Title
Investigating the experiences, thoughts, and feelings underlying and influencing prehabilitation among cancer patients: A qualitative perspective on the what, when, where, who, and why

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Abstract

Purpose
To investigate the experiences, thoughts, and feelings that underlie and influence prehabilitation among cancer patients due to undergo major abdominal surgery.

Materials and methods
Prior to their surgery, sixteen patients with peritoneal carcinomatosis of colorectal or ovarian origin due to undergo major surgery received oral information and a leaflet with preoperative recommendations. They subsequently participated in individual, semi-structured interviews. Malterud’s principles of systematic text condensation were used to analyse the interviews, and the concept of action competence inspired and framed the discussion.

Results
Although the patients found themselves in an unpredictable and uncontrollable situation, they nevertheless knew what was important to them. These factors were contextualised in five themes that reflected the experiences, thoughts, and feelings that underlay and influenced their actions: ‘Perception of preparation’, ‘The two-sided preoperative period’, ‘Home or facility-based prehabilitation’, ‘Stakeholders in prehabilitation’, and ‘Reasons for taking action’.

Conclusions
The patients demonstrated action competence in relation to their preoperative preparation. However, in relation to the kind of prehabilitation that required lifestyle changes, their action competence needed to be developed and supported. To do so, it is necessary to ask questions that cover the patients’ perspectives of the what, when, where, who, and why of prehabilitation.

**Keywords**

Preoperative care, patient-centred care, patients’ experiences, patients’ perspectives, action competence, qualitative research
Introduction

Multimodal prehabilitation represents an opportunity for cancer patients to participate in their preoperative care, by preparing themselves for surgery through exercise, nutrition, and psychological-based interventions [1]. In this way, patients are enabling themselves to withstand the treatment-related stress response. They do this by optimising their functional capacity, with the aim of improving treatment effectiveness and accelerating early recovery [2-4].

Prehabilitation could be of particular relevance to patients undergoing treatments that involves aggressive and comprehensive procedures, such as cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC), which are offered to some patients with peritoneal carcinomatosis of colorectal or ovarian origin. CRS is based on the principle of peritonectomy, whose aim is to remove all visible disease-affected areas. This is followed by perfusion of HIPEC into the peritoneal cavity in order to eliminate remaining microscopic cancer cells [5]. The treatment seems to improve tumour-free and overall survival, but it comes with a cost of considerable morbidity and long-term limitations in physical function [6-8].

In spite of the potential benefits of prehabilitation, there are aspects to consider when introducing prehabilitation programmes to severely ill cancer patients. Being diagnosed with cancer is a life-changing event, and most patients experience shock, powerlessness, confusion, sadness, anger, and exhaustion during their pathway [9,10]. In a recent qualitative study, the impact of the cancer diagnosis itself was noted as an emotional and practical barrier to preoperative physical exercise, as patients felt that they lost grip of things and were “busy surviving” [11]. In order to enhance patients’ ability to take action under these circumstances, their action competence in relation to prehabilitation needs to be further studied. Action competence can be included within the
framework of patient-centred care, as developing action competence requires that one can set specific targets and realise them through qualified and motivated actions. In addition, action competence depends on such characteristics as knowledge, engagement, courage, action experience, and confidence in one’s own ability to act. However, it is also strongly context-dependent, as one’s environment has an impact on opportunities to act [12]. Because of the stressful preoperative period, it may be unrealistic to expect that patients are able to develop action competences in relation to prehabilitation. But if it is possible, what would it take, and what factors would we have to consider?

Only a few studies have investigated cancer patients’ views on prehabilitation in depth. In two studies, patients were talking hypothetically about a prehabilitation programme that they did not actually take part in, meaning that they did not have experience of prehabilitation [11,13]. In another study, patients with bladder cancer participated in an exercise programme prior to radical cystectomy and were subsequently interviewed about their experiences and perspectives [14]. More in-depth knowledge based on patients’ experiences is needed, to understand what it would take to create optimal conditions for prehabilitation-related actions.

