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How to improve patient recovery after complex endovascular aortic repair: the experiences of patients and healthcare professionals☆

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ABSTRACT

Objective: Complex endovascular aortic repair (EVAR) involves tertiary surgical care, with short in-hospital recovery. This study aimed to explore patients' and healthcare professionals' experiences of what can improve patient recovery after complex EVAR.

Methods: Three qualitative data collection stages building on each other were analysed with thematic analysis. Stages 1 and 2 separately explored patients' and healthcare professionals' experiences of what works well and what can be improved with current care. In stage 3, participants reviewed the relevance and feasibility of intervention suggestions.

Results: Three matching themes were identified in stages 1 and 2: *Adequate information; Patient involvement; Continuity and follow-up*. In stage 3: *Individual care plan, Team meetings,* and *Contact nurse* were all found relevant, while only *Information routines* was found both relevant and feasible.

Conclusion: What patients and healthcare professionals experienced could improve patients recovery after complex EVAR seem universal for complex surgical patients, and relevant interventions were identified. However, the feasibility of person-centred interventions seem affected by various contextual factors, like current routines and availability of staff.

Practice implications: Interventions that facilitate communication, both involving and supporting the patient, should be tested to strengthen patients' ability to self-care, and ensure access to care and support when needed.

1. Introduction

Postoperative recovery is a continuous process which affects patients differently emotionally, socially, as well as physically, and continues to affect their daily life after discharge [1]. In complex surgical care, with centralised, specialised surgical services provided in tertiary care hospitals with short in-hospital recovery, taking in patient perspectives is imperative to ensure care that empowers patients for their recovery at home [2].

Complex endovascular aortic aneurysm repair (EVAR) is an example of complex surgical care reflecting the common challenges in postoperative recovery among elderly patients. Thanks to the development of the minimaly invasive EVAR procedure in the last two decades, an increasing number of elderly patients with aortic aneurysms or dissections are being successfully treated, including aortic disease involving the aorta at the level of its side branches (aortic arch and thoracoabdominal aorta) [3,4]. Despite their minimally invasive nature, these procedures are associated with severe complications, e.g., kidney failure, stroke and paraplegia. Some of these risks can be mitigated by performing the procedure in consecutive stages, with shorter operations in each stage [5]. Even though they are in need of life-saving, complex surgery, the patients are often asymptomatic preoperatively, and when or if a aortic rupture would happen is uncertain. As with any preventive surgery, it is important to minimise the negative effects of the operation,

☆ 'I confirm all patient/personal identifiers have been removed or disguised so the persons described are not identifiable and cannot be identified through the details of the story.'

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and optimise postoperative recovery. Little is known about these patients' healthcare needs and how they can be met. An interview study has shown that some patients struggle to manage daily life for several years after complex EVAR, becoming overwhelmed with tiredness and symptoms like pain and neurological deficits [6]. Long-term negative effects on health and quality of life have been seen in some individuals [7,8].

Uncovering what matters to the patient, and achieving mutual understanding and co-operation is central in person-centred care (PCC) [9]. Compared with standard care, PCC has been associated with improved patient outcomes [10]. Person-centred care makes use of the patients' knowledge of their own health, without disregarding the healthcare professionals' (HCPs) knowledge about the condition or the pragmatic context [9]. The difficulty of developing and implementing a person-centred intervention in a complex healthcare context needs to be acknowledged and addressed through taking in both patients and HCPs' perspectives [11].

Patients undergoing complex EVAR are faced with life-saving surgery which comes with a risk of impaired recovery. How healthcare services can best meet these patients' care needs and prepare them for managing their recovery after discharge remains uncertain. Both patients and HCPs perspectives could aid identification of relevant and feasible person-centred interventions. This study aimed to explore patients' and healthcare professionals' experiences of what can improve patient recovery after complex EVAR.

2. Methods

2.1. Design

The study had a qualitative design, where data was built through three consecutive data collection stages (Fig. 1).

2.2. Participants

Convenience sampling was used to recruit patients who had undergone complex EVAR and HCPs involved in the care of this patient group at a university hospital and quaternary referral centre for advanced vascular surgery in central Sweden. Inclusion and exclusion criteria are shown in Table 1. For stage 3, the researchers strived for purposive samples of three patients and 4–6 HCPs from stages 1 and 2, selected based on individual characteristics to maximise variation in the data. The sample derivation for patients and HCPs can be seen in Fig. 2. Eligible patients were contacted by post, and HCPs via their professional e-mail, with a participant information sheet and a consent form. The patients were offered to do individual interviews by phone as they lived far away from the university hospital, and were unable or unwilling to participate in focus groups in person or through a video conference application.

