Nurses’ experiences of using an interactive tailored patient assessment tool one year past implementation

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ABSTRACT

Background: Despite evidence of benefits, integration of patient-centered communication in clinical practice is challenging. Interactive tailored patient assessment (ITPA) tools can contribute to a more patient-centered care approach. However, little research has examined the impact of such tools on nursing care once they have been implemented.

Objective: To explore nurses’ experiences of the benefits of and barriers to using an ITPA called Choice, in cancer care one year after its implementation.

Methods: This investigation is a part of a larger study examining the use of Choice in cancer care. Four focus group interviews were conducted with 20 nurses experienced in using the Choice application. The data were analyzed using qualitative content analysis.

Results: Three themes and nine sub-themes emerged: (1) “Choice as facilitator for shared understanding and engagement in patients’ own care,” with three sub-themes: preparing both patient and nurse for communication, shared engagement in care planning, and giving the patients a voice; (2) “enhancing the patients’ strengths,” with two sub-themes: releasing patient’s internal strengths and confirming “normalcy” for the patient; and (3) “new challenges for the nurse,” with four sub-themes: organizational challenges, interactions with technology, a need for training in communication skills, and new ethical challenges.

Conclusions: Findings suggest that, from nurses’ perspectives, integration of ITPAs such as Choice in clinical practice offers many benefits that can contribute to patient-centered care. However, to reap these benefits, use of such tools must receive equal priority as other routines, and require sufficient time, space and competence. Choice also challenged nurses’ professional roles and created dilemmas such as nurses’ ambivalence regarding patients’ levels of disclosure of sensitive issues and the nurses’ ability to respond to them. Although patient-centered care is advocated as model for good clinical practice, this is not always internalized. Tools such as Choice may help to make such a shift happen.

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1. Introduction

Patients with cancer often experience multiple symptoms, problems and concerns during their treatment and rehabilitation [1,2]. To effectively help patients manage their illness, clinicians need to understand how patients experience their disease and symptoms, as well as any problems, concerns, and care preferences they may have. The Quality Chasm report from the Institute of Medicine defined patient-centered care as care that is “respectful of and responsive to individual patients’ preferences, needs and values, and ensuring that patient values guide all clinical decisions” [3] (p6). Patient-centered care improves disease outcomes and quality of life [4]. Patient-centered communication is a critical element of patient-centered care [4–6], and essential for knowing the person behind the patient, in order to reach a shared understanding of the patients’ problems, preferences and needs [6,7]. Through patient-centered communication the patient is activated and the foundation is laid for a partnership that includes sharing of information, shared deliberation, and shared decision making [6].

Despite evidence of the benefits of patient-centered care and communication [4,8,9], there are significant challenges to integrating patient-centered communication in clinical practice [5,6]. Although care providers may endorse the notion of patient-centered care as a way to engage the patient as an active partner in his/her care and treatment, care is still often based on routines and offers few opportunities to establish meaningful patient–provider relationships [5,6]. Frequently, clinicians also have incomplete understandings of patients’ needs, and thus are unable to provide the information and care that patients find useful [5]. Patients, on the other hand, may have poor knowledge about their disease and its symptoms, or be unable to articulate their beliefs, values, information needs and preferences. Investments in infrastructure and information technology are described as important to foster an environment that enables patient-centered care [4].

1.1. The Choice application

Choice is an interactive tailored patient assessment and communication (ITPA) tool for cancer patients designed to overcome these pitfalls. Its purpose is twofold: (a) to help patients report their experienced symptoms, problems, and priorities for care and (b) to support clinicians in providing individually tailored symptom management support [10]. The content of the Choice intervention is based on a thorough review of the literature on symptoms, problems and symptom management in patients with cancer, on oncology expert focus groups and on interviews with patients [10].

Using Choice, patients report their symptoms and health problems along physical, functional, and psychosocial dimensions, note down their degree of distress or affliction, and prioritize their need for care for their symptoms. The assessment is individually tailored to each patient based on his/her initial response. It allows patients to branch into those aspects that are personally relevant while skipping those that are not. For example, patients first select from problem categories those that apply to them, and this opens up a subset of more specific symptom descriptions in lay terms from which patients again select those that apply. They then rate degree of distress of their selected symptoms on a scale of 0–4 (not troublesome to extremely troublesome) and prioritize needs for support to manage their symptoms on a scale of 0–10 (receiving support not important to extremely important). When the patient has finished, the system immediately creates an assessment summary that displays patients’ selected symptoms and distress, in rank-order of prioritized need for care (Fig. 1, summary), thereby directing the clinician’s attention to the problems that matter most to each patient. The summary is transferred to the hospital’s electronic system, from which it can be accessed. The patient receives a copy. Because patients can complete the assessment on their own at their own pace prior to being seen by a clinician, the assessment itself does not take up clinician time. Results can be used to assist care providers to better tailor symptom management and care individually to each patient and to support person-centered communication. Development of the Choice application for cancer patients [11,12], and a demonstration of its validity and reliability are presented in detail elsewhere [13].