Thus, the aim of the study was to investigate the experiences, thoughts, and feelings that underlie and influence actions or the lack of actions in relation to prehabilitation among cancer patients due to undergo major abdominal surgery.
Methods
In the following section, the method is presented based on the consolidated criteria for reporting qualitative research (COREQ).

Theoretical framework
In line with phenomenology, we sought to uncover essential meanings of prehabilitation by studying the patients’ lived experiences in depth – based on how they expressed these experiences themselves [15]. Given that we aimed to investigate experiences, feelings, and thoughts on a personal level, a theoretical framework of phenomenology, with individual qualitative semi-structured research interviews, inspired the study.

Preoperative recommendations
To facilitate and form the basis of patients’ experiences of prehabilitation, we developed a leaflet with home-based, preoperative recommendations. The leaflet was inspired by and developed in accordance with cancer patients’ perspectives on feasibility and acceptability [13,16]. Details of the leaflet and its recommendations have been described elsewhere [16]. Briefly, it contained six general recommendations about exercise, nutrition, relaxation, smoking cessation, alcohol cessation, and other preparation (e.g., practical activities) (Table 1). On a daily basis, the patients were to fill in what they had completed in relation to prehabilitation, by taking notes and ticking boxes on the back of the leaflet [16].

[Table 1 near here]
Patients and setting

Eligible colorectal cancer patients were scheduled for CRS + HIPEC at a Danish cancer centre. This was also the case for ovarian cancer patients, but patients solely scheduled for CRS were included as well, because of the limited number of patients undergoing CRS + HIPEC at this centre. Provided that the patients filled in the leaflet, they were eligible to participate in an individual, in-depth interview during the inclusion periods, which lasted from February to June 2018 and from February to April 2019, as the patients were included in two rounds. Patients who did not understand Danish and/or had cognitive impairments were excluded. The inclusion of patients was based on purposeful sampling to ensure perspectives from different genders, departments, and ages so that common patterns across the different groups could be identified [17]. The concept of information power was used to guide adequate sample size (the greater information power the sample holds, the lower N is needed), and was assessed through the study aim, sample specificity, use of established theory, quality of dialogue, and analysis strategy [18]. By reflecting on these five items, we got an idea of when to stop recruitment.

Data collection

The leaflet was handed to patients when they attended for preoperative information and planning, 7-14 days before surgery. An interview guide was used to direct the conversation towards specific topics (Table 2). The interview guide was inspired by a previous qualitative evaluation of the leaflet, with minor adjustments, given that we aimed not just to evaluate the leaflet, but also to understand how patients experienced prehabilitation in general, with a strong focus on the thoughts and feelings that were behind their actions. The individual interviews were collected in private on the ward, except for one, which was carried out in the patient’s home because of early discharge. The time of interview is illustrated in Figure 1. Furthermore, the patients’ leaflet notes were actively
used to explore experiences and perspectives. The interviews were digitally recorded, lasted between 30-45 minutes, and field notes were made after each interview to describe the atmosphere. All interviews were performed and transcribed by the first author (full-time PhD student). The transcriptions were not returned to the patients for comments or corrections.

Data analysis
Malterud’s principles of systematic text condensation were used to analyse the data material (Table 3) [15]. This approach is inspired by phenomenology and was found appropriate, as we wished to understand patients’ experiences of prehabilitation and the preoperative period based on examples from their life-worlds. The first and last authors independently performed these analytical steps and compared their findings. The analysis was done by hand and with a word processing program. Malterud’s principles of systematic text condensation are data-driven, but theory can be used as an inspiration and to clarify the focus of the analysis. In this study, the concept of action competence inspired and framed the discussion to achieve a deeper understanding of the data material, but was not used as an analytical tool.

Ethical considerations
The study was approved by the Danish Data Protection Agency (2012-58-006) and complied with Danish legislation related to personal data protection. It was presented to the National Committee on Health Research Ethics, but no formal approval was needed, given that no biologic human
material was involved. All patients received written and verbal information about the study, voluntariness, anonymity, confidentiality, publication, and their right to withdraw from the study at any time. The patients had time to go home and read the leaflet and the written information, before deciding whether or not to participate. Written informed consent was obtained from all individual participants included in the study.
Results

Sixteen patients participated; seven females from the ovarian cancer centre, four females from the colorectal cancer centre, and five males from the colorectal cancer centre. All patients had undergone CRS with or without HIPEC. The patients’ median age was 58.

