Evaluation and implementation of ListeningTime; a web-based preparatory communication tool for elderly cancer patients and their healthcare providers

J. Noordman1,2*, J. A. Driesenaar1, I. R. van Bruinessen1, J. Portielje3 & S. van Dulmen1,2,4

1Nivel, Netherlands institute for health services research, Utrecht, The Netherlands.
2Department of Primary and Community Care, Radboud University Medical Center, Nijmegen, The Netherlands.
3Leiden University Medical Center, Department of Medical Oncology, Leiden, The Netherlands.
4Faculty of Health and Social Sciences, University of South-Eastern Norway, Drammen, Norway.

*corresponding author: P. O. Box 1568, 3500 BN Utrecht, The Netherlands, Tel: 0031 30 2729770, E-mail: j.noordman@nivel.nl

Keywords: Internet; communication; web-based tool; cancer patients; healthcare providers; videos; audio-facility.

Paper type: Original Paper

Abstract

Background: Effective patient-provider communication is an important condition to deliver optimal care and it supports patients in coping with their disease. The complex and emotionally loaded setting of oncology care challenges both healthcare providers and patients in reaching effective communication. ListeningTime is developed for elderly cancer patients and their oncological healthcare providers to help them (better) prepare the clinical encounter and overcome communication barriers. ListeningTime is a web-based preparatory communication tool including modeling videos and has an audio-facility to listen back to recorded encounters.

Objective: To evaluate the usability, perceived usefulness and actual use of ListeningTime, through the eyes of elderly cancer patients and their oncological healthcare providers. If evaluated positively, the ultimate goal is to make ListeningTime publicly available.

Method: First, members of a panel of elderly (ex-)cancer patients (≥ 65 years) were approached to evaluate ListeningTime via an online questionnaire. Usability and perceived usefulness were assessed. Second, ListeningTime was evaluated in real-life practice through a pilot study in three Dutch hospitals. In these hospitals, elderly cancer patients and their oncological healthcare providers were approached to evaluate ListeningTime via a similar online questionnaires, measuring perceived usefulness. Additionally, we examined log files and user statistics to get insight in how the program was used.

Results: Thirty (ex-)cancer patients from the patient panel, and seventeen patients and eight healthcare providers from the hospitals, evaluated ListeningTime. Overall, both the panel members and the hospital patients were positive about the ListeningTime website, the audio-facility and the video fragments. Some patients suggested improvements with respect to the actors’ performances in the video fragments and believed that ListeningTime is mainly suitable for non-experienced patients. Healthcare providers were also positive about ListeningTime. They valued the video fragments for patients and the audio-facility for patients and themselves. However, providers did not listen back to their own recorded encounters. Patients did use the audio-facility to listen back to their encounters.

Conclusion: ListeningTime was evaluated positively, both by patients and their oncological healthcare providers. As a result, the video fragments of ListeningTime are now made publicly available for elderly cancer patients through the Dutch website 'kanker.nl'.
Introduction

Effective patient-provider communication is an important condition to deliver optimal care and it supports patients in coping with their disease. The complex and emotionally loaded setting of oncology care challenges both healthcare providers (HCPs) and patient in reaching effective communication. Elderly cancer patients find it difficult to communicate their informational needs or preferences and in general their participation during interactions with HCPs is low [1,2]. In a recent study, 47% of elderly cancer patients reported barriers in communicating with their oncological HCP, e.g. not wanting to be bothersome, remembering topics to discuss only afterwards and feeling nervous [3]. In addition, HCPs insufficiently check whether or not patients understand the information, do not explore what patients already know and what information they still need [4,5]. In this vulnerable setting, elderly patients are additionally challenged by age-related deficiencies, like co-morbidity, memory loss and having a smaller network [6,7].

