

E-learning: who uses it and what difference does it make?

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Abstract

Background: CaseSearch 'My Learning' e-learning modules were designed to remind clinicians and practitioners about the role of evidence in practice and demonstrate how to find relevant evidence to make a difference in clinical care. This study aims to describe the role of the modules and their uptake, and determine whether the modules influenced the learners' palliative care practice and whether the modules were easy to use. **Method:** Two sets of questions were designed to capture data to evaluate the modules. **Findings:** The modules supported the awareness and use of evidence by health professionals. The modules contribute to ongoing professional development for practitioners and can improve palliative care practice. **Conclusion:** It is possible to collect meaningful data that contributes to understanding who uses e-learning resources and how useful healthcare professionals find them.

Key words: ● E-learning ● Continuing professional development ● Practice change ● Palliative care

This article has been subject to double-blind peer review

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There is a growing recognition that all healthcare professionals (HCPs) are likely to see palliative care patients, making ongoing education in palliative care a priority (World Health Assembly, 2014). One way that a HCP can pursue ongoing learning is via online- or internet-based resources. This has been shown to be at least as effective as face-to-face learning (Sinclair et al, 2016) in terms of the knowledge and skills acquired (Lahti et al, 2014a). In fact, many health organisations deliver core skills updates via e-learning (Pool et al, 2016).

There appears to be ambiguity as to the terminology, role and function of education provided by or sourced online (Guri-Rosenblit and Gros, 2011). Familiar terms include online learning, e-learning and web-based learning, which are often used interchangeably (Shi et al, 2016), along with web-based education and distance learning. This paper uses the term e-learning to refer to 'electronically mediated learning in a digital format (using computers and the internet) to enhance or facilitate teaching and learning' (Bullen, 2006).

E-learning is increasingly being used to deliver ongoing education to HCPs (Lahti et al 2014a) including continuing professional

development (CPD) (Green and Huntington, 2017). The benefits of e-learning are well documented in terms of increased accessibility to education, efficacy, cost effectiveness, learner flexibility and interactivity (Sinclair et al, 2015). E-learning is also attractive to those in rural and remote areas (Riley and Schmidt, 2016), and in countries where specialist online education/topics may not be available (Sinclair et al, 2016).

CareSearch is an online portal, developed at Flinders University, South Australia, that makes palliative care evidence, literature and resources available to all HCPs regardless of their setting of care or discipline background (CareSearch, 2019). Although the online portal has been designed for the Australian community, it is not geoblocked and can be accessed worldwide. 'My Learning' is a suite of e-learning modules designed to prompt and remind clinicians and practitioners about the role of evidence in practice, to demonstrate how to find relevant evidence and to show how to use the CareSearch evidence resources to make a difference in clinical care (CareSearch, 2018). The modules are offered independently as they are not part of an education programme and they do not require face-to-face learning (Sinclair et al, 2016).

‘The relatives of older people with dementia have a crucial caregiving role at home, which continues after the person with dementia has moved to a nursing home’

Background

The first CareSearch 'My Learning' modules were introduced in January 2012 and were designed around a clinically realistic case story with experiential aspects relating to the use of the CareSearch website. The modules were designed to be quick to complete, taking no more than 20 minutes, easy to access, free to use, and open to all HCPs, aiming to reduce barriers to learning about using evidence in practice. The modules were personal and relevant to practice allowing learners to study in their own time. Each module included a learning quiz and enabled a certificate of completion to be downloaded for professional records.

A formal evaluation of the modules and their impact on learning or practice was not attempted in this study. However, the number of HCPs opening the modules was tracked and users were invited to email their feedback about the e-learning modules. Emails such as the one below suggested that the modules were useful:

'Accessed from ipad. Completed the six modules: very interesting and relevant information for my work practice. Enjoyable reading and learning. Learnt a lot.'

By the end of 2015, six modules were available and in 2016 they were updated to ensure that the content was still relevant. The revised modules were reviewed by external experts and intended users prior to their re-release. Usability of the modules was optimised by formal usability testing that was completed prior to the release of any e-learning module. This involved a review of content by palliative care experts and intended users, including project staff who were not involved in the module development but who had skills and knowledge about online dissemination. This pilot process also addressed the suitability of language used. A functional usability assessment involved an expert review of online heuristics and online user testing by representatives of the intended audience. This enabled operational and content issues to be identified.

