

# Gynecological cancer patients' experiences with eHealth technology and partly nurse-led consultations in a follow-up setting: A qualitative study

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## Research Article

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# Abstract

## Background

In the last decade, there has been a move toward personalized care, with a focus on the diversity of survivorship needs after initial cancer treatment. Empowering patients to actively participate in their own health management and survivorship care is encouraged. Consequently, a new follow-up model, called Lifestyle and Empowerment Techniques in Survivorship of Gynecologic Oncology (LETSGO), for gynecological cancer patients was developed and piloted at a Norwegian hospital. In LETSGO, a dedicated nurse replaced the physician in every second follow-up consultation. The nurse provided the patients with self-management techniques following cancer treatment, reinforced with eHealth technology (a specially designed app). Encouragement of behavioral change and evaluation of the late effects of treatment and recurrence symptoms were central aspects of the self-management techniques. The app further encouraged physical activity and positive lifestyle change, helped identify recurrence-related symptoms, and provided reminders on activity goals. This study aimed to investigate the views on alternating nurse-led and physician-led care supported by eHealth technology among participants who piloted the LETSGO intervention.

## Methods

Semi-structured qualitative interviews were conducted to analyze how the participants experienced the LETSGO intervention 6–7 months after the intervention onset.

## Results

All LETSGO pilot study's participants felt safe and well taken care of. They perceived the nurses as being less busy than doctors, which made it easy for them to bring up any cancer-related challenges. Most participants reported increased empowerment and confidence in being able to recognize symptoms of cancer recurrence. Half of the participants used the app regularly and were motivated to increase their levels of physical activity. Some experienced technical errors with the app.

## Conclusions

Overall, partly nurse-led consultations and eHealth technology were well-received among the participants. An intervention study is required for further evaluation. The reported technical app errors should be resolved and tested prior to eHealth application implementation. This study reports gynecological cancer patients' perspectives of nurse-led follow-up and the use of eHealth technology, and is expected to be useful in personalized survivorship care planning.

# Trial registration:

ClinicalTrials.gov, NCT03453788. Registration 5 March 2018,  
<https://clinicaltrials.gov/ct2/show/NCT03453788>

## Background

Traditional cancer follow-up has been criticized for primarily focusing on recurrence detection and less on the physical and psychological consequences of cancer and cancer treatments (1). Concurrently, the aging population and the fact that more patients live with and beyond cancer due to improved treatments result in increased demand for already restrained healthcare resources (2). Thus, the traditional cancer follow-up care needs to be modified. Cancer services have paid increased attention to the benefits of patient empowerment and self-management in the cancer survivorship trajectory (3, 4). Patient empowerment can be defined as enabling patients to manage life aspects that are important to their health and healthcare (5). Similarly, self-management is defined as taking responsibility for one's own well-being and lifestyle behavior, including medical aspects and emotional issues following an illness (6). Patient education on survivorship issues enables targeted, personalized healthcare aligned with survivors' needs and encourages patients to take responsibility for their own health (3, 4, 7). Endometrial cancer, which is the most common gynecological cancer, is associated with obesity and weight-related comorbidities, such as diabetes and hypertension (8). Lifestyle changes, including physical activity and healthy nutrition, can enhance quality of life and reduce the risk of cancer recurrence for gynecological cancer survivors (9-11). Thus, the promotion of patient education and self-management, including a focus on physical activity, can increase patients' knowledge of, and involvement in, their disease management and educate them about the key signs of recurrence. In this regard, informed patients who actively partake in their own care receive higher-quality care than can be achieved by traditional approaches (7, 12). However, consistent guidelines and strategies for implementing self-management among gynecological cancer survivors in a clinical setting are yet to be developed.