The initial analysis showed that, preoperatively, the patients were well aware of the gravity of their situation. They knew that they were severely ill, even though some found it difficult to understand, e.g., in the absence of symptoms, and felt that their existence was threatened, due to both cancer and its treatment (major surgery and chemotherapy). The patients felt that they were put in an unpredictable and uncontrollable situation. However, they knew what was important to them, which was contextualised in five themes, reflecting the experiences, thoughts, and feelings that underlay and influenced their actions.

- Perception of preparation
- The two-sided preoperative period
- Home or facility-based prehabilitation
- Stakeholders in prehabilitation
- Reasons for taking action

Perception of preparation

What the patients found valuable and what it meant to them to prepare for surgery were not limited to prehabilitation in the form of exercise, nutrition, or relaxation. Preparing for surgery also involved arrangements that were directed towards both life and death. For example, the patients prepared meals, cleaned the house, got laundry done, sorted out the garden, and made practical arrangements with the intention of making the recovery period easier. However, the patients also
prepared for the risk of not making it through the surgery. They took precautions by writing a will, reviewing insurance papers and financial arrangements, and planning their funeral. This was not because they feared or expected to die, but it made them feel calm that these things were organised and arranged – just in case. They emphasised that it felt good to know that, by preparing for both life and death, they had made things easier for their relatives. Preparing in this way, gave them a feeling of security and control. These feelings were of major importance in this unpredictable situation, which otherwise was characterised by a feeling of lack of control.

“What money do I have, if I should pass away? Who does it fall to, and what will happen? […] It was to be sorted out, before I went in here [to hospital for the surgery]. My work was sorted out, my apartment was put up for sale, I got married so my husband would inherit … It was then that it came to my mind that there could be a life afterwards, so it was then that we started the process of buying a house” (female, 38 years old)

“It was important to me that everything was well thought through. It's not because it was a negative thought […] because you don't know what's going to happen to you… Then I had peace of mind (when writing a will). I was at ease about it” (female, 51 years old)

Some patients just lived their everyday lives. One patient explained that preparing would signal that she would not make it through.

“You might not want to prepare anything, because then it would be, like, maybe you had been thinking that you might not survive. So I think that's why I didn't do anything” (female, 75 years old)

To summarise, the theme shows what it, in patients’ perspectives, meant to prepare, as they experienced that prehabilitation-related actions were not as the only way to prepare for surgery. This represents “the what” of prehabilitation.
The two-sided preoperative period

The preoperative period was considered two-sided, as it was perceived as both long and short. Even though the patients knew that the preoperative period was short (ca. 7-14 days), they felt that their patience was tested, as they wanted to get the surgery over and done with. A short preoperative period limited time to worry, and provided the patients with a new standpoint, being on the other side of the surgery. At the same time, the patients were busy prior to surgery, as a short preoperative period resulted in numerous tasks that had to be carried out.

“I think it was a long time (the wait leading up to the surgery). At the same time, I really think during the week leading up to it, I actually could not have done it any faster. I mean, to get all of me involved in the process. Because there are so many thoughts, there are so many emotions, there are so many things that I had to prepare for this” (male, 51 years old)

I thought I had some time (to prepare), but I didn’t really. But the wait was so awful, that it was nice to get started (female, 52 years old)

Furthermore, the patients prioritised spending time with their relatives and living their everyday lives. This was perceived as meaningful because of the unpredictable nature of the situation and the uncertainty of the outcome.

“It’s because you don’t know how it will end up [...] If you don’t have a lot of time left, then you have to prioritize” (male, 56 years old)

In this way, the patients were forced to decide about what was important to them and prioritise their time accordingly. Preparing for surgery, e.g., in terms of exercise and nutrition was also acknowledged, but the patients found it hard to find the time, because of social activities and practical tasks. The patients simply did not prioritise prehabilitation-related actions.
Some patients stated that they would need the preoperative period to be extended, and that prehabilitation should be introduced earlier, especially if they were to participate in a more standardised prehabilitation programme. Notwithstanding this, almost every patient also emphasised the importance of getting the surgery over and done with. Thus, the patients experienced the limited preoperative period as an advantage for their wellbeing, but also felt that it left very little time for prehabilitation.