As part of this review cycle, it was agreed to include some limited data collection points to provide systematic feedback on the user characteristics and the perceived use and impact of the modules. This paper reports the findings on the use and perceived value of the six revised modules and two new modules released during the data collection period in 2016. The modules under discussion in this

publication are as follows:

- Module 1: finding evidence (published literature)
- Module 2: finding evidence (searching for evidence)
- Module 3: searching the web
- Module 4: residential aged care
- Module 5: dementia
- Module 6: carers
- Module 7: knowledge translation
- Module 8: disseminating research findings.

Methods

This study aims to describe the role of the modules and their uptake, and determine whether the modules influence learners' palliative care practice and are easy to use.

Ethics approval

The need for ethical approval was discussed with the Chair of the Flinders University Social and Behavioral Research Ethics Committee. It was decided that ethics approval was not required as the research met the exemption criteria, as it is negligible risk, involving the collection and use of non-identifiable data.

Data collection

Two sets of questions were designed to capture data that would allow for an evaluation of the modules reach among HCPs and its effectiveness as a learning resource. Both online survey forms were optional, simple to collect and brief. The pre-module online form included questions related to basic sociodemographic details of users to demonstrate the reach of the e-learning modules. These data were collected prior to the HCP starting any module. The post-module survey collected data after each module was completed and captured indicators that the module had been of value for the HCP, such as the likelihood of completing another module, whether the module was easy to use and useful, whether they would recommend the module to a colleague and if they would visit CareSearch again in the next 3 months. Questions included in the post-module survey sought to determine the likelihood that the learner would undertake a specific action related to the module. Data were collected passively and did not require self-identification from the HCPs.

As the evaluation questions were voluntary for the e-learning user to complete, not all of the participants completed evaluation questions, and sometimes they did not respond to each question. As such, there are various levels of missing data for all evaluation items and

individual n-values are reported throughout for ease of understanding the completeness of the data. Some users may have completed evaluation items for more than one module, and hence there may be overrepresentation of these users within the dataset.

Data analysis

Evaluation questions were embedded at the beginning and end of each module and collected using data capture tools within the website. Accessed via the Research Data Management System (CareSearch, 2012), data were collated and analysed in IBM SPSS Version 23 (IBM Corp, Armonk, NY).

The Australian Bureau of Statistics Index of Relative Socio-economic Disadvantage (IRSD) was used as a broad measure of disadvantage based on postcode, which is developed from nationwide census data (Australian Bureau of Statistics, 2013a). Those in the lowest quintile have a low IRSD score that indicates relatively greater disadvantage in general, while those in highest quintile have a high score, indicating a relative lack of disadvantage in general (Australian Bureau of Statistics, 2013b).

Results

Over the 9-month study period from 1 April 2016 to 4 January 2017, 1852 learners visited one of the eight modules. Of those, 1137 opted into the evaluation, with 92% completing pre-module evaluation (n=1043) and 32% completing post-module evaluation (n=366) (Figure 1). The authors were unable to discern unique identifiers, for example whether learners repeated modules.

The levels of evaluation data collected differed across modules, with the highest volume of pre- and post-module evaluation for modules 1 and 7; finding evidence (published literature) and knowledge translation, respectively (Table 1). The lowest level of pre- and post-module evaluation was completed for module 8: disseminating research findings. In fact, post-module evaluation for module 8: disseminating research findings had only been completed by six learners and so these data have not been reported in this study.

Baseline pre-completion evaluation

Table 2 presents the demographics of module learners. The majority were middle-aged (i.e. ≥ 41 years old) female nurses. Apart from nursing professionals (65%), learners identified as doctors (44%), aged care workers (profession) (8%), allied health professionals (6%) or classed

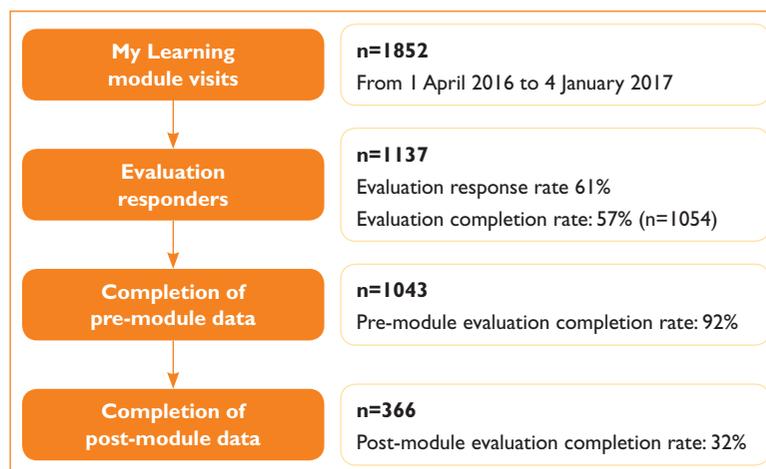


Figure 1. Flow chart of evaluation completed for CareSearch My Learning Modules

themselves as other (16%).