The Choice ITPA has been shown in clinical trials to significantly decrease cancer patients’ symptom distress over the course of their illness, reduce patients’ needs for care, increase disclosure of patients’ cues and concerns in communication with clinicians, and increase the number of symptoms and quality of life issues addressed in patient consultations [10,14–16]. The system received high ratings on usefulness by patients, nurses and physicians in a survey after the trial period [17]. Patients who had used Choice reported increased

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self-awareness and knowledge about the illness, improved communication and information sharing with health care providers and increased sense of coherence and control [18].

The clinicians at the hospital units who participated in the randomized controlled trial that demonstrated positive effects of Choice in terms of reduced symptom distress and need for care [10] decided to use the application as part of routine practice. However, to be successful, interventions found to be effective in clinical trials must also be possible to implement and maintain in routine care. Putting new computerized tools to use in clinical practice is described as challenging [19–22]. For example, a study done at a palliative unit where an electronic assessment tool was being implemented reported perceived difficulties related to establishing new routines, increased workload, technology issues, increased burden for patients, and ethical issues due to concerns about whether or not the system would actually benefit the patients [21]. Functional and technological issues, the users’ desire for more in-depth information, user privacy concerns, and limited patient use are other challenges noted when implementing new systems in clinical practice [23]. However, while a number of studies have addressed aspects of system implementation, less research has examined the challenges that may emerge over time or the impact of new interventions after they have been implemented [24].

After the Choice ITPA was implemented into regular practice, the main clinical users were nurses. Therefore, the current study explores nurses’ experiences of benefits of and barriers to maintaining use of Choice in cancer care one year after its implementation.

1.2. Theoretical perspective

The introduction of a system such as Choice in cancer care can be viewed as implementing a new innovation into existing routines. According to Roger’s theory of diffusion of innovations [25], users’ willingness to implement an innovation depend on five attributes of the innovation: (1) relative advantage, the degree to which the innovation is perceived as being better than what it supersedes, (2) compatibility with existing values, experiences and needs, (3) complexity, (4) ability to be tested, and (5) visibility of results. The findings in this study will be discussed in light of these attributes.

2. Methods

This study is a part of a larger study, in which the Choice ITPA was tested among cancer patients in three inpatient and two outpatient wards in 2003–2006 [10].

2.1. Context

Based on evidence of its effectiveness [10], the units requested to use Choice in routine patient care after the study period. This was supported by the nursing and medical leadership. The nurses were familiar with use of the assessment summary from the trial period, but had never administrated Choice themselves as a part of routine practice, as this was done by the research assistants during the earlier study.

An implementation plan for Choice was developed, in which dedicated persons at the units were involved as collaborators in the implementation process. The plan included: 1) information folders about the tool, 2) kick-off meetings for the staff at each unit, 3) individual training for the nurses on how to operate the application, 4) training on how to introduce Choice to the patients; and 5) and guidance on how to use the assessment summary of the patients’ symptoms in clinical practice. The training program and courses for the clinicians started in autumn 2006, and Choice started to be used in routine clinical practice early in 2007. In the training sessions, physicians and nurses were given thorough information about the background, purpose, and development of the Choice ITPA by the project director (CR). They were also given training sessions in small groups led by two trained research assistants. The training sessions were slightly different for physicians and nurses, mainly owing to time restrictions among physicians. All nursing staff attended training sessions with hands-on training with the Choice ITPA and were encouraged to use role-playing to practice introducing it to patients and integrating information from the summary sheet into the consultations.

2.2. Design

In this exploratory retrospective study we collected data using focus group discussions to obtain an in-depth understanding of nurses’ experiences when using Choice [26]. Focus group discussions have qualities of both interviews and discussions [27], and benefit from group dynamics [28] by stimulating participants to react to, reject or confirm statements from other participants’ thoughts. The goal with using focus groups was to elicit as wide a range of participant experiences as possible.

2.3. Sample and setting

The focus groups included nurses from three inpatient and one outpatient cancer ward at two teaching hospitals in Norway who had been part of the implementation process and had used Choice. Head nurses identified potential participants, and nurses received information leaflets about participation. Twenty nurses agreed to participate. Their age ranged from 23 to 55 years (mean 34), and their nursing experience at the unit ranged from 1 to 25 years (mean 5.9). Eight nurses had a clinical specialist education, such as oncology, mental health, intensive care or a master of nursing science. Two male and 18 female nurses participated in the focus groups.

2.4. Procedures

An interview guide was developed by the research team according to Krueger and Casey [28] to foster consistency in the questions asked across groups. The opening question concerned the participants and their initial thoughts about being in the study. After a brief introduction to the area of interest, participants were asked about their experiences using Choice in their daily work. Thereafter key questions were posed concerning Choice’s ability to elicit the patient’s symptoms, problems and priorities for help, possibilities and challenges and perceived barriers to using Choice. The interview guide
Table 1 – Examples of meaning units, condensed meaning units, sub-themes and theme from content analysis of focus group interviews.

