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Introduction

The World Wide Web provides unprecedented access to information, and computer and internet use is becoming increasingly common. The US Census Bureau (2005) reported that 62% of American households had a computer and 55% internet access and the Australian Bureau of Statistics (2007) reported rates of 73% and 64% respectively. Adoption of information technology into health workplaces has been rapid. Master's (2008) recent systematic review on doctor's use of the internet found 60-70% of doctors have access to the internet with some studies putting access at over 90% while an Australian study showed over 85% of nurses use a computer for some aspect of their work (Hegney et al, 2007).

Estimates of the size and use of the Web provide a perspective on the potential of this resource. Wilson (2002) estimated that there are around 100,000 health websites. Eysenbach and Kohler (2003) have suggested that 4.5% of internet searches are health related, and given Google reports 150 million searches per day, this represents 6.75 million health related searches every day on Google alone. Hence, the Web represents a fundamental shift in the way that information can be distributed and sought. In palliative care as in other areas of health care it is changing how we look for and disseminate information. Pereira et al's (2001) study of palliative care clinicians showed that 72% had used information found on the web in their clinical practice.

For governments and health services, there is an increasing recognition of the role that the Web can play in supporting clinicians and consumers through access to information, tools and resources. It provides a powerful mechanism for disseminating guidelines and research literature to encourage evidence based practice as Westbrook et al (2005) showed in their study of clinician use of online information.

However, availability of a resource does not necessarily result in its use. Access to and use of resources varies and there are some indications that nurses have a more limited engagement with online resources. As Estabrooks and her colleagues (2003) found, although the number of nurses using the Internet at home was increasing, fewer nurses than either physicians or the general public used the Internet at work. An Australian study of nurses' use on online clinical evidence showed that over 40% of nurses were not aware of a major online clinical resource and that a further 29% of those who were aware of it did not use it (Gosling et al, 2004). Understanding nurses' attitudes towards resources and issues around their access and use could help to improve the functionality and usefulness of these resources.

CareSearch project

In 2007, the Australian Government funded Flinders University to develop a multi-layered website to meet the information needs of those providing palliative care such as palliative care services, general practitioners or allied health and of those affected by the need for palliative care including patients, carers and their families. The project also took over responsibility for an existing website called CareSearch released in 2004. The CareSearch website (www.caresearch.com.au) provides access to evidence and information about palliative care and houses resources and tools to enable access to literature and evidence to support evidence based practice in palliative care. As part of the development program a feedback study of this site was scheduled.

The purpose of this study was to evaluate the use and utility of the website and to identify possible issues to guide development of a new website and promotion of the resource. A dual survey approach was undertaken using an online survey to gain feedback from those already using the site and a postal survey to identify rates of

use and attitudes to online resources for one of the major audiences for the website, namely, staff working in palliative care services.

Methods

Two feedback surveys were developed. The first survey specifically targeted those people visiting the website and was carried out through an online pop-up survey. This survey gathered information on how visitors came to the CareSearch website and their views on its usefulness. Respondents were self-selected from those visiting the site or responding to a newsletter distribution list email invitation. The online survey ran from 20 September to 24 October 2007.

The second survey targeted specialist palliative care services. It looked at palliative care workers' awareness and use of the CareSearch website and possible issues in accessing and using web resources. Surveys and study information were mailed to Directors of specialist palliative care services throughout Australia. Each Director was invited to distribute surveys to five staff within the service from different disciplines and at different levels of seniority to encourage feedback from the diverse range of staff participating in palliative care services. The Director was also asked to notify the project team if there were less than 5 staff. Service Directors were sent a letter ten days later asking them to remind staff to return their survey forms.

The specialist postal survey was distributed on the 19 September 2007. Replies were accepted until 24 October 2007. Ethical clearance to carry out this research was provided by the University of Wollongong/Illawarra Area Health Service Human Research Ethics Committee. The survey was overseen by the project's external evaluation partner, the University of Wollongong's Centre for Health Service Development.

Results

Online survey

One hundred and thirty four people completed the online survey. Over half of the respondents described themselves as health professionals and one third of all respondents indicated they were involved in palliative care. Twenty two carers and sixteen researchers completed the survey. There were smaller numbers in patient, volunteer and manager/other categories.

Palliative care health professionals were most likely to have learned about CareSearch from promotional materials or conference presentation while other visitors were most likely to have found the website through internet searches. (Table 1)

Most respondents (90.5%, 134/148) either fully or at least partly found what they were looking for while palliative health professionals were even more likely to find what they needed (94.3%, 50/53). (Table 1) The website was also seen to be easy to use (94.5%, 120/127) and credible (96.8%122/126). Most importantly 96.8% (125/129) would recommend the site to others. (Table 2) Overall visitors were very positive about the quality and relevance of the resource.

