

Title: Development and evaluation of an online educational resource about cancer survivorship for cancer nurses: A mixed-methods study

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Development and evaluation of an online educational resource about cancer survivorship for cancer nurses: A mixed-methods sequential study

Abstract

Background

With the increasing number of cancer survivors and growing recognition of the need for supportive care post-treatment, cancer survivorship has become an increasingly important area. Several peak bodies have recognized the need for more education and training, however few survivorship resources exist.

Objective

The purpose of this work was to develop and evaluate an online survivorship resource primarily targeting cancer nurses.

Methods

A multidisciplinary team developed an online education resource to enhance nurses' ability to provide survivorship care. Using a mixed methods approach, participants were invited to evaluate the resource via an online survey and/or telephone interview. The aims of the evaluation were to obtain perceived usefulness, applicability, and overall satisfaction.

Results

A total of 21 participants completed surveys, and 11 completed telephone interviews to provide qualitative feedback. Users found the resource to be intuitive, engaging, and relevant to their practice. Constructive feedback cited minor technical issues, as well as the desire to connect with other learners within the resource itself.

Conclusion

This study provides evidence that the Cancer Survivorship tool is an engaging tool that may be a promising means of evidence-based online survivorship education.

Background

Cancer survivorship is a pressing global issue. Currently in the United States there are 13.7 million cancer survivors, a number projected to rise to 18 million by 2024 (American Cancer Society 2014). In Australia, one million people currently live with or have survived cancer (Cancer Council Australia 2016), and in the UK, there are two million cancer survivors alive today, with a projection of four million by 2030 (MacMillan Cancer Support Group 2015). Despite these encouraging statistics, there is considerable variation in survival depending on type of cancer diagnosis within and across the global cancer community.

Cancer survivorship has become a rapidly expanding field of health care (Hewitt et al. 2006), requiring that the health workforce have the knowledge and skills required to optimize survivors' health and wellbeing. A search of PubMed of literature published between 2010-2016, including the search terms "cancer and survivorship" returned almost 169,000 citations. But despite this attention to, and recognition of the need for survivorship information, education and training for health care professionals is limited (Hewitt et al. 2006; Grant et al. 2007; Irwin et al. 2011), leaving frontline providers of survivorship care inadequately informed and supported (Hewitt et al. 2006; McCabe et al. 2013; Chubak et al. 2012). Health care providers from a range of disciplines recognise the need for better care for survivors (McCabe et al. 2013; Wallace et al. 2015; Hewitt et al. 2007), and cancer survivors value knowledgeable health professionals who can provide informed and supportive care.

Of the 59 million health care workers globally, nurses (approximately 20 million) form the largest professional group (World Health Organization 2006). As such, nurses are critical to the future of cancer survivorship care given the major role they have in providing information and support to this population.

One recent study examining survivorship care attitudes and practices among cancer nurses identified that key aspects of survivorship care are within the scope of the nursing role (Wallace et al. 2015). Nurses regard themselves as integral to survivorship care as they triage, assess, and initiate survivorship-related activities.

Such activities include cancer screening and prevention to identify late and long term effects, promoting healthy lifestyle behaviours, enabling self-management of physical and psychological problems associated with cancer and its treatments, and facilitating communication and care co-ordination between multiple health care providers, caregivers, and patients (Grant et al. 2010; Ferrell et al. 2003; MacMillan Cancer Support 2013). Despite the potential contribution of nursing to survivorship care, there is evidence of gaps in nurses' knowledge in domains such as the impact of cancer on a patient's family and the effects of cancer and treatments on sexuality and fertility (Lester et al. 2014).

In the 2006 report, *Cancer Patient to Cancer Survivor: Lost in Transition*, the Institute of Medicine recommended that, "...organizations should expand and coordinate their efforts to provide educational opportunities to health care providers to equip them to address the health care and quality of life issues facing cancer survivors" (Hewitt et al. 2006, p. 9). The American Society of Clinical Oncology (ASCO) has further emphasized the need to "expand survivorship-related education and training opportunities for oncology providers" (McCabe et al. 2013). In response, ASCO developed educational tools to improve survivorship care, including "Providing High Quality Survivorship Care in Practice: An ASCO Guide" for physicians (ASCO 2014). While the need for educational support is clear, such resources and formal training are limited, particularly for nurses (Hewitt et al. 2006; Klemp et al. 2011).

To address the gap in survivorship education for cancer nurses, the Australian Cancer Survivorship Centre (ACSC), a Richard Pratt legacy, developed and funded a free online educational resource for health professionals on cancer survivorship, in collaboration with the Workforce Education Development Group at the University of Sydney, the Queensland University of Technology and, Cancer Australia, a national government agency working to reduce the impact of cancer on all Australians. Improving care for cancer survivors requires accessible educational opportunities for health professionals (Ferrell et al. 2003). Online learning is a flexible and accessible approach to continuing professional development (CPD) that can positively influence clinician behaviour, skills and attitudes towards practice (Ryan et al. 2007). Well-

designed online materials (Shaw et al. 2014) can provide high quality learning experiences, and can enable greater access to educational opportunities (Cook et al. 2008; Cook et al. 2010). The study group therefore chose to develop an online resource, Cancer Survivorship, targeted for nurses wishing to enhance their knowledge and skills of cancer survivorship care. The choice of an online format was further informed by evidence that nurses are keen for survivorship training and have a preference for online learning, but that few online evidenced based resources are available to them (Klemp et al. 2011).

