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Oncology team members' perceptions of a virtual navigation tool for cancer patients

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ABSTRACT

Objectives: The Internet has become an important source of health information for patients and health care providers (HCPs) alike. Whereas studies have begun to document the effects of the internet on health behaviors and outcomes, surprisingly few studies have explored HCPs' perceptions of the internet as a key resource accessed by patients. However, as HCPs are seen as pivotal in guiding patients toward these resources, it is timely to study their perceptions. Therefore, the present inquiry explores HCPs' views of a recently developed high quality virtual navigation tool called the Oncology Interactive Navigator™ (OIN).

Design: Using a qualitative approach, in-depth interviews were conducted with 16 members of a multidisciplinary colorectal oncology team and volunteers at a large Cancer Centre in Montreal, Quebec, Canada.

Results: Content analysis revealed emerging themes centering on key benefits including: perceptions of a highly accessible, comprehensive high quality repository of cancer information; a means to further enhance HCP-patient communication and trust; and a significant catalyst to patient-family communication and support. Perceived drawbacks included patient (e.g., socio-demographic profile) and system's (e.g., professional roles and time constraints) characteristics that may limit OIN™ full implementation and uptake.

Conclusions: The findings underscore the relevance of virtual navigation tools to ensure optimal person-centred care in cancer. Findings also suggest how virtual tools such as the OIN™ can best be used in practice as well as they guide strategies to adopt to optimize implementation of similar innovations in health care.

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1. Introduction

Web-based virtual health-related tools that combine cutting edge communication technologies and person-centred information have shown promise in meeting the multifaceted needs of individuals facing various health issues [1–5]. More recently, virtual health navigation tools – defined as resources delivered online to connect patients and families to practical

tips to obtain the best health information available, negotiate the complexity of treatment, and access the most appropriate services [5,6]. Studies to date demonstrate that patient navigation reduces barriers to receiving care, has positive effects on knowledge, self-monitoring, follow up and enhances quality of life, particularly when used as a complement to routine care [3,4,7–9]. In addition, these have been found to improve patient-provider communication, enhance patient decision-making, and guide patients' use of health care services [10–13].

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As such, the perceptions of patients and the impact of high quality web-based tools on patient-related factors are being actively investigated [5,13–15]. However, the perspectives of the health care team including HCPs and volunteers who assist patients diagnosed with cancer to enhance self-care and navigate the health care system remain largely unexplored. The purpose of this qualitative study was to explore HCPs' perceptions in terms of format, content, and potential usefulness of a promising web-based interactive tool called the Oncology Interactive Navigator (OINTM) – a comprehensive multimedia source of information and support designed for individuals diagnosed with various forms of cancers [16]. For the purpose of this study, the colorectal cancer OINTM was initially chosen for investigation, as this is a prevalent type of cancer with a limited availability of information and support resources.

2. Literature review

Health care teams include members with various levels of education and training with a wide range of backgrounds [17,18]. In the context of cancer care, the most prevalent disciplines include medicine, nursing, psychology, social work, nutrition and pharmacy. In addition, volunteers play an increasingly important role in cancer care as they provide complementary support to patients and family members and in many cancer centres they are an integral part of oncology teams [19].

Oncology practice is affected by an ever-evolving health/illness landscape both in terms of treatment complexity, co-morbidities, polypharmacy and longer term survival [20,21]. Such a complex clinical context means that the health care system must be responsive to the diversity of patients' needs [22,23]. High quality web-based resources have the potential to be a significant complement to clinical practice by efficiently meeting patient needs through readily accessible information and support 24/7. In addition, these resources are likely to reduce repetitive teaching and ease an ever increasing burden on health care [24].

2.1. Patients' information needs and e-health

Research indicates that there is often inadequate time to answer patients' questions in a typical medical visit with as little as one in five questions being adequately addressed [25]. In cancer care, visits are often directed by the physician treatment agenda and psychosocial issues are often not addressed [26–28]. Moreover, patients are often confused by the complex information conveyed without much opportunity to clarify, thus leaving them on their own to resolve ambiguity and confusion [29,30].