<table>
<thead>
<tr>
<th>Meaning units</th>
<th>Condensed meaning units</th>
<th>Sub-themes</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I’m mentally prepared for the conversation... I have time to think things through, both what answers I can provide, what feedback and support I can offer.” “It’s probably a way for them as patients to become more aware, writing thoughts down and being able to organize and better sort things through.”</td>
<td>Having time to think through, prepares the nurse for communication becoming aware of, and structuring thoughts</td>
<td>Prepares both patient and nurse for communication</td>
<td>Facilitator for shared understanding and engagement in patients’ own care</td>
</tr>
<tr>
<td>“The patient is well prepared. He knows that he has already checked something off, rather than suddenly being asked about it. Or if they come to us, they are more prepared when they know they have already checked something off”</td>
<td>Knowing what problems they have checked in Choice prepares the patients for communication.</td>
<td></td>
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</tr>
<tr>
<td>“It’s actually easier to prepare treatment plans through the use of Choice. Problems and issues are more evident there, the needs of the patient more clear, and rather than guessing it’s easier to determine what needs to be done pointing to Choice and Choice results”</td>
<td>Information revealed in Choice was used as a basis for care planning</td>
<td>Shared engagement in care planning</td>
<td></td>
</tr>
<tr>
<td>“When you use Choice you ask ‘what do you think if this could help like this or that?’ That way he participates in the decision making about his own treatment, we create a plan based on our discussions, and he has indirectly participated in making his own treatment plan”</td>
<td>The patient indirectly participates in own care planning through use and communication about Choice results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“With the quiet ones, we find out about problems we didn’t think they had…”</td>
<td>Healthcare professionals get insight into the worries of more quiet patients. Each patient has an equal opportunity to be heard.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“And I think there’s something in treating people equally but differently. That the tool allows everyone to speak on an equal footing”</td>
<td>The patients decide how much they want to reveal about their thoughts, concerns, and struggles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ended with an invitation for participants to comment on the assistant moderator’s oral summary of the discussion.

The interview guide was first tested in a pilot focus group consisting of experienced nurses. Since the group discussions captured issues of interest, the results from the pilot were included in the study.

Four focus group discussions were conducted in a hospital meeting room with 4–6 respondents in each group. To circumvent the risk that experienced nurses would dominate the discussion in the groups [29], the respondents were divided into two groups of experienced nurses (two or more years at the unit) and two groups of less experienced nurses (less than two years at the unit).

The discussions lasted between 56 min and 123 min; they were audio-taped and transcribed verbatim by the first author. During all the discussions the first author and a colleague (both experienced nurses) were present and alternated between being moderator and assistant moderator in the different focus group discussions. The moderator asked questions to get participants to elaborate when their statements were vague. The co-moderator took the role of an observer and recorded field notes during the focus groups. Directly after the focus groups, the moderator and co-moderator met and discussed their impressions of the discussions, and noted these impressions in an observation log.

This study was planned and performed in compliance with the principles outlined in the Declaration of Helsinki [30], and was approved by the Regional Committees for Medical and Health Research Ethics in Norway and the Privacy Protection Committee at the hospital.

2.5. Analysis

The analytical process was guided by qualitative content analysis as described by Graneheim and Lundman [31]. Content analysis is a method of systematically analyzing written or verbal communication, with context taken into account [32]. As little is known about how communication tools such as Choice are received into an organization, an inductive approach was chosen [33]. This approach involves identification and condensation of the meaning units (see explanation below), and identification of subthemes and themes (Table 1). The analysis was performed by the first (EB) and the last author (ME) in an interactive process in several steps. First, the interviews were thoroughly read through to obtain a comprehensive understanding about the nurses’ experiences of using Choice. Secondly, meaning units, i.e. sentences and paragraphs containing aspects related to the same central meaning through content or context [31], were extracted from the text. The meaning units were condensed and summarized, and where possible described in terms of the underlying meaning, preserving the core content. The condensed meaning units were abstracted into sub-themes. By continuously examining parts as well as the entire text, we were able to abstract three main themes and nine sub-themes describing the nurses’ experiences (Table 2). To ensure trustworthiness,
the interpretation, Choice 3.1.1. The nurses recognized the sub-themes and themes were discussed between the first and last author as well as within the research group until agreement was reached. To increase the transparency of the interpretation, themes and subthemes are illustrated with quotations.

3. Findings

Main findings in this study indicate that the use of the Choice ITPA, as experienced by nurses, can be categorized into three themes; (1) Choice as facilitator for shared understanding and engagement in patients’ own care, (2) enhancement of the patients’ personal strengths; and (3) new challenges for the nurse.

3.1. Facilitator for shared understanding and engagement in patients’ own care

The nurses experienced Choice as a facilitator for communication. Nurses reported that it enabled patients to report and share their symptoms and priorities for care with the nurses, which made both the patient and the nurse better prepared to communicate and to plan the care.