To summarise, the theme shows that time is a crucial aspect in prehabilitation, as the patients experienced time before surgery as both long and short, which affected their reflections on when prehabilitation should be introduced. This represent “the when” of prehabilitation.

**Home or facility-based prehabilitation**

The patients appreciated the home-based recommendations in the leaflet. Being at home felt safe for patients with physical symptoms like nausea or diarrhoea, and for those struggling with psychological issues, e.g., anxiety. For some patients, home-based prehabilitation was the only practical solution, given that they could fit it in around their work, practical tasks, and family; their everyday lives.

“I couldn’t go to the gym any longer. I can’t very well be running out to the toilet the whole time. So, I had to find something else, so it was that (static bike at home)” (male, 65 years old)

*Is there something I can do at home? [...] Because you are already sacrificing much of your life, to undergo an operation like this (female, 38 years old)*
However, the patients did not reject the thought of a facility-based prehabilitation programme. They believed it could result in a higher success rate, owing to the support and supervision of health professionals. Also, some patients emphasised the benefit of participating in a facility-based programme, where they could meet other patients and create a motivating community. Thus, they had ambivalent feelings concerning the relative benefits of either home or facility-based prehabilitation.

“I mean, if it were specific to me, I would probably like it at home. But I can turn it around and say that I can also see those who may need to be encouraged to go to a place to do it with others. And it's also easier to do things at home, logistically, I also think [...] in relation to transport and all sorts of things [...] But, it is clear that there is also a greater success rate if you get out [of the house], right?” (female, 53 years old)

However, most patients preferred home-based prehabilitation as presented in the leaflet, given that they felt they already spent too much time in hospitals. The preoperative period was their last chance to live as normally as possible, and if they were to meet at a facility, e.g., three times a week, this normality would be disturbed.

“Everyday life is what gives each individual person meaning in life. And suddenly it gets stolen, you know? It also means that you learn to appreciate it a little more when you are on the other side. But I believe, well, at least I think: Don't take any more of my life! I really want to get fit for this surgery myself, but let me do it on my own terms” (female, 38 years old)

“It was my way of moving forward. That I did what I used to do” (female, 75 years old)

Furthermore, facility-based prehabilitation could be time consuming, which might not be worth prioritising compared to, e.g., spending time with relatives.
To summarise, the theme shows that the environment was of great importance, as this could affect the patients’ experience of normality and everyday life, which they cherished. This represent “the where” of prehabilitation.

**Stakeholders in prehabilitation**

Obviously, the patients themselves had to be involved for prehabilitation to be successful. However, involvement required not being too ill or unfit, nor being too fit. Physical symptoms hindered some patients in taking action in relation to prehabilitation. In addition, the patients’ psychological state of mind could represent a hindrance, given that some patients with anxiety and excessive thinking simply could not grasp the idea of prehabilitation. These physical and psychological barriers could result the feeling of being a failure, when they were not able to take action. In contrast, some patients actually perceived themselves as being too fit for prehabilitation, as they believed that they were in great shape, had a balanced diet, and were symptom-free – in general, they did not feel ill. Prehabilitation was somewhat irrelevant for them.

“That’s been the worst thing, it really has (the nausea). Because I haven’t been eating, so I haven’t had the energy to take exercise” (male, 70 years old)

“I didn’t think about it at all, doing anything extra. I was fine, so then you just carry on in the same way” (female, 79 years old)

Relatives were somewhat involved in prehabilitation, in that they supported and encouraged the patients. However, it was primarily the patient’s job to take initiative and action, given that the leaflet was their project. Thus, the relatives provided a minor form of support. The relatives also provided psychological support during the preoperative period, by virtue of the fact that they often were the ones closest to the patient. However, some patients expressed a need to spare the family – in particular their children – experiencing feelings of fear and worry. Thus, friends and colleagues
became important at this time. Some patients were concerned about being a burden, which could result in a sense of loneliness.