Overwhelmingly, 98% of learners were from Australia, with just 2% (n=23) based overseas (in New Zealand, Canada, USA, UK or Hong Kong). Australian learners came from every state and territory. Broadly, there was access to 'My Learning' from those in areas with relatively greater levels of disadvantage (quintiles 1, 2: 32%) and those with a relative lack of disadvantage (quintiles 4, 5: 42%).

An analysis of demographics by module shows some trends in module use (Table 3). Proportionally, older HCPs (≥ 41 years old) were more highly represented in modules 4, 5 and 6 (84% versus 16% aged 18–40 years old) compared to the other modules (72% versus 28% aged 18–40 years old). The highest proportion of nurses completed Module 4: residential aged care (73%) compared to the lowest for Module 8: disseminating research findings (41%). This indicates that information about residential aged care was a greater professional need for HCPs. Along with doctors (11%), HCPs who classified themselves as 'other' were the most highly represented who provided demographic data about themselves when taking module 8 (44%). Doctors were the least likely to undertake Module 1: finding evidence.

Those undertaking modules 4, 5 and 6 had the lowest levels of prior completion of any other 'My Learning' module, indicating that these learners may have started on content-specific modules of the most relevance/interest to them (residential aged care, dementia and carers), rather than starting at module 1. CareSearch 'My Learning' Module 8: disseminating research findings and correspondingly, there was an additional evaluation item within this module to identify

Table 1. Data collected by CareSearch My Learning module

CareSearch module	Module visits	Pre-module evaluation only	Pre-post-module evaluation	Total evaluation	Total pre-module evaluation
	n	n (% visits)	n (% total eval)	n	n
My Learning 1: Finding evidence (published literature)	364	196 (54)	78 (28)	274	267
My Learning 2: Finding evidence (searching for evidence)	181	71 (39)	44 (38)	115	113
My Learning 3: Searching the web	176	59 (34)	46 (44)	105	104
My Learning 4: Residential aged care	190	69 (36)	45 (39)	114	114
My Learning 5: Dementia	202	75 (37)	48 (39)	123	121
My Learning 6: Carers	181	53 (29)	41 (44)	94	94
My Learning 7: Knowledge translation	441	145 (33)	58 (29)	203	203
My Learning 8: Disseminating research findings	117	20 (17)	6 (23)	26	27
Total	1852	688 (37)	366 (35)	1054	1043

NB: not all those who completed evaluation post-module provided responses to pre-module

those in typical research roles. Of the 33 participants completing pre-module 8 evaluation, 42% (n=14) were research higher degree students, researchers or academics.

Demographics for HCPs who completed pre- and post-module evaluation are compared to pre-module only evaluation completers in *Table 2*. There appeared to be no striking differences between those who completed pre-post module evaluation and those who completed pre-module evaluation only. However, there was a statistically significant difference in the SEIFA IRSD measure, whereby those who completed pre-post evaluation were more likely to have greater levels of relative disadvantage based on their postcode. Overall, these data indicate that those who provided pre-post module evaluation are generally representative of those who provided pre-module evaluation only.

Post-module evaluation revealed overall high levels of satisfaction and benefit of CareSearch 'My Learning' (*Table 4*). Learners reported that the modules were easy to use (99%), with most reporting that they would undertake another module (96%) and would visit CareSearch again within the next 3 months (93%). More than nine out of 10 learners indicated that the information presented would be used in their practice (92%), and that they would

recommend the module to a colleague (93%), indicating that the 'My Learning' modules are user-friendly and contain information that will inform practice.

Post-module evaluation is presented by a module in *Table 4*. There were high levels of module satisfaction for all modules 1–7, with no modules standing out as performing much better or much worse.