Twenty six respondents took the time to provide comments about the website. Typical responses were:

>   *I like the breakdown into categories (carer – professional etc) in the front page – also really like the search strategies to find information. (OS054)*

>   *Really impressed with the site and put it straight into my favourites list, found just what I wanted today. (OS034)*

Specialist Palliative Care Services

The specialist postal survey was distributed to 139 services. Each service was invited to recruit 5 participants. Twenty four services distributed fewer than five surveys. Following reductions for distributions of less than five and incorrect and undeliverable addresses, the adjusted maximum respondent size was 597. Three hundred and seventy one surveys were returned within the reporting period giving a response rate of 62.1%.

There were a diverse group of respondents from within the specialist services. The largest groups were specialist palliative care nurses (30.4%, 111/365) and registered nurses (21.1%, 77/365). Palliative care medical specialists made up 9.9% (36/365). The majority of respondents in all groups use online resources. Palliative physicians and specialist palliative care nurses had the highest rate of use, at 94.4% (34/36) and 93.7% (104/111) respectively. Use by registered nurses was 71.4% (55/77) while enrolled nurse use was 77.8% (7/9). (Table 3)

All groups felt that websites are a suitable way of providing information to health professionals. However only 74.3% (26/35) of palliative medical specialists compared to 90.8% (99/109) of specialist nurses and 90.9% (70/77) of registered nurses agreed that access to online information had the capacity to improve service delivery to clients. Overall, specialist palliative care nurses had very positive attitudes to the role of online information and high levels of use. (Table 3)

Two comments made by nurses illustrate these attitudes

> *Quick and simple to use once you have the basic skills- usually gives you links to other resources or people (0014)*

A factual evidence based information source is an excellent idea and a powerful tool for training, information, research feedback. There are misconceptions as to what is P/C. This is a great way to define it for clinicians and PT's alike. (0073)

Thirty two percent (117/363) of all respondents used the website. Rates of use were higher for palliative physicians (51.4%, 18/35) and specialist nurses (50.0%, 55/110). (Table 4)

Just over forty three percent of respondents (158/363) working in specialist palliative care services had not heard of the site. A large proportion of registered nurses working in specialist palliative care services (62.3%, 48/77) had not heard of the site. In comparison only twenty four percent (27/111) of the specialist palliative care nurses had not heard of CareSearch.

Around a quarter (24.2%, 88/363) of all staff had heard of but hadn't used the site. There were similar rates for both specialist nurses (25.5%, 28/110) and registered nurses (22.1%, 17/77). No time (33.3%, 38/114) was the most cited reason for not using the site. "Not sure what's on it" (22.8%, 26/114) and "lack of skills" (12.3%, 14/114) were also common reasons. (Table 4) Typical comments associated with having heard of but not using the site were:

I have been wanting to look at site for some time, but haven't had any free time, but will now try to find the time. (0098)

Time during working hours is definitely a factor. Working part time means I do most of my information searching in my own time (0191)

My CNC probably uses it, or I ask office staff to google info for me e.g. on new drugs (0272)

While few felt lack of access as the reason for not using the site, problems with internet and computer access were raised by a number of respondents.

The problem we have is that very few have access to internet in the NSW Public Health System. (0190)

Difficult at workplace as do not have access to internet. Use websites at home (0296)

Further promotion and marketing was a common theme. Typical comments were:

I wasn't aware of the CareSearch website until now. I will be sure to check it out in the future. (0273)

What would be a way of keeping the database in the forefront of our minds? Cause it's very good and I forget its there. (0330)

Respondent comments also reflected the different expectations and diversity of information needs for nurses working in palliative care. Comments were categorised and examples of the issues are reported below:

- *Effect of the site of care*

  Resources tend to focus on palliative care services that are large, i.e., they assume multi discipline teams and designated hospital units/clinics. Haven't seen anything too useful for sole worker in a community health setting in rural/remote (0243)

I think it is a great website and have recommended it to GPs in the community to assist with drug conversions (0066)

- *Characteristics and needs of specific populations and professional groups within palliative care*

  More resources on paediatrics (0080)

  Online work book needed for symptom management for generalist care providers (0028)

- *Characteristics and functionalities of the online resources*

  Took me a while to get use to navigating (now ok) (0190)

  Online information is a good idea but often easier to print out and read when travelling or at home rather than trying to read everything off the computer (0061)

  Basic search strategies for users unfamiliar with searching (0301)

Discussion

Information literacy, or the capacity to find, assess and use relevant literature and evidence, is an important part of health professional practice (Hegney et al, 2007; Estabrooks et al, 2003; Tanner et al 2004). For palliative care where care needs are often complex and dynamic, being able to find and use trustworthy and up-to-date information may be particularly important (Tieman et al, 2008). However, the findings from our survey show that even given positive attitudes towards online information sources, there are many elements that can affect the ability to access online information resources. Other studies have also identified issues including informatics skills and knowledge, work system issues and attitudes and beliefs of the nurses themselves (Bond 2007; Hegney, 2007).