These findings indicate the importance of supporting both HCPs and elderly cancer patients in their communication. Preparing an encounter by watching modelling videos, i.e. demonstrating different communication strategies of simulated patient-provider encounters, has been found to have positive effects on the quality of patient-provider interactions [8-10]. Listening back to an audio-recording of one’s own clinical encounter is another intervention that has proven to support patients in various ways; by enhancing recall, improving decision making and the communication with family members and by reducing anxiety [11-13]. With the aim to overcome communication barriers by having elderly cancer patients and their oncological HCPs (better) prepare the clinical encounter, we combined these two techniques and developed ListeningTime, a web-based preparatory communication tool, based on a needs assessment among elderly cancer patients and their oncological HCPs [3,14]. A web-based intervention was chosen, as the Internet is a valuable source of information and support, also for elderly cancer patients [15,16]. In the Netherlands, 88.3% of the elderly of 65 years and older make use of the Internet [17]. In addition, the content of online interventions can be computer tailored to patients’ needs and preferences, online interventions are easily accessible and time-efficient and the cost of implementation is minimal once developed [18,19].

ListeningTime contains two video diaries, with each 12 short video fragments of simulated patient-HCP encounters. The video fragments demonstrate different communication strategies. At the end of every fragment a simulation question is formulated (e.g. ‘what would you do if.. emotions get in your way/you do not understand what your doctor is talking about?’). Patients are asked to watch a set of 6 personally relevant video fragments, selected by an algorithm. HCPs are asked to watch one entire diary with 12 fragments. Patients and HCPs can furthermore listen back to their audio-recorded encounter through the available audio-facility. They can access the website anywhere, at any time, with a personal login [14].

A problem with many eHealth interventions is that they often remain unused after being developed. One of the reasons is that in daily practice, the intervention is not easy to use. Usability and perceived usefulness are preconditions for the actual use of websites like ListeningTime.

Therefore, the aim of this study was to evaluate the usability, perceived usefulness and actual use of ListeningTime, through the eyes of elderly cancer patients and their oncological HCPs. The ultimate goal is, in case of a positive evaluation of ListeningTime, to make this web-based communication tool publicly available.
Methods

Aim of ListeningTime
ListeningTime, a web-based preparatory communication tool for elderly cancer patients, was developed in order to help patients (better) prepare their encounters with oncological HCPs. The tool was also designed to support HCPs in preparing their encounters with elderly patients. An overarching aim of the project was to develop ListeningTime in a participatory way to increase uptake and use. The participatory development process of ListeningTime, including the content and techniques used, was described in a previous publication [14].

Design
A cross-sectional design was used to evaluate the usability, perceived usefulness and actual use of ListeningTime, according to and by elderly (ex-)cancer patients and their oncological healthcare providers. First, members of a patient panel were approached to evaluate ListeningTime through an online questionnaire. Second, ListeningTime was evaluated in real-life clinical practice through a pilot study in Dutch hospitals, by means of an online questionnaire and by examining user statistics and log files.

Ethics
This study was carried out according to Dutch privacy legislation. According to Dutch legislation, approval by a medical ethics committee was not required. Participation was voluntary and participants gave their informed consent at the start of their participation.

Recruitment
Elderly cancer patients were approached through the Dutch patient panel ‘kanker.nl’ (translated as ‘cancer.nl’). This patient panel consists of 169 (ex-)cancer patients of 65 years or older. In March 2016, they were invited to fill in an online questionnaire to evaluate ListeningTime. They were asked to navigate through the website while answering the questions.
Second, oncological HCPs (i.e. oncologists and oncology nurses) from three Dutch hospitals were invited to partake in the pilot study to evaluate ListeningTime. At the start, HCPs were asked to visit the website ListeningTime, create a personal login account, sign digital informed consent, fill in a baseline questionnaire and watch one of the two video diaries of simulated patient-HCP encounters containing 12 short video fragments (see Box 1). After the HCPs had watched the video diary (or diaries), they were asked to include patients for the pilot study. From April until December 2016, the HCPs approached eligible patients during their medical visits, and handed out a leaflet to the patients asking to visit the website ListeningTime before their next visit. Patients were eligible if they were: ≥ 65 years, diagnosed with cancer, having internet access, speaking and reading Dutch, and not being in the palliative or terminal phase of the disease. Interested patients who visited the website were informed about the study, instructed on the website to create a personal login and to sign a digital informed consent form and fill in a baseline questionnaire in order to get access to the selection of six personally relevant video fragments. The selection of the six personal relevant video fragments and the order of the fragments varied per patient, as based on the algorithm. Fragment 1 and 2 were always offered as first two fragments (see Box 1). The stories of the patients in the two diaries differed (i.e. one diary tells the story of a female patient with lymphoma, the other diary that of a male patient with prostate cancer) and also their
participation level during the stimulated encounters differed (i.e. one diary represents a more ‘active or assertive’ patient, the other diary a more ‘passive’ patient).