The purpose of this paper is to describe the development and evaluation of an online survivorship resource that is accessible to and tailored to the needs of nurses working with people affected by cancer across a breadth of health settings.

Methods

A mixed-methods sequential explanatory design was used to undertake a pilot evaluation of the online resource (Creswell 2003). Data were gathered in two phases; firstly through online surveys, and secondly, in the form of semi-structured telephone interviews. The aim of the evaluative process was to gain an understanding of the online resource's applicability to practice for nurses, and an appreciation of their overall satisfaction with the resource. Participant responses were also used to inform improvement to the resource, as well as gather insights for development of future CPD resources for nurses working across multiple and diverse clinical settings.

Online Cancer Survivorship resource development

Initial steps

A multidisciplinary team comprising educational designers, health care professionals, researchers, and a cancer survivor was established at the commencement of the project. The team created an educational framework based on critical components of survivorship care (Hewitt et al. 2006; McCabe et al. 2013; ASCO 2014). Key to the development of the resource was the data gathered during a workshop with expert cancer nurses at the 2012 Cancer Nurses Society of Australia Annual Winter Congress. The purpose of the workshop was to identify perceived learning needs in cancer survivorship care to inform and ensure clinical relevance of resource content. Specifically, feedback was sought from nurses via a semi-structured, open discussion

format to identify and then agree on priorities for content inclusion. Over 100 specialist cancer nurses attended the forum. Members of the project team presented information about key topics to be included in the module, as well as proposed delivery modes. Feedback was sought from the participants, with key themes summarized and used to refine the module content. A review of the literature was also conducted to ensure content within the modules was based on contemporary evidence and that it addressed the associated educational requirements of cancer nurses.

Content development

Pedagogy

General principles of adult learning theory were used in the development of the online Cancer Survivorship resource. This included selected design cues from constructivist theory, which states that knowledge is constructed through experience and subsequent reflection (Herrington et al. 2000). In the context of the Cancer Survivorship resource, this led to the creation of reflective activities such as “The Challenge”, a series of reflective questions and initiatives to be applied by the learner in their workplace, as well as reflective activities post-completion of the online case studies. Situated theory was also applied, which proposes that learning happens within the activity and context where it occurs (in effect, it is situated), as opposed to teaching abstract knowledge that is out of the learner’s current context (Ryder 2014; Lave et al. 1990). In the development of the online Survivorship Resource, this led to the creation of case studies and subsequent learning activities relating to the events of the online scenarios. The Knowledge-Process-Practice (KPP) online educational model was also utilized to guide the development (Cook et al. 2010). In theoretical terms, this means the Cancer Survivorship resource was built around:

Identifying and processing new knowledge (matching the new knowledge needs of professionals to their own experiences, rather than just knowledge presentation)

Using cognitive frameworks in ‘authentic’ or ‘situated’ learning environments (using structured case studies and other practice experiences as the context for applying new knowledge)

Factors affecting health professionals’ online learning including computer literacy, motivation, and user-friendliness were considered throughout the development

process (Heartfield et al. 2013; Ruggeri et al. 2013). Well-structured online resources with varied components can have greater effect on learning than face-to-face formats (Curran & Fleet 2005; Garrison & Kanuka 2004; Means et al. 2009). Given this, various user-friendly tools were used to deliver content including quizzes, videos, and downloadable fact sheets. Each of the modules within the online Cancer Survivorship resource also contained links to external sources where applicable for further reading.

Module development

Based on the workshop with expert cancer nurses and a comprehensive literature review, a primary aim of the online resource was to develop nurses' capability to identify and respond effectively to common needs of cancer survivors in an Australian health care context. The modules also served to raise awareness of available services and interventions, as well as provide nurses with essential knowledge regarding implementation of system change to improve cancer survivor experience and outcomes.

Final versions of the online resource content were informed through consultation with cancer survivors, leading national, multidisciplinary clinical experts, and educational designers. Existing frameworks were also drawn upon for guidance, including the Royal College of Nurses document, Competencies: An integrated career and competence framework for nurses working in the field of long-term follow-up and late effects care of children and young people after cancer (Royal College of Nurses 2011). The project team provided expert advice on inclusion of practical subjects that would align with the overall learning objectives of the survivorship resource.

A series of six modules (Textbox 1) were developed each addressing a range of topics identified through consumer and professional engagement as being of relevance and importance to improved patient experience and outcomes. The resource offered interactive modules and resources in a variety of formats, including videos, case studies, personal survivor stories, quizzes, and tools for practice including The Personal Challenge, a downloadable tool with checklists and tips to improve survivorship care in a clinical setting (Figure 1). Each module required approximately 60 to 90 minutes of learning and could be re-visited at any time.

The intended learning objectives of each module are summarized in Textbox 1.

The online resource was developed to be accessible cross-platform on any device with an Internet connection.

Development of the pilot evaluation framework

An evaluation framework was designed to capture insight into applicability, impact, and acceptability (Curran & Fleet 2005). An online survey and phone interview questions were developed by the project team. These questions were designed to align with the resource aims and learning outcomes, and gather focused, relevant feedback on the content and educational approach.

As an overview, the resource evaluation method was comprised of a three-tiered process:

Online resource launch: the online resource was launched on the Cancer Australia website in May 2014 (<http://cancerlearning.gov.au/topics/survivorship>). After initial launch, the resource was freely available to clinicians interested in developing their cancer survivorship knowledge and skills.