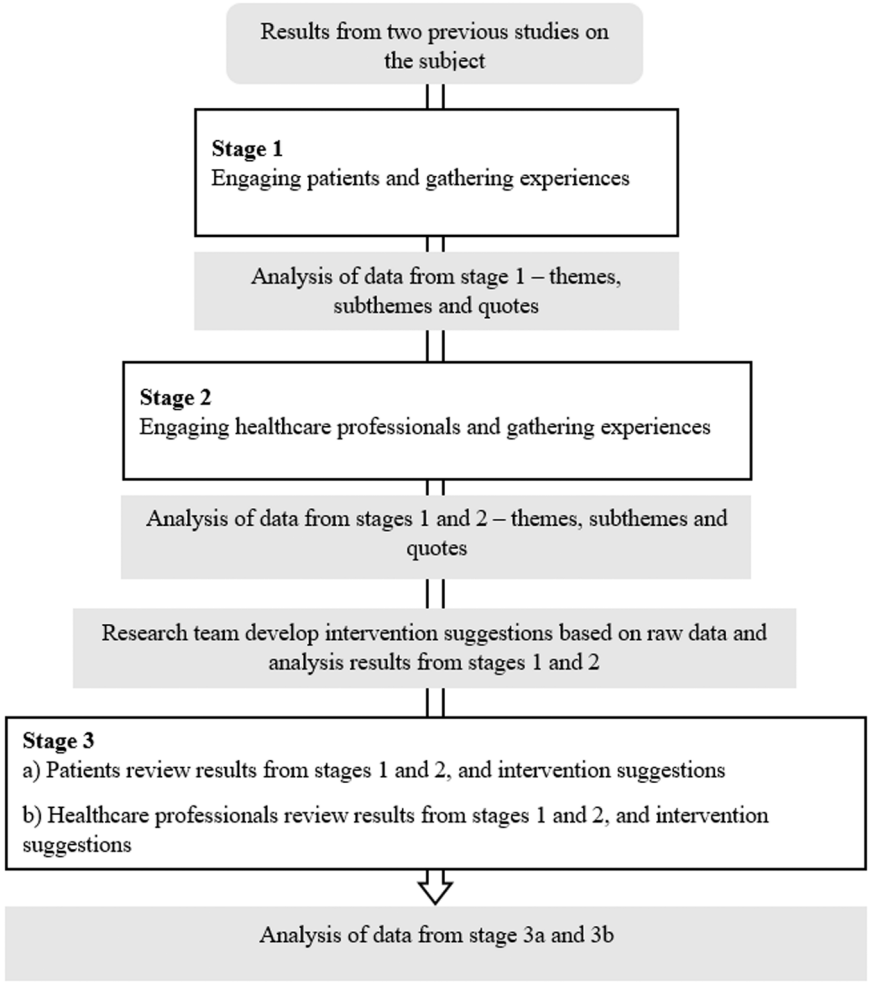

Fig. 1. Illustration of the study design, showing how data build on eachother through the three consecutive stages of data collection. The study was initially accelerated by presenting results from two previous studies on the subject to the participants in stages 1 and 2, and further accelerated by presenting themes, subthemes and quotes from the preceding stage(s). In the third stage, interventions suggested by research team based on findings from stages 1 and 2 were also presented for the participants to review. The two previous studies from which results were used were: Haakseth et al., 2019 and Haakseth et al., 2023.

Table 1
Inclusion and exclusion criteria for patients and healthcare professionals.

	Inclusion criteria	Exclusion criteria
Patients	• Having aortic aneurysms or dissections • Having undergone elective non-standard[a] EVAR[b] or thoracic EVAR[b] • > 18 years old	• On international referral, as they have a different follow-up system than Swedish residents (n = 11) • Severe unrelated conditions, which could bias the results (n = 2) • Acute surgery due to rupture or impending rupture of aorta (n = 1) • Poor Swedish comprehension (n = 1) • Involved in a recent study on the patient group, to avoid putting too much strain on patients (n = 33)
Healthcare professionals	• Nursing staff (registered nurses, specialist nurses in surgical care and assistant nurses) • Vascular surgeons (registrars, specialist physicians and vascular consultants) • Currently working and routinely in contact with this group of patients at the vascular surgery ward or out-patient clinic	• Not involved in the care of patients undergoing complex EVAR (n = 1) • Being ward manager or section manager (n = 2) • Being a member of the research team, or in any other way involved in the performance of the study (n = 2)

[a] Involving arch, visceral or iliac side branches and/or extensive coverage requiring cerebral fluid drainage and/or staged procedure and/or access problem requiring separate access surgery
[b] Endovascular aortic repair.

2.3. Data collection

The data collection methods used are shown in Fig. 3. The characteristics of the participants in each stage and the composition of the focus groups are shown in Table 2. Nursing staff and vascular surgeons were separated into different groups in stage 2 to capture the shared perspectives within the different staff groups.

Semistructured interview guides with open-ended questions were used (Appendix A). The participants were encouraged to reflect on the results presented to them and their own experiences. Results from two previous studies presented in stages 1 and 2 included summary statements and quotes from a qualitative study exploring patients' recovery after staged complex EVAR [6], and summary statements and one statistical figure from a quantitative study investigating health and quality of life among patients undergoing complex EVAR [8]. Intervention suggestions presented in stage 3 were based on what had been mentioned by the participants in stages 1 and 2, and developed through consensus discussion within the research team to, in so far as possible, meet the identified care needs (subthemes) in these stages.

Interview guides and presented material were piloted prior to data collection at each stage (Stage 1: three patients individually; Stage 2: focus group with three specialist nurses; Stage 3: two specialist nurses individually). This led to minor adjustments towards clarity.