“I think I’ve been very much on my own with it. My husband and I haven’t really talked about it, and I haven’t talked about it with my kids either. And I have a couple of girlfriends that I can go to, but I’d rather not bother them. I have had a good cry with them, but I haven’t done that recently. Because I’m afraid they’ll get tired of me, you know? [...] So I have bit my tongue” (female, 63 years old)

From the patients’ perspectives, the health professionals should be more involved in prehabilitation. Having a leaflet with preoperative recommendations was just enough for the patients to take action, as it gave them a push in the right direction. However, most patients requested that the health professionals got even more involved in an almost dominant way. They needed to be pressured, monitored, and controlled, and furthermore, some patients felt that they needed to be “threatened” in the sense of being told that lack of prehabilitation would result in fatal consequences. Thus, the patients requested that the health professionals provided a form of tough support, where they were “forced” to act, so to speak. This was due to the fact that prehabilitation (and a potential change of lifestyle) required willpower and energy, which, given the nature of the situation, could be difficult to muster. However, they also stressed that collaboration and mutual goal setting was of major importance, in order to ensure adherence. A few patients had a contrasting point of view; they expressed concerns that pressure from health professionals could result in resistance. These patients, in particular, appreciated the leaflet, given that they were free to plan and manage the preparation themselves.

“I really think you should say to me: ‘If you don’t do this and that, you’ll never get over it.’ Then I think I would. Otherwise, I won’t” (female, 72 years old)
"I don’t think people are interested in being pigeonholed with ‘you have to do that’ – they have a lot else to think about in such a situation" (male, 65 years old)

To summarise, the theme shows that involvement of the patients themselves (depending on their physical and psychological condition) along with relatives and health professionals were of great importance for patients’ experience of being able to perform prehabilitation-related actions. This represent “the who” of prehabilitation.

**Reasons for taking action**

A strong motivational factor in prehabilitation was the belief that participation in a research study served a higher purpose (helping future patients). In particular, this was of major relevance to one patient that feared heredity.

"It’s on my mind a lot that it’s probably hereditary, so my children might have to go through the same as me. So, I can do something so that they can get through it easier ... It’s that, that is on my mind” (male, 56 years old)

In relation to the actions performed, the patients found it motivating that they were to write down what they had completed in relation to prehabilitation on a daily basis. This process helped them to set goals and have a feeling of success. Additionally, the fact that the patients knew that the first author was going to look through their notes and interview them about it, had a positive impact on their actions, as the patients felt obliged, e.g., to do exercise, so that they could tick a box and show it to the first author.

"I just did it every day, and I would not have done it without it (the leaflet), because I got that “it is important to prepare,” but by having to write something down ... It really helped a lot! Because then I put it down to, like: ‘I have to drink this so that I can write down that I’ve done something!’” (female, 51 years old)
“You shouldn’t see, for example, that it says 10 units, that would be embarrassing … If I drank 10 units, you know? It would be embarrassing to write 20 smokes!” (female, 72 years old)

Last but not least, the patients hoped and believed that prehabilitation would strengthen their bodies, leading to early discharge, which motivated them to act. Also, simply the act of doing something made the patients feel calm, meaning that it was not always the ultimate goal of the act (e.g., early discharge) that motivated them, but the feeling of calmness that taking action gave rise to.

“So, of course, I hope to get through it quickly and easily, you know? […] And are there some of the things that I can do, even if they are only small things, that can help reduce the stay by just one or two days, so it doesn't do any harm” (female, 61 years old)

