a lot of people and got a lot of answers…the surgeon was brilliant he drew diagrams to explain (the procedure)…I knew what I would wake up with in relation to monitoring, tubes in and out of my body, pain medication…I found that very helpful."* Patients described several resources provided by clinic nurses they felt were beneficial in assisting them and their family members in their ability to understand their disease, the range of treatment options and peri-operative and post-operative care. The resources offered were in either pamphlet format, hand written notes and / or links to relevant web-sites, P10 *"I had the cancer council pamphlet explaining my cancer and treatments…and you can go on the website and download it all…so when you want to tell your kids…it's good at giving you information and diagrams for your family and friends…great stuff…I really do appreciate receiving that."* Most patients recalled speaking to a physiotherapist prior to surgery where only post-operative treatment was discussed namely airway clearance and early functional mobility, P7 *"the physio was very good, it was actually pretty simple…deep breathing, coughing, splinting your belly if you're in pain and how to get out of bed to move around."* Four patients received ad hoc messages from doctors prior to surgery advising that it would be beneficial to *"get fit," "keep walking"* or *"be less sedentary."* Three patients were provided with health promotion advice regarding losing weight and smoking cessation that had a limited effect on health behaviors, "*They said that losing weight would make a difference for later* [post-operatively] *I wish I'd realized to do more,*" P13 *"I was told I'd have to stop smoking for six weeks before the operation…or he* [the surgeon] *won't do the operation, you can get an infection from being a smoker…but I don't know if I will keep it up."*

Patients also identified barriers in the volume, timing, type and way in which information was provided that affected their capability to optimise their recovery. The volume of new information was overwhelming and difficult to absorb for most patients in the pre-operative consults with health professional staff, P17 *"I can't remember, it's still a bit of a blur I think I went to about four different consults in the one day."*

Table 1. Participant characteristics

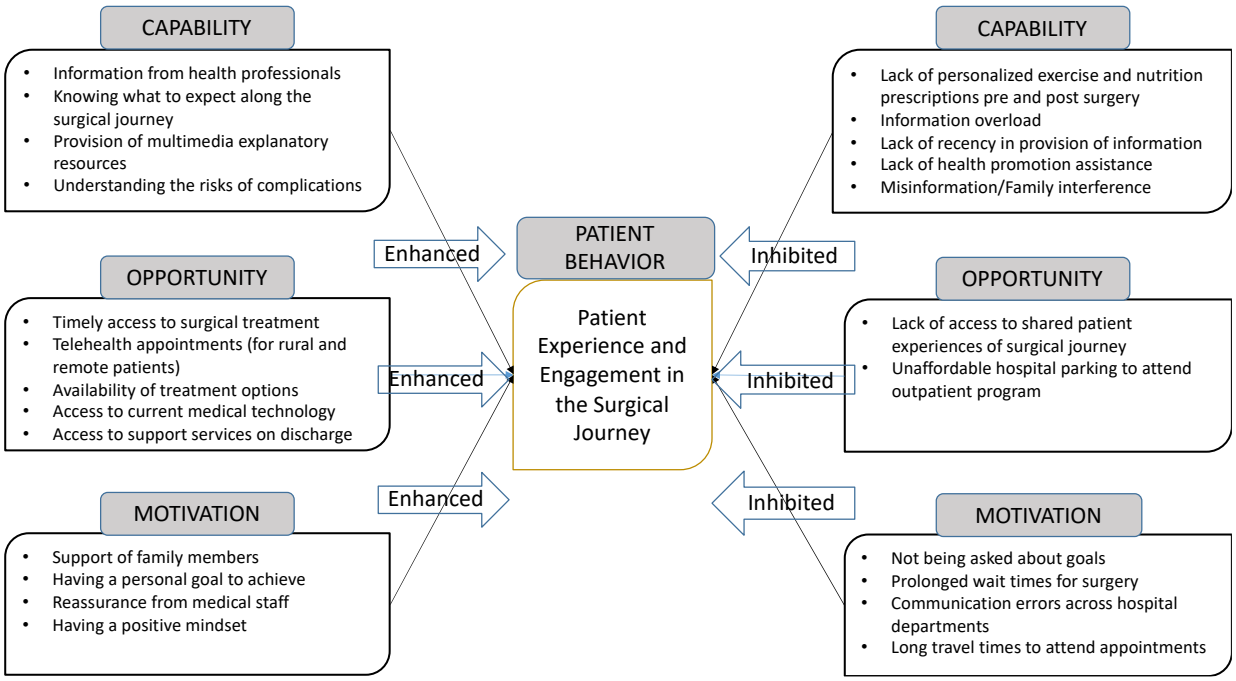
Characteristic	Number of participants n=18 (100%)
Gender	
Male	13 (72)
Female	5 (28)
Age	
40-49	3 (17)
50-59	3 (17)
60-69	3 (17)
70-79	8 (44)
80-89	1
Ethnicity	
Caucasian	17 (94)
Aboriginal	1
Work status	
Retired	8 (44)
Employed	9 (50)
Unemployed	1
Living situation	
Alone	4 (22)
With spouse or partner	14 (78)
Type of Surgery	
Colonic	8 (44)
Pancreatic/Hepatic	3 (17)
Gastric/Oesphageal	7 (39)
Reason for surgery	
Malignancy	12 (67)
Other	6 (33)
Surgical status/Touch points	
Pre-operative	3 (17)
Post-operative	15 (83)