Nurse-led consultations, either by telephone or in person, can alleviate time-restrained physician resources and are associated with high satisfaction, trust in the healthcare provided, and engagement in treatment and care options among patients (13, 14). Moreover, studies on nurse-led consultations report either improved or equal quality of life outcomes compared to traditional follow-up care after gynecological cancer (14-18), and nurse-led counseling can improve sexual functioning among gynecological cancer survivors (18, 19). In a randomized controlled trial of ovarian cancer survivors, nurse-led physical activity coaching was compared with traditional care controls (20). Cancer-related fatigue and depression were significantly reduced in the intervention group compared to the controls. In another randomized controlled trial, follow-up with nurse-led telephone consultations was compared with traditional physician-led, hospital-based consultations in patients with FIGO stage I endometrial cancer (21). The researchers found higher patient satisfaction among participants in the nurse-led group and no detriment in anxiety and quality of life measures or indications of delayed recurrence detection compared to the physician-led

group. Hence, the researchers argued that nurse-led consultations can replace or complement physician-led consultations without increasing patient anxiety or satisfaction with the provided service.

The development of technology is rapidly evolving in the industrial world, with nearly unlimited possibilities. The electronic technology used within healthcare (eHealth technology) has great potential to improve quality and safety within healthcare (22). The use of eHealth in active cancer care and survivorship is also increasing (23), which facilitates tailored information, feedback, self-monitoring options, and eased communication with healthcare professionals (24). Various eHealth modalities, including mobile phone applications, have shown promising results in improving patient engagement in self-management (25, 26).

However, to the best of our knowledge, no studies have evaluated alternating nurse-and physician-led consultations among gynecological cancer survivors. Our research group developed a new follow-up model for gynecological cancer patients. The model was named Lifestyle and Empowerment Techniques in Survivorship of Gynecologic Oncology (LETSGO), and its objectives were to increase patient involvement and personalized care while simultaneously reducing the number of consultations with oncologic specialists (physicians). To meet these objectives, follow-up consultations were scheduled with alternating nurse-led and traditional physician-led consultations; the content is described in Table 1. The nurse-led consultations were reinforced with eHealth technology in the form of a specially designed smartphone application (the LETSGO app) and an activity tracker, as described in Table 2. We pilot-tested the LETSGO model over six months in a medium-sized Norwegian hospital. Within three weeks of inclusion in the LETSGO pilot study, the participants were scheduled for the first nurse-led consultation. The nurse used motivational interviewing and behavioral change techniques to empower patients on how to play a more active role in their post-cancer care. Three months after the inclusion, the participants were scheduled for a traditional physician consultation, and after 6 months, they were scheduled for another nurse-led consultation, which continued the approach from the first consultation (Tables 1 and 2).

### **Table 1: LETSGO Pilot Study**

	<b>Time after Inclusion</b>	<b>Content</b>
First Nurse-led Consultation <sup>a</sup>	3 weeks	Information, assessment, and handling of late effects (physical and psychological)
		Development of coping strategies
		Suggestions on beneficial lifestyle changes
		Discussions on concerns regarding social network, work, or relationships
		Introduction to LETSGO app and Garmin activity tracker (issued free of charge)
		Physical activity goal setting
		Instruction on how to manually register counted steps from the activity tracker into the LETSGO app
Physician-led Consultation <sup>c</sup>	3 months	Assessment of symptoms
		Physical examination
		Vaginal ultrasound
		Discussions on survivorship concerns
		Reinforcement of behavioral change initiated by nurse
Second Nurse-led Consultation <sup>a</sup>	6 months	Assessment of symptoms and survivorship concerns
		Evaluation and adjustment of behavioral change goals

<sup>a</sup> Consultations of 45 min each

<sup>b</sup> Introduced at first nurse-led consultation and kept until end of study

<sup>c</sup> Consultations of 30 min each, additional treatment modalities/tests applied upon indication

Abbreviation: LETSGO, Lifestyle and Empowerment Techniques in Survivorship of Gynecologic Oncology