Although many patients prefer to receive health information from physicians first, and then nurses [13,24], next comes the Internet as a popular resource to find answers to health concerns. In a Canadian survey of 23,000 adults, 70% of Internet users reported looking on the Internet for health information [31], whereas in an American study of 6369 adults, 63% reported Internet use for this purpose [32]. In oncology, patients regard the Internet as a key source of health information and internet use ranges from 29% ($n=921$) [33] to as high as 63% ($n=500$) [33–35].

2.2. HCP perceptions of web-based resources for patients

HCPs appear to have mixed opinions on the usefulness of information that cancer patients seek on the Internet. One study among 226 Australian oncology professionals identified that they were most concerned about the reliability, the range and the quality of information available to patients through the Internet and public media [36]. Another survey of 266 American oncologists found that 54% thought that the Internet negatively affected patients and/or physician–patient relationships [37]. However, others have argued that the Internet is an exciting opportunity for health professionals and patients to build strong collaborative partnerships [38,39]. In addition, a recent study documenting HCPs' satisfaction with virtual tools in medicine reported high satisfaction and unique benefits such as patients' increased ease in accessing information from home, ability to reach underserved groups, and direct contact with patients via teleconferencing [40]. Similar advantages could be foreseen as per HCPs feedback on high quality web-based cancer information and support tools such as the OINTM, but currently there are no supporting data.

3. The Oncology Interactive Navigator (OINTM)

Developed by Jack Digital Productions (JDP) [16] in Toronto, Canada, the OINTM is an evidence-informed web-based tool that provides cancer-specific informational, decisional and psychosocial support to patients diagnosed with cancer and their family members. In addition, the OINTM information is customized to the particular cancer centres where patients are being treated. Stemming from ongoing collaborations with clinical experts, the OINTM provides instrumental information on four key categories: (1) Your hospital, (2) Decisions and Treatments, (3) Coping and Support, and (4) Family and Work. These categories provide patients with simplified information about the nature of the cancer diagnosis, complex treatment questions, community services, as well as patient testimonials through videoclips.

A recent pilot study with a sample of patients reveals that OINTM use is significantly related to cancer knowledge gains and an enhanced sense of cancer competence following exposure for 6-weeks [5]. Furthermore, qualitative findings reveal that patients appreciate the accessibility and accuracy of the cancer information provided, feel a sense of control in pacing their exposure to potentially distressing cancer information, report decreased anxiety, and become more informed on community resources available to them [5].

The next logical step is to document the views of members of the oncology team, as they are key in introducing and promoting evidence-based content to patients. This study lays the groundwork to begin to understand and describe HCPs' perceptions of the OINTM, as well as potential issues with clinical implementation. The research questions guiding the study were: (a) What are HCPs' (and volunteers) perceptions of the OINTM as a new web-based tool for patients? (b) What are HCPs' (and volunteers) perceived benefits and

Table 1 – Description of sample.

Gender	Occupation	Oncology certification
M	Pharmacist	NO
F	Psychologist	NO
M	Psychologist	YES
F	Nurse	NO
F	Nurse	NO
F	Nurse	NO
F	Nurse	YES
M	Dietitian	NO
F	Dietitian	NO
M	Social worker	YES
F	Volunteer	NO
F	Volunteer	NO
F	Volunteer coordinator	NO
M	Physician	YES
M	Physician	YES
F	Physician	YES

challenges regarding potential implementation or integration of the OINTM into clinical practice?

4. Methods

4.1. Design

A qualitative exploratory design was chosen to guide this study. According to Sandelowski, a descriptive design entails “the presentation of the facts of the case in every day language” [41]. Furthermore, this method is most suitable when a ‘straight’ description of the phenomena is desired [41].