Interviews in all stages were conducted by the first author (experience conducting semi-structured interviews), and audio recorded. The last author (long experience with qualitative methods) acted as assistant moderator in the focus group interviews, noted down additional information (e.g., body language and what happens in the room) and asked probing questions. Individual interviews lasted 30–50 min, and focus groups lasted approximately 60 min. The interviewer asked probing questions, and would otherwise only intervene if the participant(s) went off-topic. This study did not aim for saturation as it is discouraged in

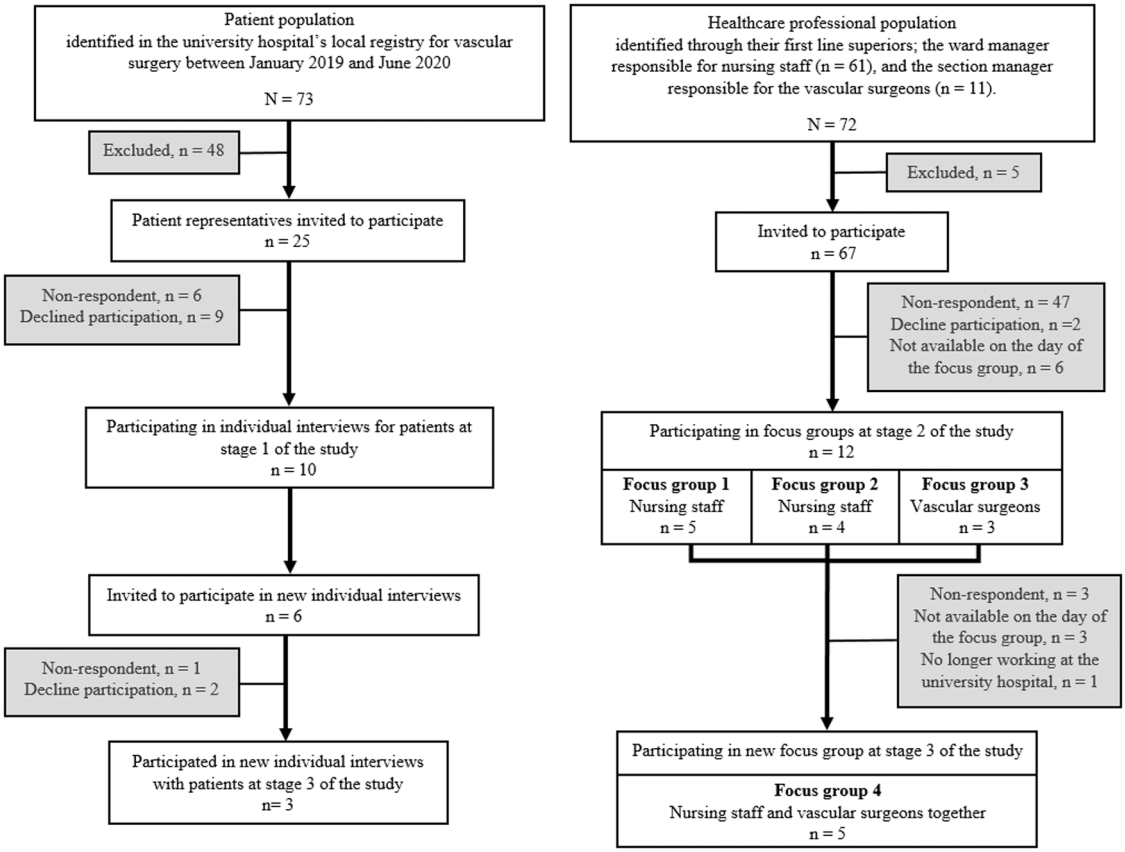

Fig. 2. Sample derivation for patients and healthcare professionals.