Module 7: knowledge translation had a different post-module evaluation that included items on the usefulness of module content (*Table 5*). Questions and answer options are described below:

- After completing this module, I feel more confident to participate in a knowledge translation project at my workplace (yes/no/unsure)
- I believe evidence should be an important part of change management? (agree/disagree/unsure)
- If you were undertaking a knowledge translation project, which part would you expect to find most difficult? (identifying a knowledge gap/finding evidence/adapting knowledge locally/assessing barriers locally/tailoring and implementing interventions for change/monitoring knowledge use/evaluating outcomes/sustaining change over time)

More than 75% of learners were more confident to participate in a knowledge

Table 2. Demographics of CareSearch My Learning Module learners and a comparison between those who completed the pre-module evaluation only versus the pre-post module evaluation

Demographic		All users		Pre-module evaluation only		Pre- and post-module evaluation		P diff
		n	%	n	%	n	%	
Sex (n=1029)	Female	934	91	615	90	319	92	0.570
	Male	93	9	64	9	29	8	
	Other	2	<1	2	<1	–	–	
Age (n=1029)	18–30 years	67	7	51	8	16	5	0.306
	31–40 years	174	17	116	17	58	17	
	41–50 years	270	26	182	27	88	25	
	51–60 years	384	37	243	36	141	41	
	≥61 years	134	13	91	13	43	12	
Profession (n=1021)	Nurse	662	65	422	63	240	69	0.396
	Other	168	16	120	18	48	14	
	Aged care worker	77	8	53	8	24	7	
	Allied health professional	65	6	46	7	19	6	
	Doctor	44	4	30	4	14	4	
	Carer/family carer	5	<1	4	1	1	<1	
Country (n=973)	Australia	950	98	625	95	325	96	0.943
	Canada	12	1	8	1	4	1	
	New Zealand	5	<1	4	<1	1	<1	
	US	4	<1	3	<1	1	<1	
	UK	1	<1	1	<1	–	–	
	Hong Kong	1	<1	1	<1	–	–	
SEIFA IRSD^a (n = 950)	Quintile 1	161	17	103	16	58	18	0.049
	Quintile 2	140	15	86	14	54	17	
	Quintile 3	254	27	159	25	95	29	
	Quintile 4	205	22	135	22	70	22	
	Quintile 5	190	20	142	23	48	15	

Total n=1043; NB: proportions may not add up to 100% due to rounding to nearest whole number, total pre-module only n=625–683 of 771; pre- and post-module n=325–348 of 366; Chi Square Monte Carlo tests used

^a Socio-economic Index for Areas, Index of Relative Socio-economic Disadvantage determined derived from Australian postcode (SEIFA IRSDa) (ABS): Quintile 1 indicates relatively greater disadvantage in general while quintile 5 indicates relative lack of disadvantage in general

translation project in the workplace (77%, with n=9 unsure and n=4 reporting no increase in confidence). Learners unanimously believed evidence should be an important part of change management (100%). Finally, when HCPs were asked about the barriers to undertaking a knowledge translation project, the most frequently reported barriers were tailoring and implementing interventions for change (34%); sustaining knowledge use over time (22%); and assessing barriers locally (18%). Conversely, learners perceived finding evidence (4%); and monitoring knowledge use (4%) to be the least prevalent barrier.

Discussion

This study presents data on the reach and effectiveness of the CareSearch 'My Learning'

modules, with users from across Australia and overseas. Each of the seven modules with useable post-module data had very high levels of satisfaction. Evaluation is an important component of any e-learning offering (Karaman et al, 2014) and can be used to improve what is offered. It is possible to collect meaningful data in a passive and ongoing way that contributes to an understanding of who is using these resources and their impact. The inclusion of basic data capture is a powerful vehicle to understand the user cohort without being burdensome.

It is important to understand learners' contextual needs, especially in non-traditional approaches such as e-learning (Lahti et al, 2014b). For example, different education delivery platforms provide learning options, such as standalone e-learning with the learner