Another stated, P5 *"I found my wife and I could hardly remember anything…so we used to take our daughter along and she'd take notes!"* Patients who were placed on a waiting list from four weeks to four months found it difficult to remember the information they were given at the primary clinic appointments and felt that they required reminders prior to admission for their surgery, P1 *"I've been on the waiting list four months…I wish they could have done a re-do of the information that I got back then, just to top me up a bit because I felt like I was going into the black tunnel again…I'd pretty much forgot everything I was told."* There was no consistent tailored prescription for nutrition or exercise for optimising recovery in the pre-surgical period, P7 *"the only piece in the puzzle missing for me that I really wanted to know more about was diet,"* P9 *"I can't remember all the facts, but probably what they didn't emphasise enough was to do some exercise before you start…"* P5 *"He said it's very important to get fit…he didn't say what sort of fitness or whatever, just get your lungs going."* Two patients also felt that some family members could be a source of confusion when it came to understanding treatment options. Family members were not always present at hospital appointments when information was provided to the patient and were thus left to their own devices, this sometimes resulted in them seeking information from potentially unreliable sources. For example, P14 said, *"they looked things up (on the internet) and they wanted me to take alternative potions and they offered to pay…I said look you have to just let me deal with what I'm dealing with…it's difficult because family are very important on our journey."* Another patient P15 stated that *"they're concerned for you…but they are not the people who are qualified to do that (educate)…it shouldn't be them trying to run the show."*

Patients' opportunities to optimise their experience of general surgery

Patients felt they benefitted from the timely opportunity to meet with health professional staff prior to their surgery to discuss treatment options and preparation, such as P11

Figure 1. Framing Patient Behaviour: Experiences that enhanced or inhibited engagement in the surgical journey.



"They give you all the scenarios, what's available and the time frames…and it's more patient oriented here." This was reinforced by P3 who said, *"All the information was made available, all the tests needed were here…they haven't missed a beat, scans everything,"* and P6 who commented *"How lucky am I…world class service…in a public hospital."*

Patients from rural settings (100-3000Kms) were impressed with the provision of telehealth consults with their doctor at a local hospital setting to save on travel time and cost, P10 *"They arranged for me to have a telehealth conference cos' we live rural… instead of coming all the way up here for a 15-minute consult."*

Patients also valued the offer of support or services on discharge, particularly those who lived alone, to check on progress and assist with activities whilst they were still recovering, with P17 explaining *"She gave me her card and said ring me anytime…I didn't… but it was such a comfort,"* and P12 stating *"They've reassured me of everything, if I can't do it* (manage activities when home)*…I can have Silverchain* (homecare service provider)*."*

A key opportunity patients felt was missing was the opportunity to share advice from other patients who had been through similar surgical experiences to assist their recovery. This was described by one patient, P7, who stated, *"The professionals are brilliant, but to get first-hand experience from the patient's perspective…this is what you'll experience and this is what I think I should have done…that might be really useful."* Another patient P12 added *"watching a video of a patient describing their surgical experience would be reassuring for your own recovery."* All patients in the groups concurred with these suggestions using gestures of frequent head nodding and statements of "*yes, agreed."*