Targeted recruitment: Following the launch, a strategy to recruit a targeted sample of nurses known to be actively involved in survivorship care was put into place to obtain feedback.

Open recruitment: Following the targeted recruitment, an open recruitment process was done to invite evaluation of the resource from a broad range of clinicians interested in developing knowledge of cancer survivorship care.

Participants

Targeted recruitment

Recruitment of nurses known to be actively involved in survivorship care occurred through the Peter MacCallum Cancer Centre in Victoria and Queensland University of Technology, as both organisations have active clinical and research programs in survivorship care. Members of the project team held senior positions in each of these organisations, thus facilitating access to potential nurse participants and acting as champions for the evaluation study. Nurses at each of the sites were recruited to the evaluation study via e-mail invitation from contact databases managed by the

involved centers. All potential participant identifiable contact information was held in databases at the two organisations involved in the study.

Open recruitment

For any health professional accessing the educational resource via the Cancer Australia website, there was an opportunity to participate in the evaluation study via an open invitation link as part of the website page. Given the diversity of health professionals involved in providing survivorship care, input from non-nursing health professionals was welcomed and although nurses were the primary audience for the resource, feedback was invited from all users to maximise the breadth of perspective brought to the evaluation.

Data collection and analysis

A mixed-methods sequential exploratory approach was used to obtain quantitative and qualitative feedback on the online resource. Participants were invited to evaluate the resource via an online survey and if agreeable, via a semi-structured telephone interview to further gain their input. The aims of the evaluation were to determine the resource contents' perceived usefulness and applicability to practice; to assess satisfaction with the resource; identify learning preferences of approaches used within the resource, and obtain basic demographic data to describe the evaluation participant characteristics.

The online survey was developed by the investigators to address the primary aims of the evaluations, and included a total of 26 questions, shown in Tables 1 and 2. Twelve Likert-scale questions were answered using a five-point scale ranging from 'strongly agree' to 'strongly disagree.' These questions focused on the site usability, content, and also preferred specific learning formats. Open-ended questions focused around learning preferences and improvements that could be made to the resources. Simple descriptive analysis, including frequency, percentages, range and averages, was undertaken for quantifiable data. Responses to open ended questions from the surveys interviews were coded into broad categories based on the focus of the survey items to which they were aligned. Data were coded according to demographic, resource access and completion, and overall satisfaction and learning preferences information.

A code was also developed to account for general feedback on the resource. Two members of the project team reviewed the responses.

Telephone interviews were undertaken to gather in-depth information about learning preferences, feedback on the resource, and applicability to practice, and to encourage generation of examples of the resource's applicability to practice, as well as eliciting general feedback. Interviews were conducted by two investigators and were audio recorded and transcribed, with interviews ranging from 12 to 30 minutes, focussing on 17 standardised questions (Textbox 4). Thematic analysis was done to identify trends amongst participant responses. Data analysis began with a process of data familiarisation as two researchers (BM/JA) independently listened to the interviews, transcribed them, and reviewed the feedback post-transcription. Participant responses were summarised into a list of bullet points for each of the 17 questions asked during the telephone interview, and data coded into emergent categories by question topic and finally key themes. The process of data collection and analysis occurred simultaneously. Three overarching categories were generated within which key themes could be explored: general feedback, learning preferences and overall relevance/applicability of the online resource in practice. Interviews continued until the process of data analysis indicated that participants were generating limited new information.

Ethics approval for this study was received from the University of Sydney Human Research Ethics Committee.

Results

Cancer Survivorship Online Resource completion and launch

Evaluation Results

A total of 21 participants completed the online survey and 11 participants completed a telephone interview between May – August 2014.

Survey Data

As shown in Textbox 2, the majority of online survey respondents were nurses (n=14/66%). The majority (n =15/71%) worked in a public setting, and 15 (71%) stated that $\geq 75\%$ of their work involved working directly with people affected by

cancer. In terms of experience, 12 (57%) identified themselves as being advanced, while nine (42%) identified themselves as being intermediate.

When asked how respondents primarily accessed the resource, most had done so using a desktop computer (n = 15/71%) and six (29%) had used a laptop. The majority (n = 20/95%) of the users identified as being confident navigating computers and websites.

In exploring the depth of content provided, 16 (81%) reported that the website contained the right amount of information. In the open feedback, two participants suggested that the inclusion of information on specific survivorship experiences, including hematologic and childhood cancers, would be useful. Two respondents also described a desire to learn more about the role of various health care members in providing survivorship care.

Sixteen (76%) respondents stated that they had learned something new and all 21 users found the resource applicable to everyday practice. All participants felt that downloadable fact sheets, practical tips, and links to external resources within the modules were important to them in online learning. When asked whether quizzes or videos were valuable to their learning, 20 (95%) participants reported that they were. Overall, participants valued having diverse formats of content delivery.

When asked if accreditation for continuing professional development would be a key motivator to visiting the cancer survivorship resource, the majority (16/76%) felt it would be and 18 (86%) participants indicated that they would recommend the resource to a colleague.

Interview Data

Of the 11 telephone interview participants, the majority were nurses aged between 30-50, situated in a major city and self-rated as having intermediate experience in their role (Textbox 3).

Key themes from the interview data included overall satisfaction with the Cancer Survivorship online resource, applicability of the content to practice, and ease of accessibility.