**Table 2: LETSGO Application Content**

<b>Sections</b>	<b>Contents</b>
<b>Contact Information</b>	Telephone number and opening hours for contacting the study participants' nurse
<b>Disease Information</b>	
Treatment	Information, illustrations, videos
Signs of Recurrence	
Late Effects	
<b>Lifestyle Advice</b>	
Physical Activity	Information, illustrations, videos
Relaxation Activities	
Smoking Cessation	Information
Nutrition	
<b>Activity</b>	
Exercises	Suggested exercise programs of various levels with illustrations and videos
Goal Setting	Participant-reported activity goal for selected activities (minutes)
Activity Graphs	Display of activities performed (days and weeks), manually registered by the participants
<b>Patient Forms</b>	
Daily Walking Steps	Steps counted by activity tracker, manually registered by the participants
Minutes Spent on Activities <sup>a</sup>	Registration of activities (minutes)
Symptom Scores <sup>b</sup>	Questionnaire with 10 recurrence-specific questions, each rated by participants as "Not at All," "A Little," "Quite a Bit," and "Very Much."  Alarm and advisement to call the study nurse (pre-saved telephone number in the app) if the answers given indicate recurrence based on a predefined algorithm and threshold.

<sup>a</sup> The app provided a weekly reminder to register activity.

<sup>b</sup> The app provided a monthly reminder to submit the questionnaire.

Abbreviation: LETSGO, Lifestyle and Empowerment Techniques in Survivorship of Gynecologic Oncology

The main objective of this qualitative interview study was to explore how the participants in the LETSGO pilot study experienced alternating nurse-led consultations aided by eHealth technology. The secondary objective was to disclose any concerns or issues the participants experienced regarding the LETSGO content or its delivery method, which would be useful in planning a prospective intervention study.

## Methods

### Study Design

We conducted a qualitative study in which semi-structured interviews were conducted with participants in the LETSGO pilot study. We developed a thematic interview guide addressing the following themes: partly nurse-led consultations and the mobile application.

### Participants

Patients who had participated in the LETSGO pilot study were invited by their treating specialist to participate in the present interview study. Written information on the study and a consent form were provided to all participants. The following inclusion criteria were used: patients who were enrolled in the LETSGO pilot study, had the ability to understand and read Norwegian, had no cognitive barriers, and could provide informed consent. The exclusion criterion was cancer recurrence, as this would transition the patient from follow-up care and back into active treatment. Of the 17 eligible participants, 12 patients accepted the invitation and were included in the interview study.

### Data Collection

The interviews were conducted face-to-face in a hospital setting between October and November 2018. To ensure that the participants could express themselves and their perceptions freely, the interviews were conducted by two independent researchers who did not know the patients. One was an associate professor from a nearby university (BJ), and the other was a medical doctor and Ph.D. candidate from the hospital in which the study was conducted (MS). All interviews were audio-recorded and transcribed verbatim, and each lasted between 18 and 41 min (median = 25.5 min). Within the topics covered by the interview guide, the participants were given the opportunity to steer the conversation toward what they perceived as important, and they appeared to discuss their experiences freely, without prompting from the interviewers (27).

## Data Analysis

We performed a qualitative content analysis using a hermeneutic phenomenological approach, as described by Lindseth and Norberg (2004) (28). In the first phase, a naïve reading of the transcribed interviews was performed to obtain an overall impression and note preconceptions in relation to the patients' experiences of attending the LETSGO pilot study. In the second phase, structural analyses helped divide the text into units of meaning, which were then condensed and abstracted before being structured into the main themes and subthemes. In the third phase, a comprehensive understanding was developed in which the authors' preconceptions, naïve reading, structural analyses, and relevant literature were all taken into account. When any doubt or disagreement arose, the researchers went back to the data and engaged in new discussions. Consensus emerged for all interpretations. This repetitive process enabled us to develop a broader understanding of the patients' experiences.

## Ethical Considerations

The study conformed to the principles of Helsinki Declaration II. All participants were given oral and written information about the qualitative study methods and aims, and all provided written consent to participate. They were free to withdraw consent at any time, without justification, and without consequences for follow-up. The study was approved by the Regional Committee for Medical and Health Research Ethics of South East Norway (2017/2195) and registered at Clinicaltrials.gov (NCT03453788) 05/03/2018.