Patients' motivations to optimise their experience of general surgery

Patients strongly concurred that their family highly motivated them to optimise their recovery. Families were described as providing the essential support that enabled patients to successfully complete the journey from pre-op to final recovery, with one patient P18 stating, *"my family was the glue that held it all together for me."* Love and wanting to 'be there' for family members inspired patients' to recover well to alleviate their stress was also very motivating, P5 *"the look (of worry) on your wife's face motivates you a lot!,"* P4 *"seeing your parents upset (shakes lowered head),"* or survival to attend a milestone event P12 *"my granddaughter wants to be a doctor and I want to be around to see if she makes it!"* Aiming for new or revized life goals, linked to lifestyle and work, after the surgical journey was also very motivating. Lifestyle goals included P11 *"taking a holiday"* and P12 *"getting back on the golf course with the girls."* One patient P2 commented that he was *"looking forward, believe it or not, to returning to work…I want to get back to painting and decorating (laughs)!...I retired twice but I enjoy some work"* and another stated P6 *"I'm a busy volunteer at my parish co-ordinating religious education for children and I don't want to let them down."* Finally, having a positive mind set and feeling re-assured by health professional staff regarding positive outcomes also drove motivation to recover, P12 *"this is where the mind comes in, you have to be*

positive to do well," P13 *"they* [staff] *were so helpful explaining… how confident they made me feel about getting through it all."*

One patient commented that the importance of adhering to advice to prevent complications should be strongly emphasized to patients, particularly the negative consequences. In their opinion, the experience of an adverse event post-surgery was something that could have been avoided, P1 *"I think they need to stipulate that you listen to your surgeon because I started driving the day after I left hospital, three days after the operation, and I went down the shop then went into work…and ended up with a major infection and a big hole in my belly! So, put it in big red capital letters!"* Another patient also commented that P16 *"I first told the doctor I didn't want to hear about it* [the cancer surgery] *buried my head in the sand…but that meant I did nothing to help myself prepare."*

Two patients felt there was a degree of oversight in being on a waiting list for several months; the first P8 stated, *"I went on the waiting list…just hanging around…it seemed to take for ever…you think nothing's ever going to get done,"* the second lamented P1 *"you feel forgotten, like you don't matter and that what's wrong with you isn't important."*

None of the patients were able to recall being asked specifically by any health professionals about their personal goals following surgery but some recounted taking the initiative in asking health professional staff about returning to lifestyle activities that were meaningful to them. One patient stated, P7 *"I don't recall that question, but I do recall discussing it, but I think it was because it was my determination to do so…I suppose I had set myself goals, but yeah I agree I don't think I was ever asked."* Another recounted, P6 *"My wife and I just tried to work it out, walking around the block then another street and another street until eventually we were getting to the shopping centre."*

Patients' reflections on improving their overall hospital experience

Patients expressed high levels of frustration with the necessity to repeat their own demographic information to different departments within the same hospital and health system, P9 *"It was exhausting giving the same information over and over again…if you go to five appointments that's 25 minutes doing repetitive stuff…don't you have it on your system?"* Poor communication between staff and different departments had also resulted in situations that caused anxiety, P16 *"I got moved to another ward and got a wound infection, my wife asked for the surgeon to see me but they didn't come until later the next day, I got worse and had to go back to theatre…If they'd come earlier I might have avoided this,"* P17 *"I was given an appointment date in clinic and then I got a letter in the post cancelling it… but when my daughter rang to check, they said I was still booked in!...it was really worrying."* Patients who were on diabetic diets were shocked at the apparent lack of awareness of suitable food options at meal times with high sugar items provided, one commented P9 "*On my breakfast table it was a chocolate milk and orange juice, maybe an apple juice and an 'up and go' or something similar and I said 'That's 45 grams of sugar and that's 15…this was nearly a 100 grams of sugar just for breakfast!'"*

Findings were subsequently mapped to the theoretical domains framework (TDF) using the guidelines for designing interventions at patient and policy levels (Table 2).[19, 24] This assisted to identify what interventions would be helpful to increase patients' capability, opportunity and motivation to optimise their recovery and experience of general surgery. A draft prehabilitation program using a multimodal approach is provided in Table 3.

Discussion

This study found that patients' experiences of general surgery in a large tertiary public hospital were mostly positive, as reported in other qualitative studies of surgical patients' experiences[26, 27] where patient expectations regarding the surgical outcome and return to what was meaningful to them were met.[28] However some gaps and inhibitors were identified that may impact patients' capability, opportunity, and motivation to optimise their preparation and recovery from general surgery.