On the informed consent form, patients could opt for audio-recording their next encounter with their oncological HCP. In case of consent, their HCP audio-recorded this next visit and uploaded the recording on ListeningTime. This enabled patients, their spouses and HCPs to listen back to their audio-recorded encounter, using their personal login.

Within one week after the (audio-recorded) visit to their HCP, patients were asked to evaluate ListeningTime through an online questionnaire. At the end of the study, HCPs were also asked to evaluate ListeningTime through an online questionnaire.

Box 1. Overview of the topics of the video fragments

| 1. Introduction patient and companion |
| 2. The role of the companion          |
| 3. Emotions                          |
| 4. Choices about treatment options concerning quality of life |
| 5. Remembering information           |
| 6. Need for support                  |
| 7. Prior to the encounter            |
| 8. Asking questions (about prognoses; where treatment takes place; wait-and-see policy; intimacy or sexuality; fear of dead) |
| 9. Indicating your complaints or concerns |
| 10. Asking all your questions         |
| 11. Complex information              |
| 12. Various information sources      |

Online questionnaires

The online questionnaire of the patient panel was used to assess the usability and perceived usefulness of ListeningTime. This questionnaires inquired about: patients’ socio-demographic characteristics, login procedure, textual parts of the website, video-fragments, audio-facility and other remarks. The online questionnaires in the pilot study were used to evaluate the perceived usefulness of ListeningTime, according to patients and oncological HCPs in hospital based care. This questionnaire assessed their first impression of the website, the textual parts of the website, login procedure, audio-facility and video-fragments.

Usability

The usability of ListeningTime was measured with the System Usability Scale (SUS) [20]. The SUS includes 10 items about several facets of usability, e.g. complexity of the website, scored on a 5-point Likert scale, ranging from 0 (strongly disagree) to 4 (strongly agree). SUS-scores were calculated using the instructions of the author. SUS-scores range from 0 to 100; higher scores indicate higher usability.

Perceived usefulness

The perceived usefulness of ListeningTime, i.e. ‘the degree to which a person believes that using a particular system would enhance his or her job performance’ [21], was measured using questions and statements. The statements were based on a study by Butow and colleagues [22]. Similar statements and questions were used in a previous study [23].
Use
The actual use of ListeningTime by patients and HCPS in the pilot study was examined using user statistics and log files, i.e. automatically generated files mapping the interactions between program and users. This allowed us to get insight to what extent patients and HCPs actually used the website, login, video-fragments and audio-facility.

Implementation strategy
The ultimate goal was to implement ListeningTime, in case of positive evaluation, as a publicly available, standalone intervention, that is, without the research context and without support of professionals. Therefore, we collaborated from the start of the project with several partners. This participatory development method was pursued to create awareness of the potential of ListeningTime and to prepare for a successful implementation (see for more details about the participatory development process of ListeningTime [14]). These partners included representatives from hospitals, the Nederlandse Federatie van Kankerpatiënten organisaties (NFK), the ‘Quality institute for oncological and palliative research and practice’ (IKNL: Integraal Kankercentrum Nederland) and 'kanker.nl'. During the project, implementation of ListeningTime by one or several of these partners was discussed.

Statistical analyses
Descriptive statistics were used to analyze the results. Data analyses were performed in Stata version 14.
Results

Patient panel

Study sample
Of the 88 members of the patient panel who were invited to evaluate ListeningTime, 30 members responded and filled in all questions. Respondents were on average 69 years old (range 65-78), 73% was male, 43% was highly educated (i.e. higher professional education or university) and 83% was married or had a registered partnership. 60% was diagnosed with urological cancer (kidney, prostate, bladder). 40% indicated that they were currently being treated for cancer and 33% had completed treatment. Other respondents were awaiting treatment, following a wait-and-see policy or indicated that they completed treatment.

Usability of the website
83% of the patients indicated that they did not need technical support to use the website, 66% thought the website was easy to use, 60% found the different website functions well integrated, 60% felt familiar with the website and 37% of the respondents would like to use the website regularly. Patients had a mean SUS-score of 73.2 (SD: 18.5, range: 30-100, n=30), which indicates good usability [20,25].