Preferred approaches to Continuing Professional Development (CPD)

The 11 respondents described experience of traditional CPD formats including conferences, clinical in-services, workshops, and reading academic journals. Most (n = 9) felt conferences or workshops had the greatest impact on their learning and described a range of benefits of face-to-face meetings:

“I get a whole lot of people I want to see in one place, and then I can network and have individual conversations as well as learning” (Participant 005).

“I think [conferences] *are more motivating and you’re linking with other similar roles and people of interest to get ideas*” (Participant 004).

Although face-to-face interaction was felt to have the greatest impact on learning, nearly all participants (n=8) agreed they would increase their use of online education if it counted towards their annual CPD points quota, and if the content was engaging, convenient, and relevant. When asked what proportion of their current learning was web-based, most learners (n = 9) indicated it was less than 50% of their annual required CPD hours (range 20-40 hours per year depending on registration requirements) (ANMF 2016). Online learning was an attractive learning approach for several learners, with cited benefits including time efficiency and inexpensiveness:

“*Online learning is engaging and easy to access... there’s lots of different platforms to source the information from. If there were other engaging techniques in interactive learning activities that might be used, then I would probably increase [usage] even more*” (Participant 002).

Five participants suggested including a virtual profile or points-tracking system of modules completed, or a certificate stating the CPD points earned as an incentive.

Overall, online learning formats were perceived as a feasible, desirable learning format when presented in an engaging way.

Relevance /applicability to practice

All participants agreed that the resource met their learning needs, although to differing levels:

“*From what was in there on nutrition it was very, very brief. It didn’t really go into those basic guidelines or anything, just nutrition to cancer survivors is the same as to the general population*” (Participant 009).

The same respondent further described that while the importance of physical activity was mentioned, practical information on what to recommend to patients was lacking. The suggestion was made to include more practical, detailed guidelines around nutritional and physical needs of cancer survivors so that nurses may be better equipped in supporting such aspects of survivorship care.

A keenness to learn more about the roles of allied health workers in survivorship care was raised by several interviewees. Three respondents mentioned that concise information around the roles of allied health workers in survivorship should be explored, such as to whom and when they should refer a patient. Specifically, the inclusion of case studies was proposed to provide opportunity for learning around triage, referral and care co-ordination:

“...what models of care would be most appropriate for this survivor *or*... what aspects of referral would you then use to apply in your clinical practice” (Participant 002).

“I also thought it would be good... to just highlight who I can refer to, so if you feel the patient would like more support in this area, then refer to the occupational therapist or dietician. Putting it there, who to refer to, that kind of practical approach” (Participant 009).

In exploring the degree to which learners felt their needs had been met, overall, learners were satisfied with the online resource. Two participants offered feedback with regard to content relating to their specialty areas, including paediatric and hematologic cancers. Particular groups of haematology patients were flagged by one respondent as having unique needs:

“I’ll give an example, say myeloma, it’s incurable. There is no surviving.... We know that their disease 100% will recur, and it’s kind of like different issues than the other disease where they survive into wellness, it’s just different issues.... With these chronic blood cancers, they will always come back” (Participant 005).

Another perspective identified as not having been addressed by the resource was the survivorship needs of those who have overcome childhood cancers:

“I think [the resource] is very good, but I would identify that there’s a lack of information for those who may choose to use it from survivorship from childhood

cancer. Because it's clearly aimed at adult cancer survivors, and if there were adult survivors of childhood cancer who went to that website, they would be short of information" (Participant 008).

These insights indicate a desire for sub-specialist information that addresses specific survivorship needs for particular groups of patients.

One of the primary intents of developing the online Cancer Survivorship resource was to create a practical tool to help improve nurses' capability in providing survivorship care. Evaluation data from participants indicated that the resource was practical to use, and the modules could be completed at the learners pace and within an acceptable time frame, adding to their acceptability.

Overall, the resource was perceived to be an accessible tool in the workplace, informing care planning and clinical practice.

Participants reported various motivations for using the Cancer Survivorship resource. All respondents were looking to improve their survivorship knowledge, and many (n = 7) were required to engage in ongoing CPD by their workplace managers. Four learners were using the resource to assist with development of survivorship programs and in planning clinical pathways:

"We're using the [Cancer Survivorship] model that's there and the information regarding a pathway on survivorship care, and using that as one of the documents in order to facilitate development of the model for childhood cancer survivors in Western Australia" (Participant 008).

Some interviewees (n = 2) were self-identified novices to survivorship and were seeking to expand their foundational knowledge:

"I was new to the area of survivorship, so I've come into a new role. The survivorship website has aided my background knowledge and given me an understanding of cancer survivorship in Australia, and that lead me to be able to better conduct my work practice" (Participant 002). *"Because I'm in a rural area, I can't attend as many face-to-face seminars and training activities as I'd like. So often I do participate in online seminars and I find that quite good. Not the same as face-to-face, but it's still a good way to learn"* (Participant 009). The comments given indicate that the resource

was useful for those new to survivorship, as well as those lacking alternative means of CPD.

The ability to connect with other learners was identified as a feature that would strengthen the Cancer Survivorship resource. This feedback aligns with participants' desire for networking and face-to-face CPD opportunities. One participant suggested: "some sort of forum, or anywhere you might be able to go and discuss... *or an interactive webinar just to connect with some other people that have already got survivorship models of care operating within their organizations, and how somebody who's coming in very new to that whole concept might approach it*" (Participant 002). The value of networking with others was clearly identified and offers opportunity to consider the role of online forums or webinars as meaningful alternatives to traditional face-to-face CPD formats.