## Results

The 12 interviewed participants were 35 to 74 years old and had been treated for uterine, ovarian, cervical, or vulvar cancer of FIGO stages I, II, or III. The median age was 51.5 years. All but one patient had received surgical treatment, half had undergone additional chemotherapy, and some had received radiation therapy. Most women in the pilot study had finished their treatment less than two years prior to inclusion in the study. Some had previously been treated for cancer recurrence, with no signs of active disease. Most participants explained that they participated in the study to support further research and development in the area of cancer care. The results are divided into themes and subthemes as they emerged from the analyses (Figure 1). The four core themes illustrate how the patients could gain useful knowledge on cancer survivorship and lifestyle change while feeling reassured and well taken care of in the LETSGO pilot study, although some technical app issues arose: "Satisfied with the provided care" highlights the trust in the nurse's expertise and perception of the app as an easily accessible information tool, "Increased their focus on physical activity" presents the expressed motivation to become more physically active, "Feeling of increased self-management" highlights the participants' perception of gained ability to recognize worrying symptoms, and "Technical issues and limitations" describes problems encountered with the app software. The main emphasis of the participants was on experiences with nurse-led consultations.

## Satisfied with the Provided Care

*"You feel taken care of and safe, and that is very important."* Participant 5

When asked about their overall opinions on partly nurse-led consultations and the supplementation of eHealth technology, all participants expressed feeling safe and well taken care of. The participants appeared open-minded, with great trust in the healthcare system.

*"I think I have to trust that the follow-up program the health care system recommends is up to standard. And if they say that a nurse and a physician can perform an equally good job, then I'll have to trust that."* Participant 12

Almost all participants thought that the nurse-led consultations were appropriate and a useful alternative to traditional physician-led consultations and found it easy to initiate contact with the nurse.

*"It felt very natural because we established a relationship, as I had been to the same nurse before. I think that is really nice."* Participant 10

The participants described the nurse as educated and qualified and that they could discuss physical, lifestyle, and psychological concerns with her.

*"She had lots of knowledge, and I thought it was good to have someone to talk to. It is nice to know you are taken seriously."* Participant 11

Because of the nurse's invitation to freely address concerns, some women found the nurse-led consultations too short in time to adequately discuss the many relevant survivor-related issues they had. Some of the participants reported that it was equally easy to bring up concerns with the physician, while others reported it easier to talk with nurses, as they perceived physicians as preoccupied, with limited time to talk to patients.

*"You are aware of it – 'Oh, she's so busy!' – but then, to be able to sit and talk with a nurse, I think that is very nice."* Participant 2

Perceived time constraints among physicians also resulted in several participants expressing relief in having the possibility of calling a nurse between visits if emerging concerns were to occur. They considered the nurse to be a screening gateway for symptoms, with the ability to spare physician resources if further examinations were considered unnecessary.

*"When you know that if there is something and you can meet a nurse...then you don't have to steal time from the doctor, if you don't really need it."* Participant 2

They appreciated the fact that the app provided a contact number of whom to contact if they had questions or worries, and described it as an opportunity to relieve anxiety related to emerging concerns, as well as a pleasing feeling of being taken seriously.

## No Need for Frequent Physical Examination

Most women did not feel they needed a physical examination more than once every 6 months and, thus, felt confident with the alternation between nurse- and physician-led scheduled consultations. Three believed that they did not need a nurse-led appointment at all, while most found it reassuring to talk to a nurse in between physician consultations and felt confident that the nurse would consult the physician if necessary.

*“I think it is fine to have nurse consultations because if there’s something in particular that needs examination, then I assume I would be referred to a doctor.”* Participant 6

One woman stated that she would like to have a physical examination as often as possible and would, therefore, have preferred exclusively physician consultations, preferably more often than the traditionally scheduled ones.

## User-Friendly and Informative LETSGO Application

Half of the participants reported using the LETSGO app regularly, contrary to one woman who refrained from using the app at all. She argued that reading and hearing about her disease made her feel overly conscious of and defined by her disease, even though she felt well—which, in turn, could affect her recovery.

*“You don’t get healthy, reading about illnesses, you know.”* Participant 7

Most participants, irrespective of the cancer diagnosis, found the app user-friendly and easily accessible, with concise information on their cancer disease and links to recommended websites if they wanted further information.

*“I read everything. I think the information was excellent – good to know that there’s a place to obtain valid information, not just Google.”* Participant 4

One woman used the app as a tool to answer questions from her friends and family about her disease because she found it hard to explain the condition in her own words.