Perceived usefulness of the website
At first impression, 50% of the respondents found the website clear, 43% found the website reliable, 37% professional, 17% inviting and 13% attractive. The website was not experienced as boring, busy, gloomy or confusing.
Next, respondents evaluated the subpages of the website: ‘About ListeningTime’ and ‘Patients’. 83% of the respondents could easily find the page ‘about ListeningTime’, 97% found it clear to whom the website is intended, 93% found it clear what the website has to offer and 83% stated that they did not miss any information about ListeningTime. Respondents who missed information indicated that the website lacked information about: a second opinion; how to inform more experienced patients and which hospitals are cooperating with this research.
80% of the respondents were able to easily find the page ‘patients’. Seven respondents explicitly mentioned that the page is clear, clean, well-designed and easy to search. Two respondents indicated that the amount of text could be less.
Respondents made the following, partly contrary remarks about the website:
‘a good website with many possibilities’
‘I thought it was a bit boring and educational, I hope this will not stop people from using it’
‘if possible implementation via the website ‘kanker.nl’’
‘video fragments were very weak’
‘nice addition to the information from oncology’

Perceived usefulness of the video fragments
70% of the respondents were able to watch the video fragments. The other respondents did not login to watch the video fragments (n=5), indicated to watch the video fragments another time (n=2), were
abroad (n=1) or too emotional to watch the video fragments (n=1). Almost all respondents were satisfied with the selection and playing of the video fragments. They made the following comments about the video fragments: easy; good; simply click; fine; without hesitation or interruption; sound was pleasant and clearly spoken; video’s played without problems.

In addition, almost all were satisfied with the ‘simulation questions’ (e.g. ‘what would you do if... emotions get in your way/you do not understand what your doctor is talking about?’) at the end of every video fragment. Respondents stated the following about the simulation questions: clear; fine; encourage thoughts; focus; encouragement to watch the video again; very personal questions; good questions but not complete. Five respondents missed the question or did not watch the entire fragment.

Respondents found the video fragments: easy to follow (95%), clear (90%), clearly spoken (85%), good (81%), realistic (76%), credible (76%), simple (71%), reliable (71%), complete (67%), professional (57%), instructive (38%). Among other things, they found the following things ‘good’ about the video fragments: recognizable; realistic; simplicity and clarity; dialogue; calm; well structured; HCP asks for and gives correct answers; effective; clear step by step method; good idea of how to communicate with the HCP and to bring certain aspects to their attention; powerful; very accommodating to the patient; answer to some questions.

Respondents mentioned the following improvement points: acting performance; more depth; identification with actors was not present (although maybe not necessary); more realistic situations (e.g. bad news conversation).

Perceived usefulness of the audio-facility
Most respondents (n=21) were (very) enthusiastic about the possibility to audio-record their conversation with the HCP and listen back to this recording on the website. Respondents mentioned the following: very commendable; excellent idea; awesome; fantastic; it would be very nice to take this opportunity; after a while you forget things or you do not know exactly what has being said, so this is a good thing. Nine respondents were not interested in this because they already make their own recordings; bring a companion to the encounter; don’t feel the need to record their encounter; find it a violation of the privacy of the HCP.

Perceived usefulness of ListeningTime
40% of the respondents would like to follow the entire program of ListeningTime, 20% was considering it and 40% is not interested. 83% find ListeningTime, or a similar program where patients see video fragments as an example of how certain topics can be discussed with their HCP, helpful for patients. Five patients did not agree and preferred a personal conversation with their HCP or found the video fragments to superficial because they already had a lot of (disease) experience

‘This [ListeningTime] can help in processing’
‘I think this is much clearer than reading information in a folder’
‘You know what to ask for’
‘It is a kind of training and sometimes a patients does not think of everything, especially when there is a lot of emotion’
‘You can prepare your encounter with the video examples’
Pilot study in hospitals

Study sample
A total of 17 patients and 8 oncological HCPs participated in this part of the study. Two of the HCPs (one per hospital) included patients for the study. 53% of the patients were male. The patients were on average 74 years old (range: 66-89), 35% was highly educated (i.e. higher professional education or university) and 35% lived alone. 53% was diagnosed with stomach-, liver- or bowel cancer, 35% with breast cancer, one patient with gynecological cancer and one patient did not know the diagnosis. 88% of the patients was treated for their disease, one patient had just undergone surgery and one patient was in remission.