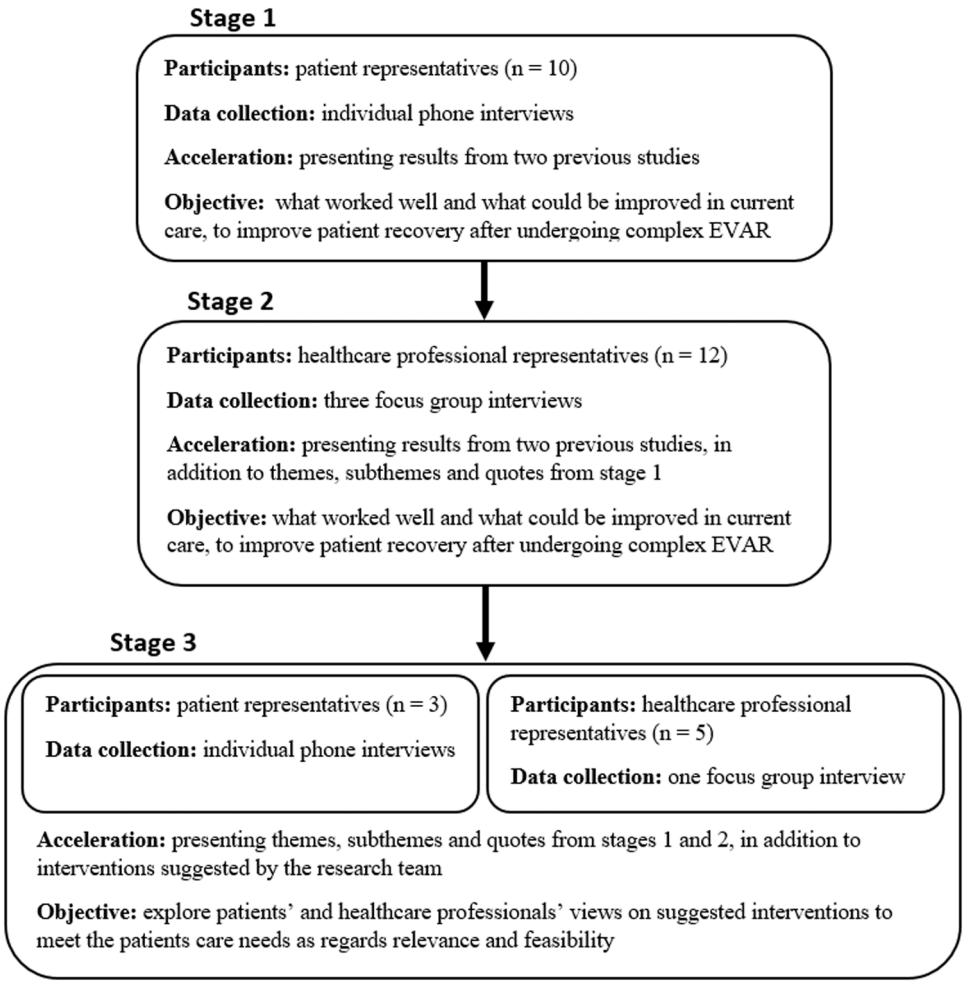

Fig. 3. Illustration of the data collection methods used in the three stages of the co-design.

reflexive thematic analysis [12]. Involvement of different stakeholders was instead used to tell a rich and multifaceted story about the care needs of patients undergoing complex EVAR.

Information on participants' characteristics was collected at the start of the interviews. Data on the patients' diagnosis and operation, post-operative complications, reoperation and time since operation was retrieved from the local electronic hospital records. Data were collected over a 10-month period, including analysis between the different stages.

2.4. Data analysis

Each recording was transcribed verbatim by the first author directly after the interview. The transcripts were analysed inductively using reflexive thematic analysis with a semantic essentialist approach as described by Braun and Clarke [13] (Table 3).

2.5. Ethical considerations

The study was performed in compliance with relevant laws and institutional guidelines Ethical approval was granted by the Swedish Ethics Review Authority (Dnr: 2021–02019). Written informed consent was collected from all participants.

3. Results

Three matching themes were identified which described what the patients and HCPs experienced could improve patient recovery after undergoing complex EVAR: *Adequate information, Patient involvement* and *Continuity and follow-up*. Six subthemes were identified for patients and HCPs, respectively, illustrating what is important for the patients and what HCPs need to do to support this (Table 4).

3.1. Adequate information

3.1.1. It is important for the patient to:… be prepared for how the surgery may affect them and how they can recover after discharge

Most patients described lacking information on how they would recover after discharge, when to expect follow-up contact and how they should live after the operation. Some described being helped by receiving such information, while others described uncertainty and concern around their condition. One patient expressed relief and feeling less alone when reading the results from the previous studies and seeing others also struggling to manage life after the operation.

Quote 1.

That is the problem. You don't know how it [going through the operation] works. – Patient 3

…know about their surgery, health status and complications.

Not knowing the outcome of the surgery and their current health status had caused some patients distress. One patient, who had no information about her current status, described worrying so much about aneurysm rupture that she had problems sleeping and distanced herself from others. Most patients described complications like neurological deficit, pain, sleep deficit, tiredness and anxiety after the operation. This caused some to be distressed as they did not know what it meant or how to handle the situation. Others described how being told everything was

Table 2
Characteristics of the participants and the composition of the focus groups in the three different stages of the study.

Stage of the study		Method of data collection	N[a]	Patient characteristics		Mean (range)
1		Individual phone interviews with patients	10	Age (years)		73.7 [57–81]
						N[a]
				Women		3
				Diagnosis	TAAA[b] involving visceral vessels	1
					TAAA[b] involving visceral and aortic arch branching vessels	1
					Juxtarenal aortic aneurysm	4
					Pararenal aortic aneurysm	4
				Preventive drainage of cerebrospinal fluid		3
				Postoperative complication	Kidney failure requiring dialysis	1
					Stroke with permanent sequelae	1
				Reoperation		4
				Professional constellation	**Workplace experience**	
2		Focus group 1 with nursing staff	5	Three registered nurses One assistant nurse One specialist nurse	Three with only ward experience Two with experience from both the ward and the out-patient clinic, <2 to >20 years within vascular surgery	
		Focus group 2 with nursing staff	4	Two registered nurses One assistant nurse One specialist nurse	Two with only ward experience Two with experience from both the ward and the out-patient clinic, <5 to >20 years within vascular surgery	
		Focus group 3 with vascular surgeons	3	One registrar in vascular surgery One specialist physician One vascular consultants	All with experience from both the ward and the out-patient clinic, <2 to >20 years within vascular surgery	
				Participants' characteristics		
3	a	Individual phone interviews with patients	3	75–78 years old One woman, two men One with postoperative complications One reoperation		
				Professional constellation	**Workplace experience**	
	b	Focus group 4 with mix of healthcare professionals	5	Two registered nurses Two assistant nurses One registrar in vascular surgery	Two with only ward experience Three with experience from both the ward and the out-patient clinic <2 years to 10 years of experience within vascular surgery	

[a] Number of participants
[b] Thoracoabdominal aortic aneurysm,

Table 3
Description of the analysis.