General qualitative feedback

The online Cancer Survivorship resource was designed to be intuitive and easy to use, with minimal technological competence required. All participants agreed that the resource format made learning easy and accessible. Six interviewees cited technical issues with web links and audio files, and some felt that certain slides were word-heavy or "busy". However, overall satisfaction with the content was high;

"Generally I found it quite good... it was really interactive and if you had special areas you were interested in you could go to that, and if you weren't you could skip it... I found that quite good, it was quite easy to adapt" (Participant 009).

A clear visual of the time required for each module was also suggested for scheduling purposes, which was later integrated by displaying the time near the play and pause buttons within each module. Furthermore, it was suggested that care plans for the most prevalent cancers be included as part of the resource to improve survivorship standards nationwide, *"so then there can be some continuity across the spectrum"*, as one participant described (Participant 005). Two respondents suggested the development of a mobile app for greater interactivity and accessibility.

Discussion

Overall, the evaluation data indicate that participants found the Cancer Survivorship resource to be engaging, practical, and intuitive. A major theme to emerge from the

survey and interview data was that the Cancer Survivorship resource was applicable to practice, which aligns with adult learning theories and was a specific objective of the resource. Various aspects were cited as being practical, including the quizzes, cancer survivorship pathways and the expert videos. Some respondents highlighted the usefulness of the resource for informing survivorship care plans (SCPs), which were a key recommendation of the IOM report (Hewitt et al. 2006). As such, the inclusion of examples of SCPs or components of best practice SCPs should be considered for inclusion in future iterations of this resource or other novel approaches to cancer survivorship education.

Feedback provided by non-nursing professionals indicated that the resource provided helpful insight into the roles and responsibilities of other professionals' engaged in survivorship care, as well as offering them relevant information. Nearly all participants surveyed agreed they would recommend the site to a colleague, and many stated that they had discussed the website with a peer. Health professionals found it useful to be better informed of professional and consumer resources available to enhance survivorship care, consistent with ASCO's report emphasizing the need for appropriate referral and provision of resources to patients (ASCO 2014). Respondents expressed a need for practical information on the roles of various health professionals working in survivorship, as well as guidelines on when to make referrals to allied health professionals. The ability to make timely and relevant referrals is dependent on awareness of what services are available. As such, future iterations of the online resource or others being developed should include exploration of the roles of various health professionals involved in survivorship care, as well as practical guidelines on when and how to refer to members of healthcare teams in acute and community health care settings.

The desire for information to enhance care of childhood cancer survivors and those living with advanced cancers was expressed. These data indicate the complexity of developing resources to address knowledge enhancement and practice improvement in survivorship care where stage of disease, diagnosis, age, ethnicity, functional status and many other variables require targeted application of essential best practice strategies and resources to every individual in need of survivorship care. This

highlights the need for the development and dissemination of quality, flexible, accessible, relevant education resources for nurses (and other professionals) who work with cancer survivors across diverse health settings and geographical areas. Given the sheer number of nurses in the workforce, they are ideally placed to drive informed, best-practice innovation in this growing area of care.

Meeting participant learning needs in an online format

The survey and interview data highlighted that generally participants' learning needs were met. The clear format and short learning activities simplified the user experience, and participant comments in both the survey and interview data noted that the resource was easy to use. Though most respondents in this study were comfortable using computers and websites, intuitiveness was considered throughout the resource development. Computer literacy remains a barrier to innovation in nursing education, particularly in remote/rural locations (Mills et al. 2014). Future online nursing education must factor clarity and ease of use in the design of education resources for optimal participant usability and ultimately translational impact.

The interviews highlighted that most participants used a variety of face-to-face CPD formats, such as conferences, clinical in-services, workshops and reading academic journals. Most respondents cited conferences or workshops as having the most impact on their learning, yet most agreed that if given the opportunity, they would increase their amount of online learning, on the grounds that it was engaging, relevant and/or convenient. Online learning formats were described as desirable for those working in rural locations with limited access to face-to-face learning opportunities. This highlights a need for quality, relevant, and feasible online CPD resources in expanding areas of cancer care such as survivorship, as a supplement to traditional education formats (Davis et al. 1999; Forsetlund et al. 2009).

In developing web-based CPD resources, the desirable aspects of in-person learning opportunities should be considered and integrated where sensible. In this study, important benefits of face-to-face CPD cited by learners included the ability to network, interact with and make connections with peers in their field. Suggestions of web-based formats that offer interaction online included webinars, live chats or

discussion forums. Future web-based CPD developers must consider ways to integrate virtual approaches to optimise uptake of online learning.