4.2. Setting and sample

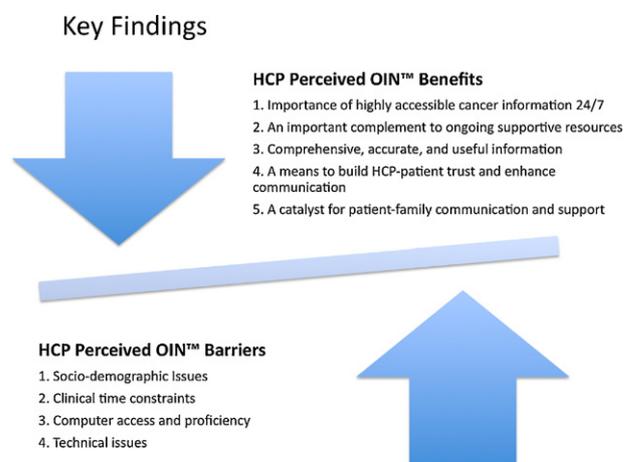
The study took place at a large university-affiliated teaching hospital in Montreal, Quebec, Canada. Interviews were conducted in a private office at the hospital by the senior author (KH).

A convenience sample of 16 colorectal oncology team members were approached with representatives from medicine (3), social work (1), pharmacy (1), nursing (4), psychology (2), nutrition (2) and volunteers (3). Participants (Table 1) ranged in age from 25 to 70. Six participants reported having certification in oncology.

4.3. Procedures

This study was approved by the institutional ethics review board. The study was presented to HCPs at a team meeting in November 2009 by the principal investigator and senior author (CL and KH respectively). Interest in participation was gauged and potential participants were told that they would be invited to take part in the study in early 2010.

Those agreeing to participate signed a consent form and completed a socio-demographic questionnaire. They were provided with an access code to login to the OINTM for a period of one week. They were also told that following OINTM use, they would be interviewed face-to-face to discuss their perceptions of the tool. In addition, automatic tracking provided

**Fig. 1 – Key findings of qualitative interviews.**

data on the number of times the OINTM was accessed, length of session, and types of cancer information perused.

4.4. Data collection

Each interview lasted between 30 and 60 min. Interviews were audio-recorded and transcribed verbatim.

A semi-structured interview guide was developed for the purpose of this study (Fig. 1). Questions were aimed to elicit views on the overall tool, its benefits and potential challenges in terms of clinical implementation and its role vis-a-vis ongoing patient education initiatives. Interview questions were slightly modified according to the profile of participants (e.g., professional versus).

4.5. Data analysis

Interview data were transcribed by a research assistant and checked for accuracy by the first author. Content analysis was used as described by Morse and Field [42]. Initially, each transcript was read for general content, and line-by-line to generate codes based on emerging themes and key ideas. Researchers kept notes on reactions to emerging ideas/concepts while reading the transcripts. Codes assigned to key ideas were organized into categories and the categories were clustered to link related codes. Categories and clusters were then given descriptive labels and exemplars of each category were identified and grouped together [42].

5. Results

Emerging categories centred generally on perceived benefits and potential drawbacks pertaining to the OINTM (Fig. 1, for a depiction of the main findings).

Overall, the importance of tailoring cancer support resources to a person's needs and preferences (i.e. what is commonly called a person-centred approach) was the common thread that linked participants' views, beyond profession or work status, age, and years of experience. The OINTM was seen as moving towards this goal and filling an important gap

in patient care. All participants emphasized that understanding each patient's context before referring them to the OIN™ was key to ensure that this resource was used appropriately.

5.1. Perceived OIN™ benefits

Participants were asked about their perceptions of the OIN™ in terms of access, attractive features and how it might position itself in light of existing patient education initiatives. Overall perceptions and quotes related to these issues are reviewed in turn.

5.1.1. Importance of highly accessible cancer information 24/7

Several participants discussed the importance for patients to have access to high quality cancer information. Although acknowledging that patients often prefer to receive information from HCPs namely physicians and nurses, many stressed that time constraints (e.g., increasing complexity of patients, added clinical and administrative responsibilities,) render challenging the direct provision of information and support. In addition, several participants (particularly nurses and a physician) underscored how patients were often overwhelmed by the amount of information provided, especially early in the cancer trajectory. Often, patients were found to be unable to recall the information or formulate questions they would have liked to ask. Several participants thought that the OIN™ would positively impact patients' sense of control as they can choose to access the information that is most relevant to them at a particular point in time. They stressed also that patients can review the information at their own pace and in the privacy of their homes. One participant stated, "I think it [the OIN™] gives the patient more chance of knowledge. And I think knowledge is power and that can make people feel a sense of control.." (Dietitian).