Eighty-two percent of the patients indicated to always bring a companion to the encounter with their oncological HCP, one patient did so sometimes and two patients always went alone to the encounter. Eight HCPs (from three hospitals) have completed the basic questionnaire. Seven out of eight HCPs were women. On average, the HCPs were 42 years (range: 31-61 years) and had seven years of working experience (range: 1-17 years). Of the HCP, 5 were nurse, 2 medical oncologist and one oncology doctor's assistant. After completing the communication training (i.e. watching one entire diary of ListeningTime), seven (out of eight) HCPs completed an evaluation questionnaire.

Perceived usefulness of the website
Patients considered the website easy to use (100%), clear (100%), interesting (82%), and well designed (91%). All patients indicated to (probably) recommend the website to other patients. 91% of the patients considered ListeningTime as useful for patients. All HCP's found the website interesting, nicely designed, well-organized and easy to use. 43% would recommend the website to colleagues. 86% of HCPs missed no information. One HCP indicated that written information on the website about what is important in communication could be added.

‘Close to reality’ (patient)
‘You know what you can and may ask’ (patient)
‘Remembering easier what the doctor has told’ (patient)

Perceived usefulness of the video fragments
Ten patients watched the video fragments before their oncological encounter, one only after the encounter. Five patients watched the fragments again after the encounter. On average, patients watched the fragments 1.4 times (range 1-3). The video fragments were considered well designed (91%), useful (91%), interesting (82%), realistic (82%) and informative (73%).

The HCPs indicated that they had viewed all 12 video fragments from the diary once. 86% of the HCPs find the video fragments nice, 50% find them interesting and 29% find the fragments useful for themselves and realistic. HCPs indicated that the reactions of the oncologist in the fragments were not always feasible in practice (e.g. taking a pause in-between a conversation) or that they could not find out which learning moments there were for patients and were therefore curious about the evaluation by patients. 86% of HCPs thought that a program such as ListeningTime can be helpful for patients. They indicated that the fragments are not useful for themselves, but maybe for patients.

‘The video fragments are clear, but for more experienced patients not very much to the point’ (patient)
‘The fragments are too simple. Most patients are already familiar with the tips that were given in the fragments’ (HCP).
**Perceived usefulness of the audio-facility**

Eight patients indicated that they audio-recorded their encounter and replayed it on the website. Three patients listened back alone, three with their spouse and two listened back twice: once alone and once with their spouse. All patients considered listening back to their encounter as useful for themselves and their spouse, and it all helped them to remember the conversation with their HCP.

‘As a patient, it is very useful to listen back to your encounter, good service’.

The HCPs indicated that they did not listen back to the audio recordings of their conversations with patients. One HCP did not feel the need to listen back to the audio recordings and the other HCP did not find it useful to listen back to all audio recordings. Nevertheless, the HCPs were positive about the possibility of recording conversations. They indicated that the recording of the conversation is useful for themselves and for the patient, and that it provides insight into their communication skills.

**Use of ListeningTime by patients**

The user statistics show that 18 patients have logged on to the website, five times on average (range: 1-17). Furthermore, four patients have listened back to the full audio recording of their encounter, the other patients have listened to a part of their audio recorded encounter.

The user statistics also show that twelve patients have fully watched one or more video fragments. On average, they viewed nine fragments (range 1-20). Four out of twelve patients have viewed the six personally selected fragments, as intended. The introductory fragments about the patient and the role of the companion were viewed by almost all patients (as intended as part of the algorithm).

Next, patients fully viewed the following fragments (one or more times) (in order of frequency): Choices about treatment options concerning quality of life (n = 12, diary 1: 6 patients, diary 2: 6 patients); Emotions (n = 11, diary 1: 5 patients; diary 2: 6 patients); Remember information (n = 11, diary 1: 5 patients; diary 2: 6 patients); Need for support (n = 10, diary 1: 6 patients; diary 2: 4 patients). The following fragments were watched by less than four patients: prior to the encounter; asking questions (about prognoses, where treatment takes place, wait-and-see policy, intimacy / sexuality and fear of death); indicate your complaints or concerns; asking all your questions; complex information and various information sources.