*“...when the family asked, I had a good answer to provide.”* Participant 11

There were different opinions on the various contents of the app. Many participants would have liked the app to contain more detailed information on their disease, but very few used nutrition advice, and no participants mentioned relaxation exercises during the interviews.

## Increased their Focus on Physical Activity

All participants discussed suitable physical activities during the nurse-led consultations, and some were happy to learn that even small increases in activities could result in health benefits. Several women

emphasized that the encouragement to set a weekly activity goal and logging achievements in the app motivated them to become physically more active.

*"It inspired me to start working out, which I did. I would probably not have started if I hadn't been a part of this. It would probably have taken longer. This fall, I started a Tabata workout, which involves strength and condition exercises."* Participant 1

Some participants, however, perceived the app's physical activity module as too basic and uninspiring compared to other training apps. For example, only one weekly goal could be entered into the app, limiting the participants to mainly focus on that one activity. Furthermore, some of the younger participants would have liked their achieved activities to be displayed graphically. Additionally, one participant preferred that healthcare providers receive her submitted physical activity achievements. As a result of these limitations, some stopped using the LETSGO app for physical activity, while others started using established training apps instead. The activity tracker, in contrast, was well-appreciated by almost all participants. They reported that the tracker was motivating and encouraged them to walk or run, which helped them reach their daily step goals.

*"I used the activity tracker. So, if I hadn't walked enough steps to meet the goal I'd set, then I just went for another walk to reach my goal."* Participant 6

Some participants competed against themselves, while others competed against friends or family. Some participants said that by using the activity tracker, they not only increased their own physical activity, but consequently also motivated their surroundings to become more physically active.

*"Oops, today I haven't walked much. Maybe we should do something. Do you want to go out in the garden for a while?"* Participant 4

Those who refrained from using the activity tracker stated the design of the device and its inability to register steps from bike cycling as reasons.

## **Feeling of increased self-management**

Most women explained that they became relaxed and felt safe knowing what to look for after engaging in monthly symptom ratings in the app and participating in the nurse-led consultations. They reported that they had gained new and important insights regarding their cancer disease.

*"When I finished the cancer treatment, I didn't know that symptoms were an important way of discovering a recurrence. I thought that it would be by a CT scan and examinations at the hospital, I mean, what the doctors do. But then, I was taught to be more aware of my body."* Participant 12

Consequently, most participants found the app reassuring and reported that the regular symptom questions provided a feeling of security, mainly because they gave them an opportunity to rate their own

health condition.

*“To look for and notice symptoms and such – it’s been reassuring because I’m new to this. I called and asked for an appointment when I experienced some bleeding.”* Participant 11

*“I believe the best thing about answering the symptom questions is that I thought them through. And if I were to experience those worries, I would know who to get in touch with.”* Participant 5

Another said that she had an epiphany when she answered the symptom questions:

*“Aha, that could be a sign of something wrong. I didn’t know that!”* Participant 9

## **No Perceived Need for Self-Management Interventions**

Two participants reported feeling healthy and cured and, thus, disregarded the information on their diagnosis and found the symptom questions irrelevant.

*“Everything is okay with me, so I don’t feel the need for an app.”* Participant 8

Another participant emphasized that the nurse should have provided a clearer goal for the appointment, including both physical and psychological aspects of cancer survivorship.

*“I talk a lot, so I felt that I took over and controlled what we were talking about.”* Participant 9

Although everyone expressed confidence in the follow-up model, not all felt prepared to take responsibility for monitoring the potential symptoms of cancer recurrence.

*“You are supposed to monitor symptoms yourself, but how can you monitor your own genitals? You may be able to see bleeding or if you gain weight, but you can’t check yourself.”* Participant 8

In addition, some participants stated to prefer that health officials received the symptom scores and physical activity achievements they had submitted.

*“I would have liked if what I registered in the app was seen by someone on the other end. One believes that it will be sent out, and when it isn’t, then it’s not that valuable.”* Participant 3

## **Technical Issues and Limitations**

Several software issues with the app emerged during the interviews. One was that physical activity had to be manually entered into the app before noon the following day. If the achievements were entered too late, the participant did not obtain credit for reaching her goal.