Furthermore, numerous participants thought that the video-clips of individuals with cancer sharing their experience would be beneficial to other patients as it provided personal and realistic information. One participant stated, "I think the videos are going to be a big hit. Because everyone wants to hear about what happened to other people. And they're not all sugar-coated. ." (Nurse).

5.1.2. An important complement to ongoing supportive resources

Some participants were concerned that the OIN™ could be relied upon as a substitute for the "human touch" of cancer care. Most felt that the tool was most appropriate as a complement to clinical practice and peer support. This is echoed by the following quote "[the OIN is] a useful complement to what we do as a team. I don't think it can replace the teaching that's done by the multidisciplinary team, be it the doctor, the resident, nurse, or dietitian" (Pharmacist).

Many also felt that routine patient education would benefit from some kind of reinforcement and the OIN™ could play this important role. An initial cancer diagnosis was described by many as a time when patients are shocked and are not receptive to learning. As such, the OIN™ could be accessed later on, when patients were less distressed and ready to process cancer information. Furthermore, several participants

spoke about the pressing need for patients to be guided through the complexity of the current healthcare system. The pharmacist – also a member of a community-based navigation service for patients newly diagnosed with cancer – stated that patients are grateful for any assistance provided as they find their way through cancer services. One participant put it eloquently, stating: "This is not instant coffee. . . This is a process. It's a journey and we, as professionals, walk the journey with the patient and their families. And this is a tool that helps. It's like a compass, it makes sure they are not alone and they don't get lost in the forest" (Social worker).

Other participants thought that the OIN™ would be most beneficial if a resource person was also available to clarify patients' questions or concerns as these may arise following OIN use. For example, "I think it would be important for the patient to know that there is someone he or she can go to for explanation. . . [for] a better understanding of what it is that they're actually reading" (Nurse).

5.1.3. Comprehensive, accurate and useful information

Several participants described their overall impression of the OIN™ as positive and many thought that although a lot of information was presented, it was simple to access, appealing, comprehensive and easy to read. Participants acknowledged that there are currently other comprehensive cancer-related websites available but felt that patients often do not know how to identify the most reliable web-based information. As illustrated by this statement, being able to recommend the OIN™ might even reduce time HCPs spend clarifying questionable cancer information obtained from unregulated websites. "A lot of patients have gone to the Internet sites and come back with information either not accurate, not appropriate, and it's just causing them more anxiety. . ." (Nurse). One volunteer also felt the OIN™ is a more efficient way to convey information than current paper-based resources "All the information is in one place. . . I mean it's cost effective in the sense, you know, we give out so many booklets and books and how many of that things end up in the garbage?" (Volunteer).

Many participants thought the OIN™ would be particularly useful for patients with colorectal cancer as there are still too few resources for this most prevalent form of cancer, moreover the information and support resources are consolidated in one repository. One participant summarizes this view: "Well, I think it's an excellent resource for patients to be able to get the [cancer] information. To go, instead of looking up on all these other different internet sites. . . it's concise, it explains, there's pictures. There's links. So I think that was really good" (Nurse).

Some concern was raised about the potential impact of the OIN™ on patients' anxiety. A nurse and a volunteer thought too much information could create anxiety in patients, although another nurse pointed out that anxiety could arise from accessing any online cancer resources. One volunteer highlighted the importance of appropriate timing for introducing the OIN™: if patients accessed the OIN™ prior to their diagnosis they may become overly anxious by being exposed to information that may not pertain to their particular diagnosis, whereas if they were given access right after diagnosis, they would focus only on information most relevant to their condition.