Table 3. Demographics of CareSearch My Learning Module learners by module

CareSearch My Learning Module		1	2	3	4	5	6	7	8	P
		Finding evidence (published literature)	Finding evidence (searching for evidence)	Searching the web	Residential aged care	Dementia	Carers	Knowledge translation	Disseminating research findings	
Demographic^a		n=258–265	n=110–112	n=100–109	n=112–114	n=114–119	n=91–94	n=200–202	n=25–27	χ^2
Sex (n=1029)	Female	238 (90)	102 (93)	94 (92)	102 (89)	105 (88)	84 (89)	187 (94)	22 (88)	0.830
	Male	21 (10)	8 (7)	8 (8)	12 (11)	14 (12)	9 (10)	12 (6)	3 (12)	
	Other	–	–	–	–	–	1 (1)	1 (0.5)	–	
Age (n=1029)	18–30 years	23 (9)	9 (8)	9 (9)	7 (6)	6 (5)	2 (2)	9 (5)	2 (7)	0.097
	31–40 years	51 (19)	25 (22)	18 (17)	11 (10)	12 (11)	13 (14)	37 (18)	7 (26)	
	41–50 years	72 (27)	23 (21)	30 (29)	29 (25)	30 (26)	29 (31)	47 (23)	10 (37)	
	51–60 years	82 (31)	42 (38)	35 (34)	49 (43)	56 (49)	34 (37)	81 (40)	5 (19)	
	≥61 years	35 (13)	13 (12)	12 (12)	18 (16)	10 (9)	15 (16)	28 (14)	3 (11)	
Profession (n=1021)	Nurse	168 (65)	77 (69)	66 (66)	82 (73)	78 (66)	55 (60)	125 (62)	11 (41)	0.011
	Other	45 (17)	20 (18)	18 (18)	14 (13)	12 (10)	14 (15)	33 (16)	12 (44)	
	Aged care worker	22 (9)	7 (6)	6 (6)	8 (7)	13 (11)	9 (10)	12 (6)	–	
	Allied health professional	14 (5)	5 (4)	7 (7)	2 (2)	9 (8)	9 (10)	18 (9)	1 (4)	
	Doctor	6 (2)	3 (3)	3 (3)	6 (5)	6 (5)	4 (4)	13 (6)	3 (11)	
	Carer/family carer	3 (1)	–	–	–	1 (1)	–	1 (0.5)	–	

Total n=1043; n ranges are given as not everyone provided a response to each demographic question
^a data are shown as n (%); proportions may not add up to 100% due to rounding to nearest whole number

working alone versus, for example, a moderated MOOC that sees learners interacting freely about content and about learning (Rawlings et al, 2017). E-learning, and here 'My Learning', has many benefits which are attractive to learners, including but not limited to: flexibility, 24-hour availability, ease of access and often e-learning is a free to use resource (Riley and Schmidt, 2016).

The technological ability to provide e-learning and its subsequent development has been described as a form of exponential growth (Liessi et al, 2018). Palliative care learning resources are increasingly being offered online, such as palliative care nursing (Bailey et al, 2017; Mazanec et al, 2019) for multidisciplinary audiences (Taroco et al, 2017) or seen as a valuable skill for doctors to learn (Kiss-Lane et al, 2018). E-learning modules also contribute to the developmental process of ongoing learning in palliative care (Loerzel and Conner, 2016), by addressing HCPs' best practice palliative care information needs (Tieman, 2016).

Resources such as 'My Learning' form part of a range of educational options for HCPs that

cover a continuum across incidental learning, professional development, prescribed training and formal qualifications. Other studies, such as Allen et al (2015), have reported significant improvements in knowledge test scores after HCPs have completed e-learning. E-learning is increasingly used for ongoing learning and may provide specific opportunities for those unable to attend face-to-face forms of delivery. However, for some HCPs, e-learning is problematic in terms of skills and confidence in an online environment or learning platform, coined by Green and Huntington (2017) as digital differentiation. In a study of 267 Taiwanese nurses, both basic and advanced internet self-efficacy were found to be significant predictors of the perceived ease of use of e-learning and perceived usefulness (Liang et al, 2017). The usefulness of e-learning for an individual can probably be attributed to many factors, likely to be situational or contextual (Voutilainen et al, 2017). Other disadvantages of e-learning can include poor pedagogical design, social isolation (Liessi et al, 2018), depersonalised learning (Rojanasarot et al, 2018), reliance on technological familiarity

and availability, and lack of instructor presence (De Paepe et al, 2018).

This data suggests that different groups may be more interested in particular topics, so in pursuing education via this avenue, HCPs or educators can create individual learning paths around areas of interest (Pool et al, 2016). For example, the results show that nurses are more likely to complete modules 4, 5 and 6. This suggests that the modules are very relevant to their roles and that nurses have a need for this information. Conversely, of the 33 participants completing pre-module 8 evaluation, 42% (n=14) were either a research higher degree student, researcher or academic. Doctors were the most highly represented (44%) in this module.