Steps of analysis	Description	Who did the work
Pre-analysis	Discussing their own experiences, perspectives and pre-understandings to be conscious of them throughout analysis.	LH, EJ
Familiarisation	Noting down possible points of significance and patterns, getting a sense of the data.	LH, EJ
Generating initial codes	Generating initial codes that identify individual features of the most basic elements of data that appear related to patients' care needs when undergoing elective complex endovascular aortic repair, to improve patient recovery.	LH, reviewed by EJ in relation to all raw data
Searching for themes	Sorting the different codes into potential themes.	LH, reviewed by EJ in relation to all raw data
Reviewing themes	Refining themes based on their internal homogeneity and external heterogeneity.	LH, reviewed by EJ in relation to all raw data
Defining and naming themes	Further refining the themes and defining them in terms of an identified essence of what each theme is about and what the themes overall are about.	LH, reviewed by EJ, CÖ, KM in relation to three raw datasets
Writing the report	Creating an analytical narrative	LH, reviewed by EJ, CÖ, KM and AW in relation to three raw datasets

Table 4
Identified themes and subthemes.

Theme	Subtheme	Subtheme
	It is important for the patient to:	Healthcare professionals need to:
Adequate information	… be prepared for how the surgery may affect them and how they can recover after discharge … know about their surgery, health status and complications	… provide information throughout the surgical continuum … ensure information has been provided and understood
Patient involvement	… be considered as an individual and involved in their own care … get a comprehensive introduction to be able to handle their recovery at home	… collect information from the patient and set individual goals … strengthen and support the patient's ability to self-care
Continuity and follow-up	… have someone who understands and cares about them after discharge … have someone take responsibility for how the operation affects their health as a whole	… ensure the patient knows when and how to contact the healthcare services … provide follow-up as regards long-term wellbeing

alright and having their symptoms explained enabled them to continue their lives.

Quote 2.

I want to ask you something! What could this [reduced sight] be due to? What can you do about it? I want them to fix my sight. So I can read again, and see my children again. – Patient 4

Most patients described difficulty taking in information that was given with overly difficult words or when too much was happening at once (i.e., at admission or shortly after the operation). They described needing to be allowed to ask questions and getting information repeated at a later time, as some thoughts and questions arose after things had

calmed down at home after discharge.

Quote 3.

When you've packed your bags and left the ward and stuff, there might be a feeling of loneliness and a bit of confusion. If it is too soon or something like that. – Patient 8

3.1.2. Healthcare professionals need to: … provide information throughout the surgical continuum

All HCPs recalled how patients, both pre- and postoperatively, described worry and suffering which was or could be eased with information. Uncertainty regarding information routines surfaced, and there was inconsistency in which information was given, when and by whom. Standardised information routines were suggested, to ensure that patients got structured information, and could get it repeated when needed. Some HCPs described how they themselves or colleagues at a patient's local hospital might struggle to give adequate information, due to lack of knowledge about the individual patient or about the patient group. The unique knowledge of the surgeon who did the surgery was discussed as required to give adequate information.

Quote 4.

I think there's a lot of information missing. (…) Because when we take them down for surgery they barely know what is going to happen to them. – Focus group 2

… ensure information has been provided and understood.

The HCPs acknowledged that they needed to ensure information was provided to and understood by the patients. The complexity of the procedure was said to be difficult for patients to comprehend. Drawing the procedure with basic anatomical sketches was said to be helpful. A problem raised was that nursing staff was not present at the information meetings between the patient and vascular surgeon, and thus did not know what information had been given. Improved teamwork, parallel working and collective meetings were recommended by the nursing staff.

Quote 5.

If we worked more as a team, it would be much easier [to ensure information is received by the patient]. It would also allow us to capture different parts [of the patient's care needs] and make use of each other's competence. – Focus group 1

Written information material was mentioned by all HCPs as a helpful tool to ensure a minimum of information was given, and to enable patients to look up and take in information in their own time. Existing brochures were described as too medical, not addressing 'soft values' and postoperative expectations. Space in the brochures for adding individual information was suggested to enable making the information more relevant to the patient.

Quote 6.

The information brochures are quite impractical in this context. They don't address this sort of worries [e.g. feelings of anxiety or depression after the operation]. – Focus group 3

3.2. Patient involvement

3.2.1. It is important for the patient to:… be considered as an individual and involved in their own care

Patients said that what happened and how people coped with it could differ greatly, resulting in different care needs. Some described the care as impersonal, not taking into account how they were doing after discharge. Patients described the importance of being genuinely cared for and seen as important, so they were talked with, not talked to.

Quote 7.

I think they [HCPs) would find out more if they talked more with you. Otherwise you are sort of just a pawn going in and out of the hospital. They do their part, then there's no more. – Patient 3

… get a comprehensive introduction to be able to handle their recovery at home.

Most patients spoke well of the in-hospital stay, but the day of discharge was described as sudden and poorly planned. Despite longing to go home, they had not considered how they would handle their situation on their own. Majority of patients described not knowing where they could turn for support, and getting in touch with healthcare services was described as impossible. Patients who experienced physical or psychological setbacks after the operation recounted having to figure out on their own how to manage their changed situation, or suffering helplessly.

Quote 8.