Other participants believed the OIN™ could ultimately empower patients and families by allowing them to access, process and control what types of information is sought and when (i.e., pacing of the information according to readiness). One participant stated “[Information] is *empowering and that puts the patients in a position that’s more involved*” (Physician). Other participants spoke about having confidence in referring patients to the OIN™ as they felt sure of the content and information.

5.1.4. A means to build HCP-patient trust and enhance communication

HCPs were pleased to see that the OIN™ was customized to the health care institution where they practice. As indicated by this comment from a psychologist specializing in sexual health, by providing accurate information on topics that are often not addressed, the OIN™ can serve as a springboard to encourage patients to discuss difficult and awkward issues with HCPs. “*The positive aspect is it opens up dialogue for them. To ask questions about things that, you know, I haven’t thought about*” (Psychologist).

Some participants thought that the tool could ease their burden by reducing questions that patients ask in areas outside of their own expertise. One dietitian felt that when patients access reliable tools such as the OIN™, they might feel more equipped to ask questions about their treatment and care, thereby building the HCP-patient relationship.

The importance of timely cancer informational support was emphasized, but there was no consensus on how the OIN™ should be introduced. Options provided included: guiding patients in terms of the type of information sought, developing the OIN™ according to health status, and designing individual or group sessions to orient patients to the OIN™.

5.1.5. A catalyst for patient–family communication and support

Many participants saw the OIN™ as a means to improve communication among family members and enhance patient support. Participants reiterated that cancer is a family experience and emphasized how the OIN™ might serve to initiate family discussions. Participants also identified that the OIN™ would provide guidance to family members in terms of milestones to anticipate on the cancer trajectory from diagnosis, treatment, follow up and long term survivorship (or palliation). Several participants mentioned potential for family interventions to be guided by the OIN™, whereby adult children, often thought to be more technologically savvy, can act as an information coach to their elderly parents.

For instance, one participant stated, “I think the children would welcome the opportunity to go through this type of tool for their own edification and knowledge... it has been my experience as a professional, that when one person is sick in a family with a life threatening illness, the whole family is sick. It’s contagious” (Social worker).

5.2. Perceived OIN™ limitations

One additional area explored in this study pertains to drawbacks of the OIN™. Several of these are outlined below.

5.2.1. Socio-demographic characteristics

Some participants expressed the importance of carefully assessing how certain factors such as socioeconomic status, education, or age may (or may not) affect patients’ propensity to use the OIN. These participants emphasized that, for instance, for younger people with cancer, income is not seen as a significant barrier to using the internet (and the OIN™), as they most often have ready access to computers. Advanced age, however, was considered to be a significant barrier. Some participants drew the cut-off as early as 50 years-old, but many thought that more elderly patients would encounter significant challenges to using the OIN™. Interestingly, most said they probably would not recommend the OIN™ to patients above 70.

One psychologist suggested that the OIN™ might even be more beneficial if designed by developmental stage and age, rather than tumour site, because the cancer experience varies according to one’s life stage. Language and literacy were seen as potential barriers as several patients seen in clinics are French-speaking, (of note, the OIN has since been translated into French). Complexity of some cancer terminology was also brought forward as an issue. Although many participants felt that the content of the OIN™ was comprehensible, one nurse expressed concern about medical language being used, although she felt that learning such terms might be valuable in future HCP–patient interactions. One participant reiterated this sentiment, stating: “*I get back to sexuality... Where they’d like to have some information, [and the OIN™] might give them the language to bring up the concern with the nurse*” (Psychologist).

5.2.2. Clinical time constraints

Not surprisingly, almost all participants identified time constraints as a significant barrier to implementation of the OIN™ in clinical practice. This quote emphasizes the importance of time, “*If I start providing explanations [about the OIN™], it would generate more questions... I just wish that time was an elastic commodity, so I could really go in-depth as my patient needs it*” (nurse).