Patients reflected their unmet need for personalized advice and proper prescription of exercises to help them optimise their recovery in both the pre-operative and post discharge periods. This is a prudent point for prehabilitation program design and is supported by findings in a recent randomized controlled trial of patients undergoing abdominal surgery.[9] The intervention group participated in personalized prehabilitation (high intensity endurance training and increased physical activity) in addition to usual care, results showed the number of patients with post-operative complications was reduced by 51% which authors attributed to increased aerobic capacity.[9] We also found that patients expressed uncertainty regarding how to resume tasks and activities post-discharge. Similarly, a large study of 1066 patients re-admitted to hospital following discharge reported 52% experienced difficulty in resuming self-care tasks despite understanding their discharge plan; furthermore, only 37% reported being asked about addressing barriers.[29] This highlights a need for better activity prescription and planning in the pre-discharge period. Patients also felt that tailored nutrition plans pre-surgery would have been beneficial in effectively preparing for surgery. Benefits have been demonstrated in a systematic review of the effects of nutritional prehabilitation alone and combined with exercise in patients undergoing colorectal surgery, with a significant reduction in length of hospital stay by two days.[30] Thus, exercise and nutritional prescription are valued and potentially beneficial components of prehabilitation.[2]

Our patients were challenged by 'information overload' after attending consecutive pre-operative clinic

Table 2. Intervention and implementation plan for a multimodal prehabilitation program

Stage 1: Understand the behaviour	Stage 2: Identify intervention options using TDF framework		Stage 3: Map relevant content and implementation options using TDF framework
	Patient level	Policy level	
Being on a waiting list for several weeks, patients forget information provided in early consults: Patients identified a need for recency of information	Education[a], Environmental restructuring[b]	Service Provision[h] Regulation[i]	Provide a structured outpatient prehabilitation program leading up to surgery Provide reminder prompts and cues with checklists or fridge magnets
Some pre-op appointments provided too much information at one time leaving patients overwhelmed: Patients identified they need information provided in 'manageable chunks' for assimilation	Enablement[c]	Service Provision[h]	Provide education topics to facilitate optimal recovery following general surgery across a series of prehabilitation program sessions
Smoking cessation and weight loss behavioural change were advised but not assisted: Patients requested stronger health promotion messages and assistance to achieve health goals	Education[a], Persuasion[d], Enablement[c]	Service Provision[h]	Provide education and assistance within prehabilitation program including access/links to health professional support for quitting smoking and weight management
Patients expressed a 'fear of the unknown' impacting confidence to optimise their recovery: Patients requested sharing experiences of patients who have been through similar surgical experiences	Modelling[e]	Service Provision[h]	Provide video vignettes of patients journey's through general surgery via web link or USB Consider a monitored Blog for patients to communicate and share experiences
Patients reported lack of or 'ad hoc' advice on exercise for optimal recovery: Patients identified a need for tailored exercise prescription	Education[a], Training[f]	Service Provision[h]	Attend an outpatient prehabilitation program Assess and agree a prescribed patient exercise goal for fitness and strength to promote recovery (frequency/intensity/duration)
Lack of or limited advice on nutrition for optimal recovery	Education[a], Enablement[c]	Service Provision[h]	Attend an outpatient prehabilitation program Assess and agree optimal nutrition to promote recovery and healing
Lack of knowledge on how to resume tasks and activities following discharge	Education[a], Enablement[c]	Service Provision[h]	Attend an outpatient prehabilitation program Provide education and prescription on resuming pre-morbid lifestyle on discharge (graded exposure to tasks and activity)
Fear of adverse events occurring on return home	Enablement[c]	Service Provision[h]	Provide social support (emotional) with follow up phone calls from relevant health professional staff (physio/nurses) post discharge
Cost of hospital parking to attend a prehabilitation program prohibitive for some	Enablement[c] Incentivisation[g]	Regulation[i]	Provide parking vouchers for attending outpatient prehabilitation program
Distance (50km+) to attend program at a single site may be prohibitive for adherence	Enablement[c]	Service Provision[h]	Offer prehabilitation program at alternative venues partnering with secondary hospitals or universities
Duplicity of demographic information from patients wasting time and creating frustration	Enablement[c]	Regulation[i], Service Provision[h]	Create a single centralised electronic medical record in health system
Administrative errors regarding appointments due to poor interdepartmental communication leading to patient anxiety	Enablement[c]	Regulation[i], Guidelines[j]	Introduce new practices to improve communication between departments or "one point of contact" procedure