It is about getting a proper introduction regarding what you can and should do. I never got that. – Patient 6

3.2.2. Healthcare professionals need to: collect information from the patient and set individual goals

HCPs described patients undergoing complex EVAR as a heterogeneous group, in terms of medical history, treatment and outcomes, but also non-medical demographics and individual values and personal interests. All HCPs depicted surgical care as mainly focused on medical treatment, physical outcomes and readiness for discharge, which they thought did not take into consideration psychosocial needs or how things would be after discharge. Gathering more information from each patient on their individual care goals through bedside rounds or preoperative interviews was suggested by some. Ways to capture this in the documentation system were mentioned as necessary to ensure continuity.

Quote 9.

There we had worked for several days under the impression that we have been clear about discharge being on Thursday. We may not have picked up on if the patient is really onboard with the idea, or if the patient has had the opportunity to have his say on the matter. – Focus group 1

… strengthen and support the patient's ability to self-care.

Due to the short in-hospital care, HCPs underlined the importance of consideration for and support towards patients' ability to manage their own care after the operation. Patients' own responsibilities in their care (i.e., setting and following up on goals, and contacting healthcare services when support was necessary) needed to be clarified.

Quote 10.

It is my job to ensure that the patient can manage when he comes home. That they feel self-confident. – Focus group 1

3.3. Continuity and follow-up

3.3.1. It is important for the patient to: have someone who understands and cares about them after discharge

Patients described how going through complex EVAR required that those caring for the patient understood the preoperative history, and cared about the impact on the patient throughout care and after discharge. A need for contact with 'those who did it [the surgery]' was mentioned frequently. One participant described a lack of such understanding and care when transferred to his local hospital after the operation. Some patients, even some recovering well, expressed disappointment when describing how no one had asked them how they are feeling after discharge.

Quote 11.

If they [the HCPs] could just ask: 'How are you doing? Do you have any problems?' (…) Then you feel that you are cared for, and someone is watching out for you. It feels safe in some way. – Patient 5

… have someone take responsibility for how the operation affects their health as a whole.

The patients described a need for someone who took responsibility for what happened to them postoperatively. This was especially relevant in regard to postoperative complications, where diagnosis and treatment were experienced as inadequate. Postoperative issues were recounted as being looked at separately by different medical professionals and institutions, which resulted in nobody taking responsibility for how the operation affected their health as a whole.

Quote 12.

I am a bit scared whatever is damaged in the arm [reduced sensoric and motoric function] will heal wrong. Like I said, there is no one who takes it seriously. I've been there [at the local hospital] seven times, but there is no one. Nothing! So now I guess the arm is more or less destroyed. [sigh]… No one would listen. – Patient 8

3.3.2. Healthcare professionals need to: ensure the patient knows when and how to contact healthcare services

Patients' inability or unwillingness to contact healthcare services when needing support was acknowledged by the HCPs. They reflected on how, in today's healthcare system, those patients who do not ask questions often did not get as much care as those who did. The importance of ensuring that patients knew HCPs were available and willing to help was underlined. Providing contact details to someone who was available for answering questions and offering support was suggested.

Quote 13.

If they could just get the number to a contact nurse. 'Just call if anything comes up!' – Focus group 2

… provide follow-up as regards long-term wellbeing.

Follow-up of the patients was seen as inadequate by the HCPs, and especially nursing staff. They described being unaware of how the patients recover and what their care needs are after discharge, due to there being no designated nurse contact. Follow-up at patient's local hospital creates a risk of the patients falling between the cracks due to insufficient knowledge transfer between the hospitals and unclear responsibility for the patients after discharge. Responsibility was suggested to fall on the university hospital until the local hospital was able to take over. A telephone call to patients postoperatively to check on how they are feeling was seen as a simple way to ease unnecessary suffering. Having a designated contact nurse, following the patients throughout the surgical continuum, was repeatedly mentioned as a solution. This was also thought to enable follow-up of care needs that could not be met during the short in-hospital stay, or getting the responsibility for these care needs adequately transferred to the patient's local healthcare service provider.

Quote 14.

That there is a before and an after [surgery]. If it [recovering] is not happening here at the hospital, then it has to be happening somewhere else. That they are being left all on their own shows we need to build a compensating structure for rehabilitation and nurse contact after discharge. – Focus group 1

3.4. Relevance and feasibility of the suggested interventions

All participants in stage 3 confirmed the findings from stages 1 and 2, with no additions or amendments.

Four interventions were presented to the participants in stage 3. The suggested interventions, and which of the patients' care needs (themes) they relate to is shown in Table 5. Descriptions of the suggested interventions and the patients' and HCPs' reviews of them in terms of relevance and feasibility are given in Table 6.

Table 5
The four intervention suggestions presented in stage 3 and if they, by the research team's assessment, would fully, partially or not likely meet the care needs (themes) identified from stages 1 and 2.

Intervention Suggestion	Adequate information	Patient involvement	Continuity and follow-up
Implementing team meetings	Fully	Fully	Partially
Utilising an individual care plan	Fully	Fully	Fully
Implementing the role of a contact nurse	Fully	Fully	Fully
Establishing information routines	Fully	Partially	Not likely

4. Discussion and conclusion

4.1. Discussion

The experiences of the patients and HCPs uncovered that the care needs when undergoing complex EVAR revolve around adequate information, patient involvement and continuity and follow-up. This is in line with other studies on recovery, where communication, involving personal and respectful information and support has been found to be associated with improved recovery [14,15]. Thus communication seems central to improve patients' recovery after complex EVAR.