3.1.1. Prepares both patient and nurse for communication
Choice was described as a door opener to address difficult topics. Information about the patient’s problems made it easier for the nurses to follow up more directly in communication. The nurses experienced that communication at the wards had changed. Topics such as death and psychological problems, which had seldom been raised earlier, were now addressed, and the communication with patients was regarded as more effective.

“I think the patients are better off, that they get help for precisely the problems they have. And we don’t have to ask as many questions and they don’t have to answer as many.”

The nurses’ experience was that by using Choice, and reading the report prior to seeing the patient, both patient and nurse were better prepared for their conversation. One nurse expressed:

“I’m mentally prepared for the conversation, … I have time to think things through, both what answers I can provide, what feedback and support I can offer.”

As the nurses described it, patients knew that the problems they had marked in Choice would be raised in the conversation, and even if the topics were sensitive, the patients were usually willing to talk about them.

3.1.2. Shared engagement in care planning
Since the patients had identified their symptoms and had an opportunity to reflect on them in advance, nurses reported that the patients were more engaged in the conversation and the time was put to better use to determine how troublesome the problems were for the patients and what to do about them.

“When you use Choice you ask; ‘what do you think if this could help like this or like that?’ That way he participates in the decision making about his own treatment, we create a plan based on our discussions, and he has indirectly participated in making his own treatment plan.”

The richness of information revealed in Choice was used as a basis for care planning, nursing assessments and as an information supplement in interdisciplinary rounds. Choice was considered to improve care plans; problems the patients ranked high in terms of distress or priority for care could be transferred to the care plan and thus followed up. Access to this information enabled nurses to provide better care.

3.1.3. Gives the patients a voice
The nurses verbalized that Choice gave each patient an equal opportunity to be heard and to express their feelings and needs for help from health care providers, independent of the care provider, shyness or verbal skills. One nurse said:

“With the quiet ones, we find out about problems we didn’t think they had.”

Nurses described that they often were surprised when they read the Choice summary about what the patients had been dealing with. Some reported more problems than the nurses expected judging from their condition, some reported less. The nurses also experienced that it was the patients themselves who decided what they wanted to share with the health care personnel. When the patient initiated communication about unexpected themes through Choice, they gave nurses a better opportunity to be involved in and provide individualized care.

“And I think there’s something in treating people equally but differently. That the tools allow everyone to speak on an equal footing”

3.2. Enhancement of the patients’ personal strengths
When using Choice the patients thought through many of their problems, and the nurses perceived that some healing took place as a “side-effect”.

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3.2.1. Release of internal strengths

Nurses experienced that, for the patients, merely going through the problems available in Choice and marking the ones that applied to them started a process of reflection.

“The advantage of Choice is that it sets things in motion. It’s a way to organize thoughts, think about their situation. It isn’t necessarily important to get help with it. They have the solution themselves and they also know we can’t help them with it, but that’s how it is. That’s the way it is.”

The nurses’ experiences were that the possibility to talk about the problem was considered helpful by the patients. Since the tool helped to identify the problems, nurses perceived that it was easier for the patient to ask for help, and the patients could get help with those problems that were most important to them at the time. In addition it was not necessary to bring up all the problems during the discussions. If the patient got help with those he or she considered most important, the nurses experienced that other problems often were resolved as well. Just being listened to could sometimes be enough help.

“It’s as if the burden is a bit lighter after they’ve put it in writing. So I think it’s a great help for some of them…”

3.2.2. Confirming normalcy

By seeing a symptom listed in Choice the patients got confirmation that their symptoms could be “normal” for their condition. The nurses described how this seemed to make the problems less frightening and that the patient sometimes felt relieved, even without a follow-up conversation. Putting the problems “on the table” could be a way to accept that this was something they had to deal with.

“I think it’s an important confirmation for the patients; they see that it’s actually completely normal to feel this tired or…”

3.3. New challenges for the nurse

Using Choice also raised new challenges for the nurses.

3.3.1. Organizational challenges

The nurses expressed challenges related to organizational constraints in terms of time, routines and work organization. It could be difficult to find time to give a patient the Choice application for an assessment, for the follow-up conversation and to document the patient’s identified problems in the care plan. Having time and space for an undisturbed conversation was highlighted as a key prerequisite when the patient needed to talk about sensitive topics. To fit Choice into the regular workflow, the daily routines had to be changed, but an entire year after implementation Choice had still not become an entirely well-established routine.

“Maybe part of it is that Choice is fairly new and there are so many familiar old routines you sort of have to rearrange if you’re going to make this a good part of those routines.”

Even though most nurses recognized the value of Choice, on busy days the administration of Choice was of lower priority.

“It might end up pretty far down on the list of priorities. First you do what you have to do, the things you know absolutely must do, and then that stuff comes in later.”