It is important to acknowledge the difference in module 7, in both the way it was developed, and in the questions posed to learners. The module user's confidence in the ability to participate in a knowledge translation project, which is not always an intuitive exercise for HCPs, was self-determined following the learning. This is likely to be subjective, especially as the perception of knowledge translation and conception of a knowledge translation project may have been varied.

Reach

As stated earlier, nurses are highly represented in modules 4, 5 and 6, which were also completed by older participants (≥ 41 years old), which correlates with the nursing workforce in Australia where in 2015 the average age of nurses was 44.4 years, with two-in-five aged over 50 years (AIHW, 2016). Many learners were in the third SEIFA IRSD quintile (27%), and there was access to 'My Learning' from those in areas with relatively greater levels of disadvantage (32%) and a relative lack of disadvantage (42%) based on their postcode. Those from disadvantaged areas are statistically over-represented in rural and remote regions (Australian Bureau of Statistics, 2000), and as many of these learners face logistical problems in accessing face-to-face education (Riley and Schmidt, 2016; Sinclair et al, 2016), there is a greater interest in e-learning (Green et al, 2017). In their study of 550 nurses in China, those in rural areas demonstrated more positive attitudes to, and a greater need for, e-learning (Xing et al, 2018).

Usability, in terms of navigation and ease of use of the modules, should also be a consideration when developing e-learning modules (Tulinayo et al, 2018). Users overwhelmingly reported that the modules were easy to use (Table 4). The accessibility of

Table 4. Post-module satisfaction evaluation by module

	Total respondents	Yes	
	n	n	%
I found this module easy to use			
My Learning 1: Finding evidence (published literature)	78	77	99
My Learning 2: Finding evidence (searching for evidence)	44	44	100
My Learning 3: Searching the web	46	46	100
My Learning 4: Residential aged care	44	44	100
My Learning 5: Dementia	48	48	100
My Learning 6: Carers	41	41	100
My Learning 7: Knowledge translation	58	54	93
My Learning 8: Disseminating research findings	–		
I am likely to use information from this module in my practice			
My Learning 1: Finding evidence (published literature)	78	69	89
My Learning 2: Finding evidence (searching for evidence)	42	40	95
My Learning 3: Searching the web	46	41	89
My Learning 4: Residential aged care	45	43	96
My Learning 5: Dementia	47	43	92
My Learning 6: Carers	41	38	93
My Learning 7: Knowledge translation	–		
My Learning 8: Disseminating research findings	–		
I would recommend this My Learning module to a colleague			
My Learning 1: Finding evidence (published literature)	78	68	87
My Learning 2: Finding evidence (searching for evidence)	44	41	93
My Learning 3: Searching the web	46	45	98
My Learning 4: Residential aged care	45	44	98
My Learning 5: Dementia	47	44	94
My Learning 6: Carers	41	39	95
My Learning 7: Knowledge translation	57	50	88
My Learning 8: Disseminating research findings	–		
I will undertake another My Learning module			
My Learning 1: Finding evidence (published literature)	77	72	94
My Learning 2: Finding evidence (searching for evidence)	42	42	100
My Learning 3: Searching the web	46	44	96
My Learning 4: Residential aged care	45	43	96
My Learning 5: Dementia	47	45	96
My Learning 6: Carers	4	4	100
My Learning 7: Knowledge translation	–		
My Learning 8: Disseminating research findings	–		
I will visit CareSearch in the next 3 months			
My Learning 1: Finding evidence (published literature)	77	71	92
My Learning 2: Finding evidence (searching for evidence)	43	40	93
My Learning 3: Searching the web	46	41	89
My Learning 4: Residential aged care	45	43	96
My Learning 5: Dementia	47	43	92
My Learning 6: Carers	41	40	98
My Learning 7: Knowledge translation	–		
My Learning 8: Disseminating research findings	–		

NB: not all post-module questions were presented after each module

Table 5. CareSearch My Learning Module 7 post-module evaluation

	Total respondents	Yes	
	n	n	%
After completing this module, I feel more confident to participate in a knowledge translation project at my workplace	57	44	77
I believe evidence should be an important part of change management	56	56	100
If you were undertaking a knowledge translation project, which part would you expect to find most difficult?			
Adapting knowledge locally	50	3	6
Assessing barriers locally		9	18
Evaluating outcomes		3	6
Finding evidence		2	4
Identifying a knowledge–practice gap		3	6
Monitoring knowledge use		2	4
Sustaining knowledge use over time		11	22
Tailoring and implementing interventions for change		17	34

e-learning resources is also a factor, as learners will often complete the modules for CPD reasons (Taroco et al, 2017).