Overall, awareness and use of the CareSearch website was low among registered and enrolled nurses. It is likely that work processes affect the capacity of some

nurses to use online sources. Many nurses commented on a lack of time suggesting that the daily routines of care provision and patient management can preclude nurses from having time to seek information in any form during their shifts. Location of computers, and attitudes within a work group to the use of this equipment, could also affect the likelihood of information seeking and updating. Gosling et al (2004) reported that RNs and ENs often did not feel comfortable in using online resources as part of their clinical practice. Organisational and health service restrictions on internet access may further limit the capacity of palliative care nurses to utilise online resources regardless of their quality and relevance. The prevailing service culture with regard to evidence use may also influence whether nurses will use resources within and outside the workplace.

Nurses' attitudes and use of online resources appear to vary according to their role. Our study found that although many registered nurses in a palliative care service have a positive attitude to online resources, their use is less than specialist palliative care nurses and palliative medical specialists. Nearly 30% of the registered nurses do not use online resources even though more than 90% of them believe online resources are a suitable way to provide information and that they could improve service delivery. In comparison specialist palliative care nurses have a more consistent set of beliefs and actions with over 90% not only having positive attitudes but using online resources as well. This finding is similar to other studies on nurses' use of online resources (Gosling et al, 2004).

Given an expanding literature and evidence base for palliative care it is likely that websites and online resources will increasingly play a role in consolidating and disseminating this information. Our study's findings have raised a number of matters relating to nurses attitudes and behaviour that need to be considered when developing web-based resources to support palliative care clinicians.

First, supporting nurses by creating resources that are relevant as well as easy to navigate and use is an issue that policy makers and web designers will need to address. Creating information resources that are targeted specifically for nurses in terms of content and purpose is an obvious first step and there are examples where this has already occurred (e.g. Hospice and Palliative Care Nurses Association website; Palliative Care Nurses Australia). Ensuring that information is available in formats that can encourage the use of the material is important. For example Dee and Stanley's study (2005) showed print resource usage was heavy for both students and clinical nurses with 70% reporting use of print journals at least once a week Ensuring that all webpages are formatted for print ready versions provides users with choices that may better fit their needs and preferences. Printable versions also extend the flow of information beyond the web to the workplace and could support specialist nurses in disseminating up to date information to other members of the nursing team.

Second, the feedback surveys have clearly identified the need for ongoing and effective marketing. Marketing may need to be targeted specifically to professional groups within services rather than generically to services. For example, awareness of the CareSearch website was low for registered and enrolled nurses working in specialist palliative care services even though there had been two service based mailouts in the preceding period and numerous conference and meeting presentations at which representatives of specialist services were present. Recognising that information may travel differently within a service is important in getting the right message to the right people. Creating a meaningful message that highlights the end-user benefits for nurses of online information and resources may also encourage and prompt nurses to use these resources. Jones and Pinnock

(2002) have already demonstrated the importance of offline marketing in encouraging use of online resources.

Finally, given our survey showed that attitudes to and use of online resources are more positive in senior roles it may be that specialist nurses, clinical nurse consultants and nurse practitioners currently function as, or could take on a role as, information brokers within their services. Specialist nurses could help to disseminate information within their organisations as well as modelling and validating an information seeker role. Their role and possible contribution to the spread of information should be actively considered in planning and developing online resources for nurses in palliative care services.

Limitations

Participants in the online survey were self-selected and this may have affected the reported attitudes to the website. Although we sought a range of respondents from specialist palliative care services, this was not a sample based on the breakdown of participants within palliative cares services. Selection of respondents was at the discretion of the service director. The survey did not include nurses working in palliative care outside of specialist palliative care services.

Conclusion

Websites and online resources are an important part of the information sources for palliative care nurses and can contribute to evidence based palliative care practice. However, providing a resource that is seen as credible and relevant by site users does not necessarily automatically translate into use of the resource by intended users. The feedback survey shows quite clearly that attitudes to and use of online resources vary among nurses with those in more senior roles having more positive attitudes and higher levels of use.