Some nurses experienced moral stress about not being able to offer Choice as planned when they realized they did not have time for follow-up conversations. Some regarded it important to do the follow-up conversation themselves, rather than hand it over to other nurses at the next shift. They also regarded it as very important to let the patient know if they could not find time for conversation until later.

3.3.2. Interactions with technology

Several systems for planning patient care were in use at the hospital. To transfer information from Choice into electronic care plans the nurses therefore had to log on to different computerized systems. This lack of coherence between systems was considered very inconvenient. Choice was regarded as relatively simple for the patients to manage, but some nurses had heard some patients describe the program as cumbersome. Patients who were unaccustomed to computers expressed uncertainty at first about whether or not they would be able to use Choice. Although this could be a challenge, for example, among the elderly patients, they were able to use it when they tried.

Some nurses highlighted that the patient’s first meeting with the hospital was important and that Choice could give a cold, impersonal impression.

“We have to think about the human relationships between caregiver and patient, and our first meeting, how important that is. […] This thing is obviously a computer, it can feel cold and a bit mechanical. It might do something with you as the vulnerable patient that you are. It’s a bit problematic…”

Some of the nurses expressed that if their own experiences with the use of Choice were poor, they were less likely to prioritize giving Choice to their patients. Some nurses emphasized that it was critical to be aware of the benefits Choice could provide for the patients, and that nurses themselves had to have a positive attitude in order to get the patient involved.

“You’ve got to plan what you’re going to say, and have a positive attitude toward it yourself, if you want the patient to get interested and use it.”

3.3.3. A need for communication skills training

Some nurses described that the greatest challenge was not in offering the Choice application to the patient, but in making use of the full potential of Choice for constructive communication and care-planning. Some expressed a need for guidance from more experienced nurses before entering conversation with patients. Being prepared and feeling secure in their professional role as nurses was important, and they expressed a need for guidance and time to carry out a meaningful patient-centered communication.

“We’ve received a bit of guidance on what we can do to handle an extreme reaction. For my part, I’ve figured out that it can be a good idea – if it’s about things you have trouble talking about, and I’ll never get used to talking about death
and sexuality – it can be a good idea to chat with some of the other people at work, kind of ask what about this, he says he's thinking a lot about these things and ‘what's a good way to express it’.

The nurses expressed that unless they felt comfortable entering into communication with the patient, it would most likely not happen. Unconsciously, communication about sensitive topics was put at the bottom of the list of daily tasks if nurses did not feel confident about their communication skills. It was easier to do the never-ending practical tasks. Nurses described how a course in communication training they had received earlier, when Choice was introduced to them, had been very helpful in overcoming these issues and they expressed a need for further communication training.

3.3.4. New ethical challenges

Choice also implied new ethical challenges. The ethical demand was the trust the patient literally put in the nurse’s hands and the nurse’s feeling about their ability to respond to that trust. Nurses described that even though Choice contained only common symptoms and problems reported in the literature, patients shared information they perhaps had never revealed to anyone before and brought up new intimate topics for conversation. Nurses perceived the patients to be more vulnerable than ever, with an expectation of being heard and responded to. Conversely, the patient responses from Choice were described as overwhelming by some nurses, especially if they did not know the patient well. The information the patient shared was regarded as sensitive, personal and difficult to respond to.

“That's a vulnerable part of Choice, precisely that they hand over all their problems, and then maybe you don’t do anything about them. That's more hurtful than nothing at all. I've always thought that about Choice.”

The nurses felt responsible for the trust the patients had put in their hands. They experienced that the most negative feedback from patients was related to lack of a follow-up conversation after the assessment; that as a bare minimum, nurses needed to acknowledge that the information the patient shared had been received.

When introducing Choice to the patients, some nurses informed the patients about what they could expect in terms of follow-up from the nurse to avoid unrealistic expectations. Some nurses experienced that patients did not want to open up to nurses they did not know, even if they had indicated their problems in Choice. Nurses described that it was easier for patients to talk with nurses they knew well, and important that nurses perform follow up conversations with patients they personally had introduced to Choice. Not all nurses shared this opinion. Some nurses thought that patients could decide for themselves who they wanted to talk to, or if they did not want to talk at all.

“It’s happened to me too, getting someone I didn’t know. I would wish someone else could do it, if the topics were sensitive. But then he has to view me as a nurse, and not as a person he may have hadn't met before.”

Some nurses took the role of an advocate on the patients’ behalf by claiming that they knew intuitively if patients were reluctant to fill in Choice. Lack of chemistry between patient and nurse was mentioned by some nurses as a reason not to give Choice to the patient. The nurse’s judgment concerning whether or not to offer Choice to patients was driven by a wish to protect some patients from unnecessary burden.

Another ethical dilemma raised by some nurses was the accessibility of information. Once a patient listed a problem, it was documented in their record and available for everyone to read. The nurses thought that the patients sometimes might feel exposed, since they had no control over the access to this information. In traditional patient interviews, sensitive information is given in a caring patient–nurse relationship, whereas with Choice the patient confided to a device and had little control over who they would talk with later.