Three patients watched some of the video fragments. In particular, they looked at the fragments about ‘choices about treatment options concerning quality of life’ and ‘remembering information’.

**Use of ListeningTime by HCPs**

The user statistics show that all HCPs used their personal login. They have logged on the website 12 times on average (range 1-30). Six of the eight HCPs watched (part of) all the video fragments of diary 2, as intended. The HCP usually skipped the introduction video fragments (‘introduction patient’ and ‘role of companion’). Four HCPs also watched (parts of) video fragments of diary 1. The HCPs did not listen back to the audio-recorded consultations of their own encounters.

**Implementation**

As mentioned before, the ultimate goal was to implement ListeningTime as a publicly available, standalone intervention; without the research context and without the involvement of professionals. As of June 2017, the educational video fragments of ListeningTime are publicly available for all (elderly) cancer patients through the Dutch website ‘kanker.nl’.
Discussion

Principal results and comparison with prior work

ListeningTime is a useful and user-friendly communication tool for elderly cancer patients. It helps patients to (better) prepare the clinical encounter with their oncological HCP and overcome communication barriers. Patients most valued the video fragments and the audio-facility to listen back to their recorded consultations. They mentioned that ListeningTime supported their informational needs (e.g. know what you can ask), emotional needs (e.g. how to deal with emotions, ask for support) and their cognitive needs (e.g. better remember what the doctor has told). Patients feel often overwhelmed by emotions after diagnose or during cancer treatment and have a need for emotional support. In addition, most cancer patients also report difficulties in understanding and fully processing the healthcare providers’ information [25,26]. ListeningTime seems to offer an opportunity to fulfill these needs.

Previous research found that combining audiovisual information with conversational style is the best way to present eHealth information about cancer treatment to (younger and older) adults [27]. This can explain patients’ positive evaluation of ListeningTime as we used a combination of audiovisual information with conversational style in the video fragments. However, for more experienced patients the video fragments seem less useful. Future research is necessary to get insight in which moment is or are (most) appropriate to use ListeningTime (for example, at the start of a disease trajectory). Oncological healthcare providers were also positive about ListeningTime as a supportive tool for patients. They valued the video-fragments and the possibility to listen back to the audio-recorded consultation. However, they also mentioned that the video fragments were too simple for patients. It is possible that HCPs overestimate their patients’ communication skills or that they included mainly experienced patients during the pilot study. Analyzing real-life video- or audio-recordings of patient-provider encounters in this setting can provide insights into the communication process and role of both patients and providers. Since only eight patients audio-recorded their encounter during this study, it is not possible to draw conclusions. As mentioned before, HCPs were positive about the possibility to listen back to the audio-recordings. However, they did not listen back to their own recorded encounters. This can have several reasons, e.g. lack of time or not feeling the need to listen back. For this study, the main aim was to support elderly cancer patients in overcoming their communication barriers. ListeningTime seems to offer this opportunity. Although, oncological HCPs participated in this study to support patients in their communication skills and therefore used ListeningTime, we did not offer a specific communication training for HCPs.

Over recent years, many eHealth interventions have been developed. However, numerus eHealth interventions have not been evaluated, have reported attrition (like drop-out, non-usage) and adoption problems (i.e. poor uptake after implementation) [28-30]. By actively involving elderly cancer patients and their providers in developing ListeningTime, the use and uptake of this intervention was expected to increase [31,32]. The evaluation of ListeningTime indeed showed that patients valued ListeningTime, and as a result the video fragments became publicly available for all elderly cancer patients. A previous study found similar results and concluded that actively involving patients with cancer in designing and evaluating a web-based tool is feasible and appreciated [33]. Although ListeningTime was developed to support especially elderly cancer patients, the tool might be very useful for younger patients as well. A recent study found no differences on website satisfaction between younger and older cancer patients using a mode-tailored website [34]. Nevertheless, it should be tested if ListeningTime is also useful for younger cancer patients. To this extent, it would be interesting to know how many (elderly and younger) patients (and their significant others) use the educational video fragments of ListeningTime since the implementation on the website ‘kanker.nl’.