Study Limitations

E-mail invitations to take part in the online survey were sent out to confidential participant email addresses through the two targeted recruitment organisations. Consequently, this presents the risk of bias due to the fact that some participants were recruited by centers involved in the study. Additionally, due to the digital format of recruitment (e-mail), it was not possible to establish a reliable number for potentially eligible participants and hence calculate a response rate. Similarly, the open invitation to participate in the online survey via the Cancer Australia website did not allow identification of the number of potentially eligible participants. As the online survey evaluations were anonymous, it was not possible to assess how many participants had taken part in both the online survey and the telephone interview. As a consequence of the privacy issues involved with recruiting participants, it was not possible to include a targeted reminder system to encourage completion of the survey or participation in the telephone interview. As such, the number of participants is relatively low and the findings must be considered in the context of the smaller sample size in this study. A further limitation of this study is that the impact of the resource on participant knowledge or practice was not assessed. The primary aim of the research was to investigate applicability and relevance of the resource content, better understand learner preferences, and gain comprehensive feedback on a new method of cancer survivorship education for health professionals. Consequently, evaluating impact on practice was not a focus of this study, but is an important consideration for future evaluation of the contribution of the resource to survivorship cancer, specifically on patient experience and on outcomes that matter to patients.

Conclusion

The findings of this study indicate that nurses desire to continuously improve and update their knowledge and skills on cancer survivorship care through accessible, interactive, and relevant learning opportunities. They are willing to engage with online education that offers credible and relevant content delivered in a range of learning formats. This study provides evidence that the Cancer Survivorship tool is an

engaging tool that may be a promising means of evidence-based online survivorship education. Future work in this area should consider the value of online survivorship resources on nursing practice and survivorship outcomes.

References

- American Cancer Society. (2014). Cancer Treatment and Survivorship: Facts and Figures [online]. Available at: <http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-042801.pdf> (Accessed 23 March 2016).
- Australian Nursing and Midwifery Board (ANMF). (2016). Fact sheet: Continuing professional development [online]. Available at: <http://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/FAQ/CPD-FAQ-for-nurses-and-midwives.aspx> (Accessed 23 March 2016).
- Cancer Council Australia. (2016). Australian Cancer prevalence exceeds 1 million: new estimates [online]. Available at: <http://www.cancercouncil.com.au/media-release/australian-cancer-prevalence-exceeds-1-million-new-estimates/> (Accessed 23 March 2016).
- Cook, D., Levinson, A., Garside, S., Dupras, D., Erwin, P. & Montori, V. (2008). Internet-based learning in the health professions: a meta-analysis. *Journal of the American Medical Association*, 300(10):1181–96.
- Cook, D., Levinson, A., Garside, S., Dupras, D., Erwin, P. & Montori, V. (2010). Instructional design variations in internet-based learning for health professions education: a systematic review and meta-analysis. *Academic Medicine*, 85(5):909-22.
- Creswell, J. *Research Design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). SAGE publications: Thousand Oaks, California.
- Curran, V. & Fleet, L. (2005). A review of evaluation outcomes of web-based continuing medical education. *Medical Education*, 39(6):561-7.
- Davis, D., O'Brien, M., Freemantle, N., Wolf, F., Mazmanian, P. & Taylor-Vaisey A. (1999). Impact of formal continuing medical education: do conferences, workshops, rounds, and other traditional continuing education activities change physician

behavior or health care outcomes? *Journal of the American Medical Association*, 282(9):867-874.

Ferrell, B., Virani, R., Smith, S. & Juarez, G. (2003). The role of oncology nursing to ensure quality care for cancer survivors: a report commissioned by the National Cancer Policy Board and Institute of Medicine. *Oncology Nursing Forum*, 30(1):E1-e11.

Forsetlund, L., Bjørndal, A., Rashidian, A, et al. (2009). Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Systematic Review*, 2.

Garrison, D. & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2):95-105.

Grant, M., Economou, D. & Ferrell, B. (2010). Oncology Nurse Participation in Survivorship Care. *Clinical Journal of Oncology Nursing*, 14(6):709-15.

Grant, M., Economou, D., Ferrell, B. & Bhatia, S. (2007). Preparing professional staff to care for cancer survivors. *Journal of Cancer Survivorship*, 1(1):98–106.

Heartfield M., Morello, A., Harris, M., Lawn, S., Pols, V., Stapleton, C., et al. (2013). e-Learning competency for practice nurses: an evaluation report. *Australian Journal of Primary Health*, 19(4): 287-91.

Herrington, J., Oliver, R., Herrington, A. & Sparrow, H. (2000). Towards a new tradition of online instruction: Using situated learning to design web-based units, *ASCILITE 2000 Conference*, December 9 - 14, Coffs Harbour, N.S.W.

Hewitt, M., Bamundo, A., Day, R. & Harvey, C. (2007). Perspectives on post-treatment cancer care: qualitative research with survivors, nurses, and physicians. *Journal of Clinical Oncology*, 25(16):2270-3.

Hewitt, M., Greenfield, S. & Stovall, E. (2006). From cancer patient to cancer survivor: Lost in transition. *National Academies*; Washington, DC.

Irwin M., Klemp J., Glennon C. & Frazier L. (2011). Oncology nurses' perspectives on the state of cancer survivorship care: current practice and barriers to implementation. *Oncology Nursing Forum*, 38(1):E11-9.