“You sort of dive in, inside all the boundaries people raise around themselves when they meet new people. And here I come with a document where this person has opened up. So you jump right in without really having an invitation.”

4. Discussion

The use of Choice was experienced by nurses as both a facilitator for mutual engagement in communication and as an initiator of new challenges. On the one hand, Choice gave the patient a voice, enhanced the patient’s strengths and prepared both nurses and the patient for communication and promoted an engagement in shared care planning. On the other hand, Choice posed organizational, technical, ethical and communicational challenges (Table 2). These findings are consistent with four of Rogers’ attributes of innovations [25], and we will discuss the findings in light of these attributes; (1) relative advantage, the degree to which the innovation is perceived as being better than what it supersedes, (2) compatibility with existing values, experiences and needs, (3) complexity, the degree to which the innovation is perceived as difficult to understand and use, (4) observability, the degree to which the results of the innovations are visible to others. Trialability, the degree to which users can try out the innovations before use, was rarely discussed in the focus groups, as this study was conducted one year past implementation. Trialability will therefore not be included in the discussion.

4.1. Relative advantage

The relative advantages of Choice were that it addressed the patients’ perspectives, made possible a shared understanding of the patients’ problems and prepared both patients and nurses for communication. This is in line with findings reported by patients that used Choice in another study [18], where Choice increased their self-awareness and knowledge, improved communication and information sharing and increased their sense of coherence and control. As such, Choice contained several of the core elements in patient-centered communication [7], and thus can be a valuable tool to enhance patients’ participation in their own care and decisions related to their health. Similar findings were reported in a study of the Edmonton Symptom Assessment System (ESAS), an
assessments with some similarities to Choice [34]. In the study most of the nurses and allied health professions found the ESAS to enhance patient care, help patients to articulate their symptom issues, and facilitate follow-up with patients with past symptom issues. Similarly, in a study of an electronic version of ESAS, clinicians reported it as useful [35].

Some of the nurses noted, however, that even though they knew the advantages and possibilities that Choice could bring, they still did not have “good experiences” using it. This affected both how often the patients were given the possibility to report symptoms using Choice and the frequency of follow-up conversations based on the assessment. This is consistent with Rogers’ theory that it is the individuals’ perception of the relative advantage of an innovation (in this case, what the users believe the relative advantage to be) that matters, not the experts’ objective evidence [25]. The greater the innovation’s perceived advantage to the user, the easier it is to adopt and sustain [25].

The study revealed that nurses’ confidence in their professional roles and what they perceived as appropriate care planning were key factors in how they perceived the advantages of Choice. Systematic assessment is seen as necessary to provide professional care [36]. Choice was perceived as support in this assessment by capturing the patients’ perspective and was used as a basis for a care plan. However, by becoming aware of all of the patients’ problems and needs in a busy ward and simultaneously feeling uncomfortable with performing patient-conversations about sensitive topics, reluctance to use Choice seemed to occur. In traditional interviews the nurse has more control over what questions to ask, and can in some ways adjust this information to fit the constraints of both time and personal perceived competence.

According to Rogers [25], the dissemination of an innovation is dependent on to what degree it is perceived as better than the procedures it supersedes. In busy periods in the wards, the nurses found it inconvenient to offer Choice as planned due to lack of time to communicate with the patients after the assessment. On the other hand, nurses also experienced Choice as enhancing patients’ personal strengths without any follow-up conversation. In light of this, Choice may be offered to patients as a self-management tool, also in periods of high work-load. However, in this case nurses should clearly inform the patient that they cannot follow-up the assessments in detail, and encourage the patient to initiate conversation about what they want to talk about. As such, Choice would still be a tool to communicate patient’s symptoms and preferences, but patients’ expectations would be different and the moral stress on nurses would decrease.

4.2. Compatibility

According to Rogers [25], an innovation has to be compatible with existing values and experiences to prevent a mismatch between the professional’s ideals and reality, which is a basis for burnout and turnover among nurses [37].

The use of Choice posed organizational and new ethical challenges. One challenge was to make full use of the information acquired through Choice in communication with the patients in the daily workflow. Situations where nurses were unable to talk to patients about the information shared through Choice gave rise to moral stress, because they could not meet the expectations created.

Many nurses regarded good delivery of care to entail a “continuous caring relationship” between an individual patient and an identified health care professional [38] and expressed reluctance to hand over tasks to the next shift, or to follow up on an assessment initiated by colleagues. However, the complexity that characterizes cancer care, with a multitude of professionals and stakeholders involved in delivery of a safe and coordinated care [39], calls for new models of communication. Patient, or person-centric models of communication that give the patients and family caregivers a voice will be increasingly important as advanced care moves more and more into the patient’s home. Our study suggests that Choice might serve as a facilitator of teamwork, link teams of professionals together, and promote “team continuity of care” [38]. As such, Choice might challenge existing values and routines about how to perform and organize patient care.