In this study, we have evaluated a Dutch web-based communication tool. However, the results might be useful and relevant at international level as well. As our results indicate, a tool as ListeningTime

In this study, we have evaluated a Dutch web-based communication tool. However, the results might be useful and relevant at international level as well. As our results indicate, a tool as ListeningTime
can be very valuable to offer to elderly cancer patients. It consists of multiple useful techniques; i.e. a tailoring algorithm, modelling videos (including simulation questions) and an audio-facility [14], which can be useful for other countries and settings as well.

To our knowledge, this is one of the first studies using a participatory process to develop an online intervention, i.e. with the help of elderly cancer patients and their providers [28,33]. In addition, the educational video fragments of ListeningTime were implemented through the website ‘www.kanker.nl’. This success can be due to the participatory nature of the development process and the inclusion of partners from the start of the project. Unfortunately, it was not technically possible to also include the tailoring algorithm and the audio-facility of ListeningTime on the website of ‘kanker.nl’.

Limitations

Some limitations should also be noted. First, the results may be influenced by the relatively small study sample. However, this is an exploratory pilot study. Larger, controlled studies are necessary to replicate (or contradict) our findings. Second, it is possible that only interested patients participated. However, this is also the targeted group that will watch the video fragments on ‘kanker.nl’. Third, we aimed to include a wide range of elderly cancer patients, with different (stages of) disease and different levels of participation (e.g. active, passive). As patients volunteered to partake it is possible that the results of this study represent the more ‘active’ patients; those who feel confident in participating during medical encounters. In addition, we are not aware of the number of patients approached by providers in the hospital and the number non-responders.

Conclusions

ListeningTime was evaluated positively, both by elderly cancer patients and their oncological HCPs. As a result, the video fragments of ListeningTime are publicly available for all (elderly) cancer patients through the Dutch website ‘kanker.nl’, without the research context and without the involvement of professionals.

Acknowledgements

The study was funded by the Dutch Cancer Society (KWF Kankerbestrijding: NIVEL 2014-7271). We would like to thank all (former) patients, oncological healthcare providers, hospitals, the Nederlandse Federatie van Kankerpatiënten organisaties (NFK), the ‘Quality institute for oncological and palliative research and practice’ (IKNL: Integraal Kankercentrum Nederland) and ‘kanker.nl’ for their involvement in the study.

Conflicts of interest

None

Abbreviations

HCPs: Healthcare providers
References


http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=83429NED&D1=0&D2=0,3-
6&D3=0&D4=a&VW=T (accessed 13 June 2018). No WebCite available.
18. Cegale DJ. Emerging trends and future directions in patient communication skills training. Health 
19. Noar SM, Black HG, Pierce LB. Efficacy of computer technology-based HIV prevention 
No WebCite available.
21. Davis FD, Davis F. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of 
preparation package: changing patients but not physicians is not enough. J Clin Oncol 2004 
tailored website for counselees prior to breast cancer genetic counseling. J Cancer Educ 2011 
Patient navigation moderates emotion and information demands of cancer treatment: a qualitative 
Robinson BE, Roblin DW, Walsh K, Street RL Jr, Gallagher TH. Patients’ and family members’ views on 
patient-centred communication during cancer care. Psychooncology 2013;22(11):2487-95. doi: 
10.1002/pon.3317
27. Bol N, van Weert JC, de Haes HC, Loos EF, Smets EM. The effect of modality and narration style on 
recall of online health information: results from a web-based experiment. J Med Internet Res 
users when developing web-based mental health interventions. Front Psychiatry 2017 May;8:72. doi: 
ER. A holistic framework to improve the uptake and impact of eHealth technologies. J Med Internet 
DOI:10.2196/jmir.7.1.e11.
of a Self-Help Web-Based Intervention Targeting Young Cancer Patients With Sexual Problems and 
doi: 10.2196/resprot.5499.
32. Omeni, E., Barnes, M., MacDonald, D., Crawford, M., Rose, D. Service user involvement: impact 
and participation: a survey of service user and staff perspectives. BMC Health Serv Res 2014 Oct;14: 
33. van Bruineness IR, van Weel-Baumgarten EM, Snippe HW, Gouw H, Zijlstra JM, van Dulmen S. 
Active patient participation in the development of an online intervention. J Med Internet Res 2014 
34. Nguyen MH, Smets EMA, Bol N, Loos EF, van Weert JCM. How tailoring the mode of information 
presentation influences younger and older adults’ satisfaction with health websites. J Health Comm 