The patients' need for information described by the participants is consistent with findings of other studies on patients undergoing aortic surgery [6,16,17]. Information is a person-centred fundamental care need [9,18]. However – in line with a study on patients undergoing open aortic surgery [16] – this study brings to light patients' difficulty taking in and understanding information given to them due to inconsistency in how and when information is provided, and the information failing to meet their individual needs. Moreover, HCPs thought the complexity of the patients' procedure was difficult for patients to comprehend. This could be explained by the fact that patients undergoing aortic surgery are often older with multiple comorbidities, which has been associated with lower health literacy [19]. This is known to be associated with difficulty managing complex diseases and self-care [20]. Thus, establishing routines on what, when and how information is provided, and adjusting to the individual seems highly relevant to mitigate the low health literacy of this patient group.

Patients experienced a lack of consideration regarding how the operations affected them as individuals, and an absence of support from the healthcare services after discharge, where no one asked them how they are doing. Similarly, other studies have highlighted a need for support and individualised and consistent care for patients undergoing aortic surgery [6,16,17]. This could be understood based on the fact that patients' ability for self-care has been found to be affected not only by health literacy, but also by access to care and support [20]. The HCPs described difficulties with ensuring continuity and adequate follow-up due to lack of routines for this, and the fact that patients often are on referral from other hospitals. This could be seen as a consequence of both the rapid development and centralisation of complex EVAR procedures to high volume centres, due to positive effects on patient morbidity and mortality [21], which indicates that interventions beyond information may be required to strengthen these patients' ability to self-care, and ensure access to care and support. Having a contact nurse to ensure continuity and follow-up was explicitly suggested by the HCPs. This is a well-established intervention within cancer care, and within care for chronic diseases, where it has shown positive effects on physical and psychosocial patient outcomes [22,23]. Patients undergoing complex EVAR are comparable to these patient groups, faced with a life-threatening diagnosis and complex treatment over time [5]. Thus, a

Table 6
Description of the four suggested interventions, and the patients' and healthcare professionals' reviews of them in terms of relevance and feasibility.

Suggested intervention	Description of intervention	Patients' review	Healthcare professionals' review
Implementing team meetings	HCPs[a] and the patient sharing information on the patient's situation, and together setting and evaluating goals for the patient. Timing: preoperatively before admission, during in-hospital care and before discharge.	**Relevance:** High. Being talked with and not just to. Having needs seen and met. Improving information transfer. **Feasibility:** High. It cannot be hard to talk more with patients. *'I have no say in the matter [in my care]. (…) I feel like I've been forgotten.'* – Patient 4	**Relevance:** High. Facilitating information transfers. Ensuring minimum information. Identifying patients' care needs. **Feasibility:** Low Affected by time pressure. Involves changes to current routines. Requires gradual implementation. *'There are so many professions involved overall.'* – HCP[a] 3
Utilising an individual care plan	Based on team meetings. The patient and HCPs[a] establish a shared understanding of the patient's situation, and set goals together, and document this in an individual care plan. The care plan is continuously evaluated in daily care, at subsequent team meetings and can be utilised after discharge.	**Relevance:** Probably high. Considering individuality. Enabling continuity and follow-up. **Feasibility:** Uncertain. Details of performance is up to HCPs[a]. *'There should've been more information on how you should live afterwards. (…) I was just put on a bus and sent home'* – Patient 3	**Relevance:** High. Adjusting care to the individual patient. Capturing who the patient was before the operation. **Feasibility:** Low. Requires team meetings. Uncertainty regarding practical performance. *'If you manage to implement team meetings then it [individual care plan] should be feasible.'* – HCP[a] 1
Implementing the role of a contact nurse function	Designated nurse(s) who is responsible for establishing contact with the patient, providing information and supporting them throughout their surgical continuum, starting preoperatively and continuing after discharge. Recommended to participate in developing and evaluating the patient's individual care plan.	**Relevance:** High. Contact after discharge is lacking. Current one-way feedback. **Feasibility:** Uncertain. An easy gesture of care. Shortage of nurses. *'It [the follow-up] should've been more personal than a letter. In case you have any questions afterwards.'* – Patient 3	**Relevance:** Uncertain Not necessary for all patients. Ensuring continuity and individualised care. **Feasibility:** Low. Requires high availability and continuity from the contact nurse (s). *'I think it will be difficult for them [the contact nurses] to make it to meetings at the out-patient clinic. Because they don't have much time.'* – HCP[a] 1
Establish information routines	Establish a routine for *information content* (background, status, expectations, recommendations), *timepoints* (preoperatively, admission, in-hospital, discharge and follow-up), *responsibility* (i.e., nurse and surgeon) and *written information material* combining standardised and individual information (i.e., diagnosis/ procedure).	**Relevance:** High. Preparedness and safety. Adequate content and timepoints. Easier to understand. **Feasibility:** Uncertain. Time pressure. Requires someone who knows what has happened to them. *'You are a bit safer when you know a little. You can't just go around being unsure about things!'* – Patient 2	**Relevance:** High. Clear responsibility. Ensuring information is given and understood. **Feasibility:** High. Hands-on. Could be added to current practices. High quality with little effort required. HCP[a] 2: *'Yes, it [an information brochure] is so concrete!'* HCP[a] 4: *'…and so easy to get through [to clinical practice]'*

[a] Healthcare professional

designated nurse contact may be a relevant intervention.