Identifying potential issues in access and use of these resources can encourage and support the uptake and use of the knowledge into clinical settings for palliative care. The findings of the feedback survey show that comprehensive strategies addressing design, marketing, and organisational processes may be needed to maximise the equitable access and use of these resources by all members of palliative care teams.

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Table 1: Characteristics of CareSearch Visitors: Online survey

Respondents		How did you find out about the website?				Purpose of visit				Find what you were looking for?		
Group	No.	Promotion/ Newsletter	Conference	Word of Mouth	Internet search	Looking for self	Looking for other	Specific resource	Having a look	Yes	Partly	No
Patient	6	2	0	2	2	3	2	1	0	5	0	1
Carer	22	6	2	3	14	9	9	5	4	10	7	5
General Role	3	0	0	1	2	2	1	1	1	2	1	0
Health Professional (Palliative Care)	53	27	15	8	13	11	6	30	15	35	15	3
Health Professional (Other)	34	9	4	3	14	7	4	13	13	22	9	3
Researcher	16	3	2	4	9	2	2	11	3	11	5	1
Volunteer	5	1	0	2	0	2	1	2	3	4	0	1
Manager/Administrator	4	3	1	1	1	1	1	1	2	4	0	0
Policy Maker/ Planner/Funder	4	3	2	1	2	0	0	2	1	4	0	0

TOTAL	147	54	26	25	57	37	26	66	42	97	37	14
Total response set[1]					162				171			148

1. Totals may vary as not all respondents answered all questions and respondents could choose more than one category.

Table 2: Attitudes to CareSearch website: Online visitors

	Yes	No	Total[1]
Do you find the website easy to use?	120 (94.5%)	7 (5.5%)	127 (100%)
Is CareSearch information credible?	122 (96.8%)	4 (3.2%)	126 (100%)
Would you recommend the website to others?	125 (96.9%)	4 (3.1%)	129 (100%)

1. Totals may vary as not all respondents answered all questions and respondents

could choose more than one category

Table 3: Attitudes and use of online resources: Specialist survey

Respondents		Do you use online?			Online is suitable to provide information			On line can improve service delivery			
Group	No.	Yes	No	% Yes	Yes	No/Not sure	% Yes	Agree	Don't know	Disagree	% Agree
Palliative medical specialist	36	34	2	94.4	33	2	94.3	26	9	0	74.3
Other medical practitioner	8	5	3	62.5	8	0	100	8	0	0	100
Specialist palliative nurse	111	104	7	93.7	107	4	96.4	99	10	0	90.8
Registered nurse	77	55	22	71.4	70	6	92.1	70	7	0	90.9
Enrolled nurse	10	7	2	77.8	10	0	100	10	0	0	100
Care worker	1	1	0	100	1	0	100	1	0	0	100
Volunteer	13	7	6	53.8	11	2	84.6	8	4	1	61.5
Allied health	69	54	15	78.3	63	6	91.3	61	6	1	89.7

Manager/Other	40	31	9	77.5	35	5	87.5	35	5	0	87.5
TOTAL	365	298	66	81.9	338	25	93.1	318	41	2	88.1

1. Totals may vary as not all respondents answered all questions. Percentages are of those answering the individual question.

Tale 4 Awareness and use of CareSearch website

Respondent		Heard and/or use CareSearch?				Reasons why don't use						
Group	No.	Not heard	Heard Don't use	Use	% Use	Not sure what's on it	Not relevant	No access	Lack of skills	No interest in web	No time	Other
Palliative medical specialist	36	4	13	18	51.4	3	0	1	1	1	6	4
Other medical practitioner	8	3	4	1	12.5	1	0	0	2	0	1	0
Specialist palliative nurse	111	27	28	55	50.0	7	1	1	3	0	15	10
Registered nurse	77	48	17	12	15.6	4	0	1	5	0	6	6
Enrolled nurse	10	9	0	1	10.0	0	0	0	0	0	0	0
Care Worker	1	1	0	0	0	0	0	0	0	0	0	0
Volunteer	13	9	2	2	15.4	0	0	0	0	0	2	0
Allied Health	69	37	16	16	23.1	8	2	0	3	0	6	4

Manager/Other	40	20	8	12	30.0	3	0	0	0	0	2	5
Total	365	158	88	117	32.2	26	3	3	14	1	38	29

1. Totals may vary as not all respondents answered all questions and respondents could choose more than one category. Percentages are of

those answering the individual question.