One participant felt integrating an introduction to the tool into his daily practice might be too time-consuming, “*I don’t have the time that it would take to sit down and spend 40 min with the patient... Their chemotherapy, the side effects... You know, I would lose an hour*” (Pharmacist). However, a few participants suggested that initial strain on time would actually be mitigated by longer-term benefits of the OIN™; it would answer patients’ questions that might not be answered during rushed clinic visits. One volunteer also suggested that time spent waiting for an appointment would be an ideal time to access the OIN™ with computers provided in waiting areas of the hospital.

One HCP indicated that the OIN™ would not take additional time in patient consultations and was even open to additional means of communication, “*I don’t know [that] I would spend too much time... I would go through the main categories, and then I would say, you can refer to this if there’s missing information and write to me. I’d give them my e-mail address*” (Physician).

5.2.3. Computer access and proficiency

Participants did not think computer availability would be a limitation in accessing the OIN™ as several options include

computers provided in public libraries, Internet cafés and friends/family members' home. However, the level of comfort or privacy when accessing a public computer was perceived as important. One participant stated that it was not ideal for patients to access personal health information in a public setting: "I was trying to picture going into an Internet café and clicking on this website and thinking that's a little, uh, embarrassing almost. Like not embarrassing, but maybe something someone will be shy about doing in public" (Nurse).

Participants expressed some concern about the required level of computer proficiency. This comment summarizes the impression of several participants, "You had to know how to use the computer... you had to at least know how to go back and forth and change pages, which is very basic" (Nurse). However, two participants suggested novice computer users might need assistance to fully benefit from the OIN™. One physician indicated that providing access to family members or a support person might be significantly beneficial to the patient.

5.2.4. Technical issues

Participants noted very few technical issues with the OIN™, but one participant suggested that the tool would benefit from "saving" user information and prior searches. The lack of personalization to a patient's specific cancer treatment plan was a concern raised by two participants. They felt this drawback reduced their enthusiasm to recommend the OIN™ over other cancer information websites.

6. Discussion

The main purpose of this study was to explore a cancer team's perceptions of a promising web-based navigational tool for individuals with cancer, namely colorectal cancer, but the OIN is being developed for 23 additional cancer diagnoses. Findings from interviews reveal that participants perceive the OIN™ as an important contributor to patients' information and support needs and a significant complement to patient education and navigation initiatives.

6.1. Tailoring care

The general consensus from the interviews is that providing information is only one part of what HCPs do to tailor care to patients' needs. Whereas direct cancer care still needs the human touch, information and support provision can be provided efficiently and easily through other means – such as the internet [43]. As certain patients commonly experience what HCPs call 'information overload', virtual access to cancer information can address this issue and can be best tailored to individuals' needs and preferences [36,44,45].

6.2. Overall perceived OIN™ benefits

Many participants saw the OIN™ as a significant complement, though not a substitute for supportive and educational activities provided by HCPs. As stated earlier, this finding supports other literature indicating that patients prefer health information from physicians and nurses first and then from the Internet [13,24]. However, in many cases, patients access

the Internet first because their desired source of information (physicians or nurses) is not as easy to access [32,46].

Many participants felt that the OIN™ would be most beneficial if administered to the family unit. Participants suggested that a 'family intervention' might assist with navigation problems for those less technically savvy, and also bridge cancer-related communication among family members. This supports previous findings encouraging the mobilization of family strengths and resources to better meet patient and family needs [47,48].

An additional potential benefit of the OIN™ identified by participants was building trust and empowering patients. Past studies have documented how technological interventions can improve trusting relationships among healthcare team members and patients [49,50]. However, it has also been reported that a high proportion of patients search for health information on the internet, but a small number actually bring the information to the attention of their healthcare provider [51,52]. In some cases, patients seek further information due to breakdown of communication in the patient-provider relationship [52]. This is significant because early provision of a web-based platform such as the OIN™ might assist HCPs in preempting a breakdown in communication by offering patients an alternative resource.