Table notes: TDF = Theoretical Domains Framework
[a]Increasing knowledge or understanding
[b]Changing the physical or social context
[c]Increasing means/reducing barriers to increase capability or opportunity
[d]Using communication to induce positive or negative feelings or stimulate action
[e]Providing an example for people to aspire to
[f]Imparting skills
[g]Creating an expectation of reward
[h]Delivering a service
[i]Establishing rules or principles of behaviour or practice
[j]Creating documents that recommend or mandate practice. Includes all changes to service provision

Table 3. Draft prehabilitation program informed by patients

Session	**Education** (including checklist)	**Tailored Exercise Plan**
1	Goal setting	Assessments Orientation to the gym
2	Benefits of aerobic exercise (may include quitting smoking)	Supervised aerobic exercises
3	Benefits of strength and balance exercises	Supervised strength and balance exercises
4	Changing health behaviours	Personal exercise plan
5	Nutrition for wellbeing and recovery (may include weight management)	Personal exercise plan
6	Pain management / Anxiety management	Personal exercise plan
7	Dangers post discharge / Planning for resuming function (may include ADL and hobbies)	Personal exercise plan

undergoing orthopaedic surgery.[27] If designing a multimodal prehabilitation program, weekly sessions could be conducted and information delivered in manageable 'chunks.' This requirement is supported by information processing theory that explains we are only able to process and commit to memory approximately five to seven pieces of information at one time point.[31] The way health promotion messages were delivered was also important to patients with the need for a strong emphasis on the negative consequences of failing to adopt the necessary health behaviors associated with avoiding complications. This finding concurs with another study on patients' perception of risk related to adverse events that showed patients need to perceive the risk involved before they take the necessary action to avoid the threat.[32]

Patients identified a need for early connection with other patients' stories who had undergone a similar 'lived experience' to inform or reassure their expectations of the surgical journey. Utilising web-based patient narratives was one suggestion, a recent systematic review found use of patient narratives to be promising in improving patient knowledge and empowerment, with some beneficial outcomes such as modelling of health behaviors including participation in healthcare and physical activity.[33] Conversely, patients' personal accounts may contain misleading or biased information that may potentially manipulate health care decision making[34] validating the need for monitoring by health research professionals such as in the 'Database for individual Patient Experience.'[35]

Patients concurred that being on a waiting list, particularly as waiting time periods extended, resulted in difficulty recalling and engaging with preparatory information provided at pre-operative surgical consultations and a further lack of communication by the healthcare team contributed to increased anxiety and lowered levels of motivation in preparing for surgery. Similar frustrations were reported in a review of patient perspectives whilst waiting for a range of surgeries, where feelings of anxiety and stress were consistent themes.[36] However, this review also reported that for some patients the wait time was viewed as a 'second chance,' an opportunity to engage in activity and prepare for surgery and life beyond, which was different to our finding of feelings of lower motivation and disengagement with preparation. The preoperative period provides prime opportunity for intervention and patient-health professional interaction for improved clinical care. These findings support the provision of prehabilitation to assist psychological wellbeing using interactive education, exercise and health behaviour change techniques and strategies for anxiety and stress reduction.[2] How well patients regain both psychological and physical wellbeing are important markers of recovery after surgery, highlighting the importance of a multimodal approach.[2]

Our study also highlighted a gap in engaging a patient–centered approach with patients reporting not being asked specifically about their goals. Ascertaining what is meaningful to patients in the preoperative, perioperative and postoperative periods may be challenging but is fundamental to executing patient-centred care in practice[28] as engaging patients in their care has been associated with improved clinical outcomes and care experience.[37] Patient feedback enabled understanding of the health behaviours that required intervention at patient and policy level with suggestions for prehabilitation program content and implementation (Table 2). Patients want and need to be physically and psychologically prepared for their surgical journey. Adopting a multimodal approach that addresses exercise and physical activity, psychological wellbeing and nutritional optimisation when developing prehabilitation programs could be a way forward.[2]

Limitations

Patient responses were dependent on personal recall of their pre-operative clinic and hospital experiences over time, which may not necessarily have accurately reflected what was available or provided by the hospital service or staff. However, findings did represent patients' personal interpretations from different time points along the surgical journey and a consensus in response to discussion items strengthened the findings. Saturation was deemed to have been reached across the four focus groups with no new information emerging. The sample represented one

tertiary hospital and hence results may not be generalizable to other settings. However, our study design and subsequent findings may assist to inform other settings that seek to engage patients to inform the design of prehabilitation programs.