To summarise, the theme shows the patients’ reasons for taking action, which was experienced as motivational factors. This represent “the why” of prehabilitation.
Discussion
The experiences, thoughts, and feelings that underlay and influenced patients’ prehabilitation-related actions can be expressed in terms of five themes. They respectively represent the what, when, where, who, and why (the five Ws) of prehabilitation. The patients had their reasons for taking action (the why), but their actions were also strongly affected by what it meant to the them to prepare and what they found meaningful, when prehabilitation was introduced and prioritising time in general, where prehabilitation took place, and by who was involved in it. Understanding patients’ perspectives and experiences in relation to prehabilitation is an important element of an patient-centred approach, and ensures that patients are treated according to their values, preferences, beliefs, and needs [19]. Even though many prehabilitation programmes state their patient-centredness, a recent review shows that individualisation was based on the patient’s physical condition only, rather than, e.g., preferred type and location of exercise [20]. Thus, prehabilitation programmes might be lacking patient-centredness, due to the sparse knowledge concerning the patients’ perspectives, which are essential in defining patient-centeredness [21]. One concept within patient-centredness is action competence. In the following section, the findings will be discussed in the light of action competence, given that this concept contributes to an understanding of the complexity of taking action in a competent way [22,23].

Developing patients’ ability to act (their action competence) requires that they are motivated. Motivation consists of three component parts: emotions, goals, and personal agency beliefs [24]. The patients were motivated to participate because of the opportunity to serve a higher purpose, and the chance to speed up their recovery. Consequently, prehabilitation felt meaningful and relevant – emotions with a positive impact on patients’ motivation and action readiness. Also, the patients emphasised how reporting their actions was a motivational factor, in that, e.g., it helped them to set
goals, thus contributing to their overall motivation. The patients’ personal agency beliefs expressed themselves in the way that they perceived their inner resources and the immediate environment. Findings from a recent study found that patients appreciated the opportunity to tailor their preparation themselves, in accordance with their everyday lives and resources. In this way, prehabilitation did not exceed their resources [16]. However, in the present study, the patients found it difficult to have confidence in their inner resources, if they felt too ill or unfit. This indicates a lack of personal agency beliefs, which could have a negative impact, as the three components of motivation; emotions, goals, and personal agency beliefs, are interactive. If one of them is lacking, motivation in general will be blocked [24]. Furthermore, the idea of being too ill/unfit is unfortunate, given that the least fit patients typically are the ones that benefit most from prehabilitation [25]. Thus, personal agency beliefs could be the most vulnerable component, and one that needs to be supported, in order to avoid motivation being blocked. In other words, the health professionals must support the patients’ self-efficacy, so that positive expectations are created in spite of their health condition.

Sufficient resources in relation to the environment are an important prerequisite for motivation and thereby action competence [24]. The patients acknowledged that facility-based prehabilitation could lead to a higher success rate, yet they preferred home-based prehabilitation. This is in line with a previous study on colorectal cancer patients’ views on physical exercise, where home-based prehabilitation also were preferred, because they wanted to determine for themselves how to exercise, as they knew what was best for them [11]. In the present study, the reason for preferring home-based prehabilitation was the change to live as normally as possible before surgery. Furthermore, some patients believed that they could not find the time for facility-based prehabilitation. This finding is supported by a questionnaire-based survey among colorectal and
l lung cancer patients enrolled on a mixed prehabilitation programme (home and facility-based), where finding the time was identified as a barrier, second only to parking issues [27]. However, another qualitative study among bladder cancer patients found that supervised exercise provision, with associated social support, was central to maintaining attendance [14]. A recent review showed that facility-based prehabilitation programmes had, on average, 98% adherence rate, while it was only 70% for home-based programmes [20]. In addition, the development of action competence demands more than just maintenance of habits – one has to break a habit, for example, doing exercise instead of watching TV [22]. Of course, this breaking of habits could take place at home, but one could imagine that it would be easier at a facility, with the right equipment, supervision, and encouragement. However, if barriers such as finding the time and wanting to live everyday life result in poor adherence to, or even rejection of prehabilitation, home-based programmes could be a suitable alternative, as it would be less time consuming and disturb the patients’ everyday lives the least possible. Additionally, community and home-based programmes are needed, if prehabilitation is to be implemented in a sustainable way, taking the current resource constraints on health care systems into account [27]. The environment also included other persons involved in prehabilitation, and the findings showed that healthcare professionals played an important role, as the patients needed to be pressured, monitored, and controlled. However, a behavioural change achieved through pressure and control does not represent development of action competence, as it does not require patients to make decisions and act in a self-motivated way to achieve their aim [12]. One could argue that, because of the stressful nature of the situation, it is acceptable that the patients simply trust and follow the health professionals’ action instructions, without much reflection or involvement in goal setting – despite the fact that this compromises with the idea of action competence. However, others could argue that exactly because of the stressful situation, the patient’s own goals must be reflected in the programme to maximise adherence [28]. No matter
what, support and supervision from the health professionals is an important part of a prehabilitation programme [29].