In line with the findings of this study, patient participation in the care team has been seen as a way to enable access to information and opportunities for patient involvement in their own care [24]. This is also a suggested clinical routine in the Gothenburg model of PCC [25]. Improved team work between different HCPs was also suggested by the nursing staff in this study, which may reflect that the nurses' role in multidisciplinary teams is said to be central for advocating the patients' perspective when their willingness or ability to participate is reduced [24]. Poor communication between HCPs has also been found to lead to discontinuity of care and compromise patient safety [26]. This underlines the relevance of team meetings before discharge, involving the patient, to identify invididual care needs, enable self-care and improve continuity of care and support after complex EVAR. Moreover, documenting goals and actions developed together with the patient in an individual care plan has been described as a way to facilitate continuity within PCC [25]. This seems especially relevant for improving knowledge transfer between care providers, which was described as a problem by HCPs in this study. A multifaceted approach involving the patients and ensuring continuity has also been recommended when planning safe discharge of elderly patients [27]. This all shows how complex surgical interventions, performed in geriatric populations at a specialised, tertiary care units far from the patients' homes, and with short in-hospital care, puts high demands on routines for communication.

Overall, the care needs identified in this study could be said to be universal for patients undergoing complex surgery, and the suggested interventions are thus intuitive parts of clinical practice. While all suggested interventions were found to be highly relevant in this study, only information routines was seen as a feasible intervention to improve these patients' recovery. Establishing and safeguarding the patient-HCP partnership is the core of PCC [9,18,25], and a requirement of national and international health policies [28]. This leaves a gap between what should be done and what could be done to improve patient recovery after complex EVAR. The participants described lack of availability of staff as something affecting the feasibility of the other suggested interventions. One cause of this was time pressure. Similarly, care quality has been found to be negatively affected by demands of effectiveness and efficiency in moving patients through the healthcare system quickly [29,30]. Moreover, the HCPs experienced that the interventions' feasibility was affected by how much change to current routines they would require. This is consistent with traditional practices, structures and attitudes having been identified as barriers to implementing PCC [11]. A

way to lower these barriers and improve care quality is said to lie in the wider care context, e.g., in terms of organisational factors and leadership [11,31]. A further understanding of how the context of care affects patient recovery after complex EVAR is required to enable delivery of relevant interventions, enabling communication that could further improve patient recovery.

4.1.1. Methodological considerations

One strength of this study is the use of existing and emerging material on the subject to inform discussion, as it enabled the participants to more quickly reach a shared deeper appreciative understanding of the strengths and weaknesses of a healthcare service and what is needed for the future [32]. It also induces narrative persuasion, potentially enabling addressing the HCPs' 'capability', 'opportunity' and 'motivation', which is essential for change [33]. In addition, a form of respondent validation of the existing material on patient recovery after complex EVAR is provided [34]. By encouraging participants to discuss the material related to their own experiences, the potential bias from the existing material was mitigated.

Low participation and not reaching recruitment targets is a limitation of this study, which meant that purposive sampling in stages 1 and 2 was limited. The wide range of participants' characteristics, and including different stakeholders, could, however, still give large variation in the data and strengthen transferability [12,35]. Credibility of the findings from stage 3 is limited as no validation was sought. Moreover, data saturation, as a common indicator for credibility, is incompatible with the dynamic and interpretive nature of theme development in reflexive thematic analysis [12]. Three purposively chosen patients were included at stage 3, and informed by results from stages 1 and 2, which was deemed fit for giving good information power, and fulfil the purpose of exploring the relevance and feasibility of the intervention suggestions [12]. Another limitation of this study is that the patients could not participate in focus group interviews. This is particularly relevant in stage 3, where patients and HCPs would ideally have participated in focus groups together, to enable co-creation of priorities. Moreover, all patients participated through phone interviews, which may have affected the reliability of the interviews and lead to overlooking of important non-verbal expressions. However, phone interviews facilitated participation for these patients, who were often older and lived across a large geographical area.

4.2. Conclusion

What patients and healthcare professionals experienced could improve patients recovery after complex EVAR, revolving around communication, seem universal for complex surgical patients, and relevant ways to meet them were identified. While information routines is seen as a feasible way to improve patient recovery after complex EVAR, implementing other relevant person-centred interventions into current clinical practice is not seen as feasible due to the complexity of the procedure and barriers in the care context.

4.3. Practice implications

Interventions that facilitate information, patient involvement, improve team work and ensure continuity and follow-up should all be tested to strengthen the patients' ability to self-care, and ensure access to care and support when needed. This may require ensuring their feasibility, by assessing the effects of contextual factors, like current routines and availability of staff to do the tasks required.

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CRediT authorship contribution statement

Caisa Öster: Writing – review & editing, Supervision, Methodology, Conceptualization. **Kevin Mani:** Writing – review & editing, Methodology, Conceptualization. **Linda Haakseth:** Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Anders Wanhainen:** Writing – review & editing, Methodology, Conceptualization. **Eva Jangland:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data statement

Transcribed interviews that support the findings of this study are presented in Swedish, and are available on request from the corresponding author. The data are not publicly available due concerns regarding ethical restrictions as the informants' privacy is granted by the Swedish Ethics Review Authority. However, all authors declare that all data have been collected and treated as described in the Materials and Methods sections, and the data sets, including citations, are completely and correctly reproduced.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.pec.2024.108460.

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