- Klemp, J., Frazier, L., Glennon, C., Trunecek, J. & Irwin, M. (2011). Improving cancer survivorship care: Oncology nurses' educational needs and preferred methods of learning. *Journal of Cancer Education*, 26(2), 234-242.
- Lave, J. & Wenger, E. (1990). *Situated learning: Legitimate peripheral participation*. Cambridge University Press: Cambridge, UK.
- Lester, J., Wessel, A. & Jung, Y. (2014). Oncology nurses' knowledge of survivorship care planning: the need for education. *Oncology Nursing Forum*, 41(2), E35-43.
- MacMillan Cancer Support. (2013). *Throwing light on the consequences of cancer and its treatment*. MacMillan; London, UK.
- MacMillan Cancer Support. (2015). *Statistics fact sheet* [online]. Available at: <http://www.macmillan.org.uk/Documents/AboutUs/Research/Keystats/StatisticsFactsheet.pdf> (Accessed 23 March 2016)
- McCabe M., Bhatia S., Oeffinger K., Reaman G., Tyne C., Wollins D., et al. (2013). American Society of Clinical Oncology statement: achieving high-quality cancer survivorship care. *Journal of Clinical Oncology*, 31(5):631-40.
- Means, B., Toyama, Y., Murphy, R., Bakia, M. & Jones, K. (2009). *Evaluation of Evidence-based Practices in Online Learning: A Meta-analysis and Review of Online-learning Studies*. Washington, D.C.: U.S. Department of Education.
- Mills, J., Francis, K., McLeod, M. & Al-Motlaq, M. (2014). Enhancing computer literacy and information retrieval skills: A rural and remote nursing and midwifery workforce study. *Collegian*, 22(3):283-9.
- Royal College of Nurses. (2011). *Competences: An Integrated Career and Competence Framework for Nurses Working in the Field of Long Term Follow-up and Late Effects Care of Children and Young People After Cancer*. London: Royal College of Nurses.
- Ruggeri, K., Farrington, C. & Brayne, C. (2013). A global model for effective use and evaluation of e-learning in health. *Telemedicine Journal and E Health*, 19(4):312-21.
- Ryan, G., Lyon, P., Kumar, K., Bell, J., Barnet, S. & Shaw, T. (2007). Online CME: an effective alternative to face-to-face delivery. *Medical Teacher*, 29(8):e251-7.

Ryder, M. University of Colorado at Denver. University of Colorado Web site [online]. Available at: <http://carbon.ucdenver.edu/~mryder/itc/idmodels.html> (Accessed 4 February 2014).

Shaw, T., Barnet, S., McGregor, D. & Avery, J. (2014). Using the Knowledge, Process, Practice (KPP) model for driving the design and development of online postgraduate medical education. *Medical Teacher*, 37(1):53-8.

The American Society of Clinical Oncology (ASCO). (2014). Providing High Quality Survivorship Care in Practice: An ASCO Guide.

Wallace, A., Downs, E., Gates, P., Thomas, A., Yates, P., et al. (2015). Provision of survivorship care for patients with haematological malignancy at completion of treatment: A cancer nursing practice survey study. *European Journal of Oncology Nursing*, 19(5): 516-22.

World Health Organization. (2006). Health workers: A global profile [online].

Available at: http://www.who.int/whr/2006/06_chap1_en.pdf (Accessed 23 March 2016)

Textbox 1

Intended Learning Objectives of the Cancer Survivorship Modules

Module Name	Intended Learning Objectives
Cancer Survivorship Fundamentals	<ul style="list-style-type: none">• Describe key features of the cancer survivorship experience• Outline the epidemiological profile of cancer survivorship in Australia• Recognize the importance of incorporating cancer survivorship care into health care practice.
Key Elements of Survivorship Care	<ul style="list-style-type: none">• Identify principles underpinning contemporary approaches to cancer survivorship care• Identify core knowledge and skills required for health professionals to provide survivorship care
Toolbox for Providing Cancer Survivorship Care	<ul style="list-style-type: none">• Identify tools and resources to implement the following elements of survivorship care:<ul style="list-style-type: none">• Therapeutic communication• Framework for supportive care• Multidisciplinary care• Survivorship care plan (SCP)• Shared care• Identify processes for improving the

	quality of cancer survivorship care
Managing Common Health Concerns	<ul style="list-style-type: none"> • Describe the impact of cancer and its treatment on survivor's physical, psychological, social and spiritual wellbeing • Describe evidence based screening and assessment approaches to identify supportive care needs of cancer survivors • Identify evidence based interventions to minimize risk and manage common supportive care needs of cancer survivors
Promoting Self-Management	<ul style="list-style-type: none"> • Define self-management in the context of cancer survivorship • Describe the role of health professionals in promoting self-management • Identify tools and processes to assist promotion of self-management
Promoting Wellness	<ul style="list-style-type: none"> • Outline evidence to support lifestyle and behavioral changes to promote wellness in cancer survivors • Identify the role of employment in survivors wellbeing

Textbox 2

Demographic data from survey

Role	Nurse	14
	Physiotherapist	2
	Occupational Therapist	2
	Medical Oncologist	1
	Educator	1
	Project Officer	1
Work setting	Public	15
	Private	3
	Not applicable	3

Textbox 3

Interview Participant Demographics

(n = 11)

Location	Major City	8
	Regional	2
	Rural	1
Role	Registered Nurse	5*
	Paediatric Oncologist	1
	Occupational Therapist	1
	Cancer Care Dietician	1
	Physiotherapist	1
	Transplant Care Coordinator	1
	Head Support Services	1
Work Setting	Public	11
	Private	0
	Other	0

Self-Rated Experience in Role	Beginner	0
	Intermediate	8
	Advanced	3
Age	20-30	1
	30-40	3
	40-50	4
	50+	3

Textbox 4

Telephone Interview Questions

1. What is your current role?
2. Which age bracket do you fall into: 20-30, 30-40, 40-50, 50+
3. Where do you work (what region/city)?
4. In your current role do you feel what level do you feel you are at: 1) entry level to your profession 2) intermediate experience 3) advanced /expert
5. How do you currently keep your knowledge around best practice cancer care up to date? Is this a requirement of your role, or do you actively seek out opportunities to update and increase your knowledge around best practice cancer care?
6. How do you keep your clinical skills up to date? Is this a requirement of your role, or do you actively seek out opportunities to learn new skills?
7. What sort of professional development activities have you participated in? Why did you choose these activities? Which activity did you feel had the most impact on you in terms improving your practices in the workplace and why?
8. What percentage of your professional development activities includes online learning? Why have you opted to use it at this level (or not at all)?