We found that the patients already intuitively prepared themselves in numerous ways, which is in line with other studies concerning the preoperative period [13,15,30]. In preparing for both life and death, they were taken up with tasks that had to be done before the surgery, which sometimes meant that they gave a low priority to prehabilitation. Thus, one might believe that these patients simply did not have action competence. If we were to jump to such a conclusion, we would fail to recognise that the patients’ action competence in relation to preparation in general was very well developed. A competent action is judged by the context, meaning that one person can demonstrate a high level of action competence in one context, and low level in another [22]. For example, the patients demonstrated how, during complex and stressful times, they managed to take action and plan their future, because they perceived this to be meaningful and relevant. Now it is up to health professionals to support the development of action competence in relation to prehabilitation by supporting the patients’ motivation (goals, emotions, and personal agency beliefs), developing their skills in relation to, e.g., exercise and goal setting, and create an environment that is suitable and set the stage for prehabilitation to take place. It is important to note that developing action competence is not about getting the patients to obey prehabilitation-related orders. Nor is it giving up on the patients and leaving them alone, when their perspectives conflict with health professionals’ biomedical knowledge. Based on our findings, a dialogue that focuses on the what, when, where, who, and why – a dialogue that does not undermine the value of the patient’s everyday life and preferences – is essential to the development of action competence in relation to prehabilitation.
Methodological considerations

It has been suggested that behavioural change theories could be employed in the design of future prehabilitation programmes, as they can help us understand better how to support behaviour change in relation to prehabilitation [27]. In this study, the concept of action competence inspired the discussion, which strengthened the reflections and led to an understanding of what should be taken into account in supporting patients’ action competences. However, it is important to note that the concept of action competence originally was developed to enhance pupils’ ability to take action. Hence, it does not take life-threatening situations into account, in which development of action competence is much more complex on a personal level. Furthermore, the study was strengthened by the fact that the patients actually took part in prehabilitation, by using the leaflet, and did not just talking hypothetically about it. The first and last authors independently performed the analytical steps and compared them, which ensured that the findings went through a validation process. Both authors are experienced within the field of qualitative research. The present study also has limitations, which should be noted. Firstly, we investigated the thoughts and feelings that underlie and influence actions in relation to prehabilitation. This means that we did not directly observe the actions preformed, making it impossible to say if the patients actually did what was recommended. However, the patients’ honesty was reflected in the leaflets’ notes and during the interviews, e.g., when telling that they were too tired or simply had not prioritised exercise, indicating that they actually were sincere about the actions preformed. This honesty could have been enhanced by the relationship that was built up prior to the interviews, given that the first author (the interviewer) had talked to the patients’ twice by phone and met them face-to-face to set up the interview. Secondly, the participating patients’ median age was 58, which limits the possibility of transferring the findings to geriatric cancer patients. Thirdly, the patients talked hypothetically when sharing views
about facility-based prehabilitation, as they had no experience of that. This could reduce the credibility of the theme ‘Home or facility-based prehabilitation.’

In conclusion, the preoperative period was a time of stress and unpredictability for the patients. Despite that, or maybe precisely because of that, they were fully aware of what they found meaningful and important, and this was reflected in their actions. The patients demonstrated action competence, especially regarding preparation in general, but when it come to preoperative exercise, nutrition, and psychological exercises – actions that for some required a change of lifestyle – they needed personal support and supervision. Questions like what, when, where, who, and why should ideally be addressed and taken into account in the development of future prehabilitation programmes, in order to create optimal conditions for the development of patients’ action competence in relation to prehabilitation.