*“Oh no, it’s noon and I forgot to register. Now it’s too late!”* Participant 3

In addition, the number of steps counted by the activity tracker had to be manually entered into the LETSGO app. This was perceived as inconvenient, and several participants recommended automatic step registration as a useful app improvement.

*“Ideally, I wish the activity tracker was connected to the app. If I wanted to really evaluate activities and get motivated and such, then I used the Garmin app as well. To see how far I had run.”* Participant 10.

Some participants did not receive monthly reminders to submit answers to the recurrence-specific questions, while others experienced frozen app software or were evicted from the app during the symptom evaluation.

*“You can register the activity—for example, the walk you’ve had—but when you register, it freezes. And these questions you’re supposed to answer now and then... It stops at the fourth question, and then I’m not able to continue.”* Participant 2

## Discussion

In our study, all participants felt safe during follow-up with alternating nurse-led and physician consultations. Most participants emphasized that communication with a nurse was pleasant, both because the nurse seemed experienced and because she appeared less busy than physicians usually do. This is in line with a study conducted in the UK, which reported that ovarian cancer survivors with three years of nurse-led telephonic follow-up found that “time was never an issue” and that “somebody was looking out for me” (29). Researchers assessing endometrial and lymphoma cancer survivors also found nurse-led appointments helpful, as the survivors’ experience of nurses contrasted with their perception of physicians being too busy or less interested when contacted for support and reassurance (14, 21, 30). Our participants found the nurse consultations and app informative and educational, and several stated that these services corrected a previous misconception that only physical exams or imaging scans reveal recurrences. The monthly reminder to rate recurrence-associated symptoms in the app, including the apps’ alarm and advice to call the treating nurse if the entered symptoms were associated with an increased risk of recurrence, was perceived as both useful and reassuring by most of the interviewed participants. They reported learning that monitoring their own body and health for symptoms could identify recurrences or other concerns that should be discussed with healthcare providers. According to our findings, learning about the cancer disease, expressing concerns, and deciding on survivorship care are important factors for increasing empowerment in cancer survivors (31). However, not all LETSGO participants apprehended the empowerment aspect of the app and disregarded it with the argument of feeling well and thus not needing it. These patients could abandon the beneficial knowledge of alarming symptoms. If a recurrence were to occur later, their gap in knowledge could possibly delay contact with healthcare providers. eHealth technology is a powerful and expanding technology field that might be beneficial in healthcare settings, as it can help identify a problem and guide appropriate action (32). It can also reduce the number of face-to-face consultations, which can be cost-effective and ease overburdened healthcare services (33). eHealth technologies have led to improved survival (34) and

reduced hospital admissions (34, 35) among cancer survivors. However, there is limited knowledge of its benefits for gynecological cancer survivors. In general, patients welcome eHealth technology to support empowerment and self-management (36). In the present study, most participants, irrespective of the gynecological cancer diagnosis, found the app and activity tracker useful, although some of the younger participants experienced the app as limited and uninspiring compared to the established nonmedical apps. This highlights the potential value of further studies on eHealth technology among gynecological cancer survivors. Feedback from participants regarding app failures is also useful. Technical issues causing the app to malfunction can potentially fail to alert survivors of important actions or can result in dissatisfaction with the app, causing discontinued use (37, 38). Additionally, finding a balance between easy-to-use functionality, which enables use by patients who are less accustomed to technology, and visually appealing content that enhances user engagement is important (37). In studies conducted among healthcare professionals, increased workload is reported as a major expressed concern with regard to implementing eHealth technology in clinical practice (36). Thus, extensive testing of the app, problem-solving, and the establishment of well-functioning technical support are important tasks that must be performed before implementing the app in daily practice (23).