Conclusion

Patients confirmed the pre-surgical period as an opportunity to engage in preparing physically and psychologically for surgery and recovery. Patients' experiences of the surgical journey identified gaps that impacted their capability, opportunity, and motivation to effectively prepare and rehabilitate that could be addressed by a multimodal prehabilitation program. Intervention options at patient and policy level were identified for trial to enhance the patient experience of general surgery.

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Appendix. Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

No. Item	Guide questions/description	Response
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	JFC and AMH conducted the focus groups. JFC conducted the interview
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	PhD
3. Occupation	What was their occupation at the time of the study?	JFC Post-Doctoral Research Fellow, AMH Professor of Research
4. Gender	Was the researcher male or female?	Female
5. Experience and training	What experience or training did the researcher have?	Both researchers are trained academics with 10 years experience in conducting qualitative research
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	JFC and AMH were independent researchers and had no prior relationship with the hospital focus group participants
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	The researcher JFC verbally explained their role (physiotherapist with clinical and research expertise), affiliation with the University and purpose of the research prior to the commencement of the focus group
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	Participants were informed that the researchers conducting the focus groups (and interview) were interested in the patient experience and prevention of adverse events in hospital. Participants were also told the researchers were employed by the University and had no affiliation with the participating hospital
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Deductive content analysis using the capability-opportunity-motivation-behaviour (COM-B) model of health behavior change and theoretical domains framework (TDF) underpinned this study
Participant selection		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Purposive sampling was undertaken
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	Participants were approached in person (if still in hospital) or by telephone
12. Sample size	How many participants were in the study?	n=18
13. Non-participation	How many people refused to participate or dropped out? Reasons?	n=16 patients declined to participate as travel restrictions or work commitments were prohibitive

Appendix. Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist (cont'd.)

No. Item	Guide questions/description	Response
Setting		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	Data was collected in a private meeting room, away from the hospital thorough fair, near the outpatient department and surgical wards
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	Two spouses attended with participants but chose not to participate in the focus groups
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	Participant characteristics are presented in Table 1
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Guiding questions for the focus group and interview constructed around the Consumer Quality Index, Inpatient Hospital Care and determinants of health behavior change. These were reviewed and modified by other members of the research team (DE, AB-L, KO, DF and FW) with extensive experience of patient contact. This study was designed to inform a pilot RCT
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	N/A – This study primarily used focus groups
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	All focus groups and interview were audio recorded and transcribed verbatim
20. Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were taken by the researchers during all data collection
21. Duration	What was the duration of the inter views or focus group?	Each of the 4 focus groups ran for approximately 1 hour. The interview post discharge totalled 1 hour
22. Data saturation	Was data saturation discussed?	Yes, the focus groups were ceased following the fourth as no new findings had emerged
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	A summary of key messages from each focus group was offered at the close with time allowed for participants to comment for member checking. The individual interview transcript was provided to the participant for comment.
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	Two researchers coded the data (JFC, AMH) with arbitration by a third researcher (CB)
25. Description of the coding tree	Did authors provide a description of the coding tree?	Cycle 1 'start list' of researcher generated codes, Cycle 2 Categorization based on COM-B and TDF

Appendix. Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist (cont'd.)

No. Item	Guide questions/description	Response
26. Derivation of themes	Were themes identified in advance or derived from the data?	N/A - Deductive content analysis was utilized, data was coded and categorized based on the COM-B and TDF
27. Software	What software, if applicable, was used to manage the data?	Qualitative data was managed using NVivo version 12
28. Participant checking	Did participants provide feedback on the findings?	A report of findings was presented to the hospital for distribution to participants. Participants valued the opportunity to have their voices heard.
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Representative verbatim participant quotations are presented throughout the Results section
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Researchers have demonstrated consistency between data presented and findings through representations in written text, participant quotations and a concept diagram (Figure 1)
31. Clarity of major themes	Were major themes clearly presented in the findings?	Findings were mapped to the COM-B and TDS (see Figure 1 and Table 2)
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Diverse participant experiences were represented in the results