Conflict of Interest Statement

The authors have nothing to disclose
References


<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Description</th>
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<tbody>
<tr>
<td>Exercise</td>
<td>Patients were recommended to exercise on a daily basis before the surgery. It was described that the exercise should be more than everyday physical activities, and should preferably increase the heart rate. Examples of exercise options were listed.</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Patients were recommended to eat food rich in protein on a daily basis. A range of food choices was listed, and three recipes for protein shakes were provided.</td>
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<tr>
<td>Relaxation</td>
<td>Patients were recommended to set aside time for relaxation every day. It was described that they should find a comfortable position and have a rest (with or without listening to music or radio). In addition, they were encouraged to use meditation and breathing techniques. A link to a 20-minute audio file with relaxation exercises from the Danish Cancer Society was provided.</td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>Patients were recommended to stop smoking before the surgery. Links to websites from the Danish Cancer Society and the Danish Health Authority with information concerning options for smoking cessation were provided.</td>
</tr>
<tr>
<td>Alcohol cessation</td>
<td>Patients were recommended to stop drinking alcohol before surgery, if they drank more than six units of alcohol/day. Patients were recommended to contact their general practitioner to get help, and a link to a website with information concerning options for alcohol cessation was provided.</td>
</tr>
<tr>
<td>Other ways of preparing</td>
<td>It was suggested that patients focus on practical activities, like gardening or cleaning the house, in order to prepare themselves for their discharge. Furthermore, examples of other kinds of preparation were mentioned, such as talking to a psychologist or keeping a dairy.</td>
</tr>
</tbody>
</table>
### Table 2: Interview guide

<table>
<thead>
<tr>
<th>Main topic</th>
<th>Examples of questions asked</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part 1</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Thoughts and feelings - Experience of the preoperative period | - How did you experience the time period before your surgery?  
- What did you do while waiting for surgery?  
- How did you feel? Please tell me about your thoughts and feelings.  
- Had you any physical symptoms while waiting for surgery, and did you involve anyone in these symptoms?  
- Did you do anything to prepare yourself for surgery?  
- What did you find meaningful to do while waiting for surgery? |
| **Part 2**                                     |                                                                                                                                                          |
| Motivation and actions - Perspectives on the leaflet | - What are your thoughts about the leaflet?  
- Is the leaflet meaningful for you personally? Why?  
- Did you do anything different because of the recommendations in the leaflet?  
- What motivated you to prepare for surgery?  
- The recommendations in the leaflet are very general (not individualised). What is your thought about that?  
- Did you prepare in ways not described in the leaflet?  
- What are your thoughts about involving your relatives in the leaflet and in your preparation in general?  
- What are your thoughts about support provided from the health professionals before surgery?  
- What does it take for you to engage fully in your own preparation?  
- If it were up to you, where should your preparation take place?  
- How did you feel about filling in the leaflet? |
Table 3: The four steps of systematic text condensation (18)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>The interviews were read as a whole, attempting to achieve an overall impression, and preliminary themes were identified. Thus, we moved from chaos (the whole data material) to themes.</td>
</tr>
<tr>
<td>Step 2</td>
<td>In this step, we moved from themes to code groups, using so-called coding: The interviews were “scanned”, in order to identify meaning units, which are defined as text fragments with relevance for the aim of the study.</td>
</tr>
<tr>
<td>Step 3</td>
<td>In this step, we moved from codes to meaning. In each code group, meaning units that belonged together were clustered, resulting in two or three subgroups within each code group. Based on these subgroups, artificial quotes written in a first-person format were created to draw meaning.</td>
</tr>
<tr>
<td>Step 4</td>
<td>The interviews were recontextualized to ensure faithfulness to the data, and codes were converted into an analytical text. Thus, we moved from condensation to descriptions.</td>
</tr>
</tbody>
</table>
Surgery planning: The leaflet was handed out

Patients used and filled in the leaflet at home (ca. 7-14 days)

Interviews (15 patients)

Surgery

Interviews (1 patient)

The first author telephoned the patients*

The first author telephoned the patients**

* Patients were given further information about the project, and if they agreed to complete the leaflet and participate in an interview, they were formally included in the project.

** Patients were asked how they were doing and reminded to bring the leaflet.