The “normalization” of a new technology into daily work is in part dependent on how well the tool fits with existing skill sets [40]. Lack of communications skills was highlighted as a barrier to the use of Choice by some of the nurses. Issues related to death and dying have been described in the literature as areas where nurses have the least skills in communicating with cancer patients [41]. The nurses in the current study also mentioned that these issues were difficult to discuss with the patients. Training of the staff’s communications skills is highlighted as a crucial point in interpreting feedback from the patients through electronic systems [42,43]. Heaven et al. point out that clinical supervision is essential to effectively transfer skills learned during communication training into clinical practice [44]. If training and supervision increase the possibility of offering and following up the Choice ITPA, this can make a difference on patients’ outcomes, as the positive results in the randomized controlled trial demonstrate [10]. On the other hand, it could be argued that Choice was consistent with existing values and needs for communication. Patients who had used Choice reported it to enhance communication with health care providers [18], and our study indicate that patient-centered communication was improved. For the patients it is sometimes enough that someone listens. They do not necessarily need help to solve all their problems. ITPAs have significant advantages for eliciting patients’ strengths and illness experiences, and for tailoring care individually to each patient. The process of selecting aspects that are personally relevant is a powerful intervention itself, as it activates the patient’s own reflection and awareness and encourages patients to take a more active role [18]. Self-reflection has been successfully used as an instrument for improving learning skills in professionals [45], and has been viewed as an instrument for interpreting and handling the situation and an approach to learning [46]. However it has to be further evaluated and tested in patient care.

4.3. Complexity

Innovations that are perceived as easy to use and understand are more easily adopted [25]. Although nurses in this study described Choice as being overall easy to manage for the patients and the nurses, it was challenging to make it
fit in the daily routines. This is in line with other studies describing integration of computer technology in health care as challenging [20,22]. Challenges are not necessarily due to technical difficulties or limitations within the e-health application, but also to an understandable down-prioritization of quality improvement and research projects in favor of urgent clinical care and demands [47]. Even though the nurses in the current study experienced that the use of Choice had several advantages, they could still manage their job without including patients into care by using Choice and Choice was hence reported to be put on the bottom of the daily task list on busy days. This might relate to the fact that Choice came in addition to existing systems and that there was no pronounced need for a tool that assesses the patients’ concerns, preferences, and knowledge.

An unexpected finding was that Choice challenged skills related to ethical issues more than technical ones. A challenge that arose was nurses’ feelings of being overwhelmed by patients’ problems without being able to help. Being unable to live up to expectations and demands at work fosters feelings of powerlessness and threatens a professional’s self-image as a competent and responsible nurse. Incompatible demands, stress of conscience and lack of support from managers and colleagues are strongly associated with burnout and job turnover [48]. This highlights the complexity of introducing a new technical tool into practice, since it changes forms of interaction between people [49]. Leaders have to be prepared for unexpected changes, such as need for support to the users that may arise after the introduction of a new tool like Choice. In addition, nurses need to be aware that it may not be possible to help patients with all their symptoms and concern when time is short and/or the patient is tired. It could be argued that some problems are and should remain outside the hospital’s sphere of responsibility [50], or could be handed over to other professionals (e.g. social workers) or caregivers. Some of these self-expectations may be due to how nurses are trained to intervene, and nursing interventions are seen as a key function in the nursing process. Furthermore, nurses are not necessarily aware of their facilitator role, such as helping patients to mobilize their own strengths. Educating nurses in these important roles may help foster professional confidence, despite the fact that they cannot always solve the problem for the patient.

4.4. Observability

Observability deals with the degree to which the results of the innovation are visible to users [25]. In this study the summary assessment was available in the hospital’s electronic system. It could be printed and therefore was visible for both patients and health care personnel. In addition, information from Choice was used in care planning. However, Choice was not integrated in the electronic health record, and one could not directly transfer information to a care plan. As such, it was not possible for others to see whether information from Choice had been used or not.

The positive effect of Choice demonstrated in an RCT [10] was a rationale for implementing Choice in this study, and was initially presented to the nurses. In the focus groups, nurses described positive effects of Choice. For example, the nurses reported that the Choice information allowed both patients and nurses to be better prepared to discuss the patients’ needs and that it strengthened the patients’ personal resources. These benefits were, however, not necessarily visible to other nurses or health care personnel on a daily basis unless discussed among the staff.

It is essential that key professionals and administration understand the value of a program before implementing it [51]. However the findings from this study clearly underscore that, to successfully implement and sustain e-health applications in daily practice, the users must recognize that it is beneficial in their daily work and for the patients [52,53]. Understanding a tool’s utility affects the motivation both to use the system and to encourage the patient to participate [54]. Further, results from the focus group discussions with the nurses support that this understanding of usability among users is important for sustaining a program until it is fully integrated into daily routines. Choice promotes a shift toward more patient-centered care by inviting the patients to take active part in their own care by assessing their symptoms, preferences and needs. Since it is natural to turn back to old routines during periods of time pressure, one must establish routines that initiate, integrate and protect patient-centered care in daily practice [6].