6.3. Overall OIN™ perceived limitations

Participants' responses to the OIN™ were overall positive, however they identified a few concerns pertaining to future implementation. The challenges commonly raised included: how/who/and when should the OIN™ be introduced to patients, what member of the team would lead implementation, how much time would be required. HCPs thought that the amount of time required to refer patients to the OIN™ as well as address their questions, were significant barriers to clinical implementation. Time constraints have been reported as a barrier in numerous utilization studies of a broad range of web-based resources for healthcare professionals [53–55]. However, time commitment involved in the initial start-up of web-based technology in clinical practice has been reported to result in time-savings for HCPs once the technology is routinized [56,57]. It has also been reported that HCPs are more motivated to engage in routinization if they perceive time-savings post-implementation [58]. A recommended strategy to contain time issues is to have patients be their own coaches when it comes to getting the password and summary information to access the tool.

Overall, many of the challenges outlined by participants reflect the challenges of instituting any change in clinical practice, which include (1) organizational barriers, including structure and process variables; (2) social barriers, including the prevailing opinion of team members; and, (3) professional barriers, such as a sense of incompetence or skill-deficits related to new technology [58–62]. The findings of the present study reiterate that all of these potential barriers must be taken into consideration when planning to implement web-based tools.

A few studies have focused specifically on HCPs resistance when it comes to e-health implementation [63,64]. Specifically, there is evidence of a 'cascade effect' [64] created when

members of the multidisciplinary team accept or resist a new e-health modality. In this study, HCPs positively appraised the OIN™, and seemed interested in its potential to benefit and individualize patient care.

Some participants suggested that accessibility to a computer and computer literacy were significant barriers to utilizing the OIN™, while others indicated that services within the hospital and the surrounding community are widely available to support patients in their use of the OIN™. However, the ‘digital divide’ wherein people with higher income and education are better served by, and can more readily utilize web-based technology, remains an important and significant consideration in the uptake of web-based technology [43,65–67].

Cultural factors are noted in the literature to have a significant impact on access, processing, recall and uptake of relevant e-health innovations focusing on cancer information [38,68]. The findings from this study lend further credibility to the importance of adopting e-health modalities that are tailored to specific contexts (e.g., are culturally sensitive) in terms of language, values, health practices and recommendations.

7. Limitations

Findings from this study are limited to the views provided by small numbers of participants representing each discipline or volunteer group. Future studies could seek data saturation through the inclusion of more members according to each occupational group. In addition, participants may have felt pressure to provide positive views of the OIN™ as there are very few comprehensive tools such as this one and because they may have been involved with prior pilot studies using the OIN™.

8. Implications

At the outset, the present investigators recognized the importance of involving all representatives of the multidisciplinary team (including volunteers) when seeking feedback on patient-centred innovations such as the OIN™. Whereas much of the research on web-based tools focuses on separate professions (i.e. nursing, medicine) rather than multidisciplinary teams [60,69,70], recent studies indicate that when implementing changes in practice to improve patient care, a comprehensive approach is needed to enhance implementation potential [58,70–72]; and to recognize that HCPs’ perspectives are key to successful implementation. All participants underscored the importance of patient needs and context, though many had a unique practice focus. Furthermore, this study showed that HCPs were cognizant and considerate of the roles played by other members of the oncology team and their importance when foreseeing implementation of new practices.

Authors’ contributions

Both K.H. and C.L. contributed to the conception and design of the study, acquisition of data, analysis and interpretation

Summary points

What was already known on the topic

- Oncology patients have high information needs that often go unmet.
- Given time pressure, budgetary constraints, and a rapidly evolving cancer field, HCPs have reduced patient time.
- E-health can fill a critical gap and show tangible benefits for patients.
- Health care providers can significantly influence the uptake of e-health interventions in clinical practice.

What this study added to our knowledge

- Provides insights into diverse perceptions of e-health by members of an oncology team.
- Emphasizes importance of pre-implementation efforts in e-health research to anticipate and modify potential barriers, thereby ensuring full implementation potential.
- Underscores the need to take into consideration the perspectives of all involved to ensure optimal e-health outcomes

of data, drafting and revising of the manuscript, and final approval of the version to be submitted.

Conflicts of interest

There is no conflict of interest to declare.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.ijmedinf.2011.11.001.

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