9. If given the opportunity would you choose to increase the amount of online learning you participate in to update your knowledge and skills? Why?
10. Why did you choose to use the Cancer Survivorship website?
11. Did you feel the website met your needs in terms of the breath and depth of content offered?
12. Do you have any examples of how you were able to apply any of the
 - knowledge obtained from the Cancer Survivorship website in your practice?
13. After using the Cancer Survivorship website, did you discuss anything you learned with colleagues?
14. Have you downloaded and used the Challenge? Has this made an impact on your practice? Can you give an example?
15. Did you feel the content was presented in a format online that helped make the learning process easy and accessible for you?
16. Did you experience any challenges using the online Cancer Survivorship website?
17. How would you improve this Cancer Survivorship online resource? Do you have any general comments on the course such as what you enjoyed, what could be improved, or any suggested changes on what would encourage others in your profession use this learning tool.

Table 1

Online Evaluation Results: Responses to Questions on Satisfaction and Learning Preferences (n =21)

Questions	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I found it easy to navigate the website.	9 (42.9)	9 (42.9)	3 (14.3)	0	0
The content engaged my attention.	7 (33.3)	13 (61.9)	1 (4.76)	0	0
I learned new information on cancer					

survivorship from this website.	3 (14.3)	13 (61.9)	3 (14.3)	2 (9.5)	0
I found the information applicable to me in my everyday practice.	18 (38.1)	13 (61.9)	0	0	0
Interactive learning opportunities, such as quizzes or videos, are important to me when completing online learning.	9 (42.9)	11 (52.4)	1 (4.8)	0	0
Links to external resources are important to me.	9 (42.9)	12 (57.14)	0	0	0
Quizzes are important to me when completing online learning.	4 (19.1)	12 (57.1)	5 (23.8)	0	0
Expert videos are important to me on websites.	6 (28.6)	11 (52.4)	4 (19)	0	0
Downloadable fact sheets and practical tips are important to me.	12 (57.1)	9 (42.9)	0	0	0
I consider myself competent in using computers and navigating websites.	10 (47.6)	10 (47.6)	1 (4.8)	0	0
Accreditation for continuing professional development would be a key motivator for visiting this website.	5 (23.8)	10 (47.6)	5 (23.8)	0	1 (4.8)
I would recommend this site to colleagues.	8 (38.1)	10 (47.6)	3 (14.3)	0	0

Table 2

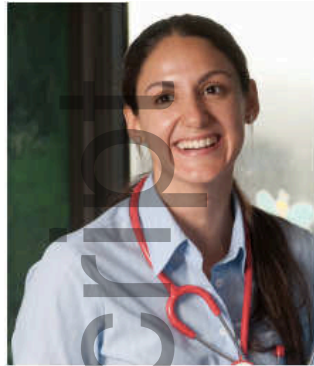
Online Evaluation Results: Responses to Questions on Resource Access and Completion (n = 21)

Questions					
How long did it take you to complete a learning activity on the website?	<1 minute	1-5 minutes	5-10 minutes	>10 minutes	
	2 (9.5%)	12 (57.1%)	4 (19.1%)	3 (14.3%)	
I found the website contained _____ information.	Far too little	Slightly too little	The right amount	Slightly too much	Far too much
	1 (4.8%)	2 (9.5%)	17 (81%)	1 (4.8%)	0 (0%)

How did you access the website?	Desktop computer (PC)	Laptop	Smartphone	Tablet Device	Other (please specify)

Figure 1

The Personal Challenge: A Practical Downloadable Tool for Improving Survivorship Care



We can make a difference to the lives of people affected by cancer by making small shifts in our everyday practice and approach.

How can you improve survivorship care?

There are simple steps we can all take as health professionals in our daily practice that will make a big difference to our patients and their families. Why not take 10 minutes today with your morning cuppa to get started on the Challenge.

How to get started on your personal challenge to improve survivorship care of people affected by cancer:

Tick off as you go

1. Set a goal and schedule a date to complete this Challenge. You can use the Challenge goal setting template on pages 3 to 4 as a guide. ☐
2. Identify gaps in your knowledge of contemporary survivorship care by taking the module quizzes. Note down areas you'd like to learn more. ☐
3. Increase your understanding of contemporary cancer survivorship care by completing one or all of the learning modules. ☐
4. [Share the Challenge](#) - get your colleagues involved and discuss your experiences and the positive changes you've made. You could share the Challenge by email, print the Challenge poster (page 1) and display it in your workspace or place copies in the staff pigeon holes. ☐

Include the Challenge in your professional development plan - it could look great in your portfolio.

Or team up with others in your workplace and choose a prize for the person who is the first to reach their goal.