4.5. Study strengths and limitations

Strengths of the study include that the participating nurses had experiences with use of Choice in routine care and, as such, gave us insight into real life use of the application. Credibility was reached by the participants’ opportunity to challenge and verify each other’s opinions during the focus group discussion. Transferability, however, is probably somewhat limited, given the intervention, participants, setting and context.

As for limitations, the interview guide and the focus groups were developed and conducted by personnel who knew the units and the implementation process of the Choice application, which might have influenced the interviewee’s pre-understanding and may have affected the participants’ willingness to discuss challenging issues. On the other hand, this knowledge provided insight into what questions were important to ask, and which statements needed elaboration. As the nurses raised several sensitive topics during the focus groups, this could be considered both a strength and a limitation.

Since the findings in this study are context specific and different applications have different characteristics, these results are not necessarily transferable to other contexts and applications. The study findings are limited to nurses’ experiences of use. Patients’ views are reported elsewhere [18]. As Choice is also used by physicians, the view from this group would give a more comprehensive picture of clinicians’ experiences. In addition, the leaders of the units might have additional experiences. Moreover, as a text never implies just one meaning, but rather the most probable meaning from a particular perspective [32], our interpretation of the findings should be seen as one possible understanding of use of Choice in clinical cancer practice. Nevertheless, this study highlights some important
issues that developers and implementers of other applications may find helpful.

4.6. Conclusion and implications

Our findings suggest that, from the nurses’ perspectives, integration of ITPAs such as Choice in clinical practice has many benefits in terms of eliciting patients’ symptoms, promoting patients’ own participation in care and giving patients a voice. It can make communication between the patient and the nurse more purposeful, allowing help to be offered for what matters most to the patient. As we have seen from our earlier clinical trial, it improves outcomes in terms of less symptom distress and better patient-provider communication [10]. However, to obtain these benefits, the organization must be aware of the users’ view of both advantages and challenges the use such a device may entail. In addition to focusing on the benefits of such systems, one must take the users’ beliefs and concerns into account and understand how it affects their daily routines. To make full use of the system’s potential, managers have to enable the staff to prioritize these tools among other routines (i.e. ensure sufficient time, space and competence). Nurses have to be offered support to increase their communication skills and be given opportunity to reflect on ethical issues regarding use of the ITPA.

The uncertainty the nurses expressed concerning their professional roles in terms of communication, and their wish for more training and supervision in the communication context, suggests a need for more education, which again may contribute to foster professional confidence despite the fact that they cannot always solve the problem for the patient.

The shifts toward more patient-centered communication and care will impact health care organization and heighten the need for competence to integrate patients’ preferences into care. Our findings revealed a need for better training in patient communication in order to make full use of the possibilities offered by tools like Choice.

Finally, this study shows that new tools challenge the existing routines, and do not automatically fit in the ordinary workflow. To facilitate a sustainable implementation of an innovation into daily work routines, the informatics field must to collaborate closely with the users in order to design systems that are perceived as useful, compatible with existing values and needs, and easily integrated into routine care. On the other hand people in health care organizations must be willing to change some of their routines and investigate the need for new skills and competences. In conclusion, in order to move toward more patient care, grasping the new possibilities offered by electronic assessments of symptoms and integrating them into routine practice has to be a focus of the future.

Authors’ contributions

EB: Design and conduction of the study. Transcribing, coding, analysis and interpretation of data. Drafting the article, and revising it for important intellectual content. CR: PI of the study. Design and conduction of the study. Analysis and interpretation of data. Contribution to manuscript for important intellectual content. SM. Design of the study. Contribution to the manuscript for important intellectual content. ME. Design and conduction of the study. Coding, analysis and interpretation of data. Drafting parts of the manuscript and contribution to the manuscript for important intellectual content.

Summary points

What is already known about the topic?

- The implementation of patient-centered care applications in clinical practice is challenging despite evidence of the benefits.
- Interactive Tailored Patient Assessment (ITPA) tools can contribute to a more patient-centered care through eliciting patients’ experienced symptoms, problems, and priorities for care and supporting clinicians in providing individually tailored symptom management support.
- While a number of studies have addressed issues related to IT implementation, less research has examined the challenges that can emerge when using and maintaining new systems over time.

What this study add to our knowledge

- From the nurses’ perspectives, integration of ITPAs such as Choice in clinical practice offers many benefits that can improve patient-centered communication and care.
- To obtain these benefits, such tools need to get organizational support at an equal level as other daily routines, such as competency training, and dedicated time.
- Such tools can challenge professional nursing roles and assumptions about patient-centered care and bring ambivalence such as discrepancies between patients’ levels of disclosure and nurses’ ability to respond to them appropriately.
- Users have to feel confidence in their communication skills and the benefits of use if they are not to put the tools at the bottom of their priority list.

Competing interest

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References

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