Motivation and intent

In terms of intended concrete actions of the HCPs surveyed, 96% indicated they would take another module and 93% indicated they would visit CareSearch within 3 months. This suggests that there is both motivation and intent to use the e-learning resource from users. Targeting specific behaviour, such as users specifying a time for a future action (3 months) rather than generalising (I will visit CareSearch again) is an indication of potential action (Webb and Sheeran, 2016), and more likely to increase behaviour change (Lee, 2018). It suggests that the user of the e-learning module has benefited from the experience and that change in their practice is likely to follow, with 92% of our learners indicating that the information presented would be used in their practice.

However, there is a need to understand the influence of e-learning on behaviour and changes in practice of HCPs (Sinclair et al, 2016). From the evidence, this study shows that active education or active engagement can increase the chance of practice change (Lee, 2018), such as when learners can look at things, do things and engage with content. 'My Learning' is based on case studies and includes quizzes and active links to content in CareSearch.

Furthermore, there are indications that a measure of motivation is related to the intent to

change practice (Williams et al, 2014). However, this desire to change practice begins to decline from the time the module is taken, which suggests that regular reinforcement of the lessons learned is needed (Rawlings and Devery, 2018). This highlights the need for the ongoing promotion of e-learning, to ensure that the skills and knowledge learnt are retained and used.

The *Theory of Planned Behaviour* predicts intentions and behaviour (Ajzen, 2011), and intent to act is a measure employed in the evaluation used in this study: participants responded to the statement: 'I will visit xxx in the next 3 months'. However, behavioural achievement depends on both motivation (intention) and ability (behavioural control) (Barley and Lawson, 2016). These factors may be a consideration when trying to implement changes in the workplace.

Strengths and limitations

There are limitations in the self-selected nature of respondents as only 33% completed a post-module surveys. HCPs who did not fill in the survey may have had a different experience to those who did, perhaps being less or more satisfied with the e-learning (Lahti et al, 2014a). The data collected was also limited as respondents did not have to enter any identifying personal details. In terms of the generalisability of the findings of this study, the findings focused specifically on the evaluation of static e-learning modules, their uptake, influence on palliative care practice and ease of use.

A further limitation is that while the usability of e-learning modules was addressed during the development of the modules, this study relies on the self-reported ease of use of the modules from participants. However, it is worth noting that most reports stated that the modules were easy to use. Additional insight on how the information delivered in the e-learning modules could have been improved would have been beneficial to better understanding.

Future directions

Understanding attitudes of users to the modules also indicates ways the modules could be improved to increase the reach and use by HCPs. For example, it is possible to include the option for a user to share a module via email or social media. Personal recommendations from peers remain a powerful marketing tool for health professional education. Users could also make use of facilities to be alerted to new modules or updates to content, or could opt-in to receive behavioural prompts to improve their practice

via email. This could lead to a more comprehensive online learning ecosystem that could enhance the use of evidence in care to improve palliative care outcomes.

Conclusion

Online learning is a valuable tool for HCPs to gain new knowledge or to refresh or update their practice. The increasing ease of use of learning platforms means that health professional educators can be more easily involved in creating clinically relevant online content that is responsive to the needs of particular target groups and that allows for frequent updates to reflect changes in evidence and practice requirements. The authors of this study have found that the suite of 'My Learning' modules is useful for HCPs. The modules have the potential to support the awareness and use of evidence by HCPs and improve palliative care practice, alongside contributing to practitioners' CPD requirements. The further development of an evaluation programme for the e-learning platform to provide more data to improve its functionality and relevance to HCPs is being considered by the authors.

Declaration of interests: none.

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Key points

- E-learning is an important tool for ongoing professional development
- Active education can increase the likelihood of practice change
- End-of-life care can be improved by accessing targeted learning resources

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Continuing professional development: reflective questions

- Have you considered e-learning as an option for ongoing education, for continuing professional development or to upskill in an area of interest?
- Have you considered the CareSearch 'My Learning' (10 modules focused on clinical care and on evidence to practice) as a way of improving end-of-life care in your organisation?
- Think about how you currently search for evidence. Could you be helped by a straightforward easy to use e-learning module that steps you through the process?

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