Many participants in the present study stated that they entered symptoms and physical activity achievements into the app as instructed. However, some reported that they did not find this exercise meaningful, as the data were not passed on to the responsible healthcare providers. Apparently, several participants did not comprehend patient education as an important aspect of entering physical activity achievements. Thus, to ensure patient commitment and the optimal effects of self-management interventions in a clinical setting, it is important to repeatedly provide information on why symptom evaluation and physical activity goal setting are encouraged. One participant reported that reading and hearing about her disease made her feel overly conscious of, and even defined by, the disease, even though she felt well. This is an important statement that needs to be considered when planning future follow-up care. This participant's viewpoint is consistent with the reports from other studies that have disclosed significant variance among cancer survivors in terms of their need for information (39, 40) and, thus, indicate the importance of not inflicting greater worry or stress through patient education, albeit well-intentioned. Nurse-led consultations using motivational interviewing to encourage patient reflection on lifestyle changes and survivorship needs, combined with eHealth technology, can be an effective strategy for personalizing care and optimizing survivorship trajectories. However, this model of follow-up care after cancer treatment should be tested in larger intervention studies.

## **STRENGTHS AND LIMITATIONS**

A strength of the present study is that the participants were invited to express their opinions on partly nurse-led, and thus reduced physician, consultations in a follow-up setting. The opinions, suggestions, and needs of the current study's participants can be considered when larger intervention studies on personalized care are being planned—which, in turn, might prevent dissatisfaction and reduce drop-out rates. Another strength was that the patients had no previous engagement with the interviewers and were,

therefore, without bias and could steer the conversation toward what was important for them. Furthermore, for investigator triangulation, the data were analyzed and discussed by researchers with different academic and medical backgrounds, which resulted in a broad understanding of the participants' thoughts and opinions. One limitation is that the LETSGO pilot study only included patients who owned a smartphone, and as the current qualitative study only interviewed participants from the LETSGO pilot study, there could be selection bias in relation to the evaluation of the nurse-led consultations. Another limitation is the possibility of social desirability bias, whereby patients in an interview setting might sugarcoat their experiences when talking with representatives from the hospital that initiated the LETSGO pilot study. However, this possibility was mitigated by the fact that none of the interviewers knew the participants, and the participants were encouraged to report any negative experiences encountered to facilitate an assessment of whether the follow-up model was beneficial for future survivors. The study was conducted at a single practice site in Norway; thus, the generalizability to other populations might be limited.

## **IMPLICATIONS FOR PRACTICE**

Follow-up care with eHealth technology and partly nurse-led consultation is a promising approach for gynecological cancer survivors and should be tested in a larger study comparing the new follow-up model with the traditional model. The present study presents patient perspectives on factors to be considered for the implementation of nurse-led consultations and eHealth technology in a follow-up setting.

## **Conclusions**

The results showed that the gynecological cancer survivors in this study felt safe and were satisfied overall with alternating physician-led and nurse-led consultations reinforced with eHealth technology. They experienced the nurse-led consultations and symptom registration in the app as reassuring, and most participants expressed increased awareness of symptom monitoring and physical activity benefits. However, several participants did not comprehend that one objective of nurse-led care and active eHealth technology was a means of patient empowerment and self-management in the survivorship trajectory. Half of the participants used the LETSGO app regularly during the trial, and among the reasons for not using the app regularly were unexpected software issues, limited or too basic functions, and the fact that a survivorship app was unnecessary due to the participants' perceptions of feeling well. Further research with prospective intervention studies with eHealth technology and alternating care between nurses and physicians would be a reasonable next step, although this study demonstrates the importance of thorough testing of new electronic applications to prevent technical challenges and inferior treatment provision due to loss of function.

## **Abbreviations**

eHealth technology - Electronic technology used within healthcare

## Declarations

Ethics approval: The study was performed in accordance with the Declaration of Helsinki and approved by the Regional Committee for Medical and Health Research Ethics of South East Norway (2017/2195).

Consent to participate: All participants provided written consent to participate.

Consent for publication: All participants consented to the publication of data from the interviews.

Availability of data and materials: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Competing interest: The authors declare that they have no competing interests.

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## Figures



**Figure 1**

Themes and Subthemes that Emerged from the Interviews

Abbreviation: LETSGO, Lifestyle and Empowerment Techniques in Survivorship of Gynecologic Oncology