

# Web-Based Learning in Practice Settings: Nurses' Experiences and Perceptions of Impact on Patient Care

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**Abstract:** This paper presents qualitative research completed in two groups of hospitals in the United Kingdom, as part of a larger mixed methods study. It involved eight qualified nurses caring for patients with gastro-intestinal cancer in general surgical wards. It explored the nurses' experiences of using an online programme and their perceptions of the impact of learning on patient care delivery. The nurses volunteered to complete an online open source package [www.cancernursing.org](http://www.cancernursing.org) and meet for focus group discussions and interviews following a lapse of six weeks. Two of the participants experienced difficulties completing the package and following changes to the previously attained ethical approval, a focus group was conducted with these staff.

Analysis of the transcripts identified a number of issues for those considering the adoption of such modes of delivery within healthcare. Nurses referred to a lack of information technology skills and competence in computer use, access issues, organizational barriers and lack of protected study time. In spite of difficulties they gave examples of how their learning had impacted on patient care.

**Keywords:** Online learning, cancer care, nursing education, workplace learning, qualitative research

## 1. Introduction

Changes in health care delivery and education internationally are becoming increasingly focused on technology. Nurses are using the Internet to access information to support patient care (Dickerson and Feitshans, 2003). Hand held devices such as personal digital assistants (PDAs) are being used in a range of health related applications (Rempher et al, 2003), including educational support (Miller et al 2005). Given the explosion of technological use to support healthcare learning it is interesting that whilst increasing numbers of small scale studies present user experiences in educational settings (Conole et al 2002, Moule 2002), a limited number investigate the use of technology in healthcare environments.

Atack (2003) reviewed registered nurse's experiences of completing a web-based programme at home or in the workplace in Canada, finding technical issues of use problematic. Moule et al (2006, 2008) explored healthcare professionals' experiences of using web-based materials to gain resuscitation knowledge in the workplace and home. This preceded classroom skills practise as part of a blended learning approach. They found staff had difficulty finding the space and time to study in clinical settings. Those participants with easy access to computer resources and who were more autonomous in their workload management, such as medical staff, found online study in the workplace more achievable.

Evidence related to the impact of e-learning on clinical practice is also sparse. Further work by Atack et al (2005) explored the effectiveness of a six week online course. It concluded the format was an effective, efficient and convenient way to educate large numbers of staff, showing staff were able to transfer e-learning into practice.

This paper presents the findings of phase three of a research study that implemented an online education package in gastro-intestinal cancer nursing into two hospitals and evaluated the user experiences through focus groups and interviews. As part of the evaluation the users were asked to reflect not only on their learning experiences, but also on the perceived impact of their learning in clinical practice. The discussion also presents interview data from those nurses unable to complete the learning, reflecting on the issues of employing online learning as part of health care education.

The online open source package used is based at CancerNursing.org and covers the essential knowledge and skills necessary to prepare registered nurses caring for patients diagnosed with gastro-intestinal cancer (Irving and Sutherland, 2004). The organization is charitable and independent, accessing specialist nurses and healthcare professionals to develop and validate learning materials. The materials used in this study relate to cancer of the oesophagus and include eight study modules that encompass pre and post knowledge tests.

The study aimed to:

- Examine the nurse's experiences of using the online cancer care package
- Explore nurses' perceptions of the impact of online learning on patient care

A secondary aim was developed during the course of the study:

- To investigate the reasons why some nurses were unable to complete the online package

These aims were developed into the following research questions:

- What are nurses' experiences of learning online?
- What are the nurses' perceptions of the impact of learning from the web-based resource on their clinical practice?
- What are the barriers to engaging with online learning?

## **2. Methods**

The research was a mixed method design employing both quantitative and qualitative approaches (see McGuigan and Moule, 2006). This paper presents phase three that used qualitative methods to support data collection through focus groups and interviews.

As the study necessitated access to healthcare professionals and practice areas it required ethical approval from the hospital research ethics committee and that of the university. This was secured prior to data collection and re-submission was required to conduct a focus group with those staff not completing the online package.

The study was advertised using posters and through ward meetings in both hospital sites involved. A convenience sample of ten registered nurses employed in surgical care volunteered and was recruited. Eight participants had completed the online package, whilst two participants had begun, but failed to complete the package. The participants received a project information sheet and all gave informed consent.

Two focus groups and three individual interviews were undertaken six weeks after the online programme was completed. One focus group was composed of five participants who had completed the programme (completers); the second was conducted with the two participants who had been unable to complete the online programme (non-completers). Three completer participants were unable to attend the focus group took part in individual interviews.

Open questions were used to guide the focus groups including:

- Can you tell me about your experiences of the online course?
- Do you feel the course has impacted on your practice, and if so could you give examples?

For those nurses attending the focus group for non-completers the following guide questions were used:

- Can you tell me about the difficulties you had completing the course?
- How has this made you feel about using online learning in the future?
- What could be put in place to try and support e-learning use?

The approach to data analysis was based on Pattern coding and Pre-structured case analysis, supporting data reduction, display and conclusion drawing using the framework suggested by Miles and Huberman (1994). The data were prepared for analysis by producing verbatim transcripts. Each transcript was treated in a systematic way, to enable the coding and theme development, whilst acknowledging the importance of group processes and dynamics captured in the interviews (Webb and Kevern, 2001). To support the rigor of the process, transcripts were encoded independently by two team members and the transcripts with identified themes were returned to the participants for verification of accuracy of content and interpretation.

## **3. Findings and discussion**

The analysis of the interview and focus group transcripts identified key themes and within these a number of sub-themes:

1. New learning and its impact on practice and patient care
  - a. Theory development
  - b. Understanding the patient journey
2. Confidence in using computers
3. Personal experiences of using e-learning
  - a. Lack of protected time
  - b. Computer access
  - c. Organisational barriers

From these themes and sub-themes areas emerged that the nurses perceived had an impact on patient care. The first theme and sub-themes focussed on the nurses' new learning, theory development and the confidence this engendered and their enhanced understanding of the patient journey. These, the participants felt, were as a result of the e-learning package they had worked through.

The other two themes related to the experience of undertaking e-learning and included improving their confidence in using computers and the difficulties associated with undertaking e-learning whilst working in a full time clinical role.

### 3.1 New learning and its impact on practice and patient care

#### 3.1.1 Theory development

Although all the participants were registered nurses none had undertaken any specialist study in cancer nursing and all were working within a surgical unit that did not focus exclusively on cancer patients. Evidence of new learning and theory development was fairly minimal; however a small number of nurses did relate how the programme had helped them to develop aspects of their practice. They perceived this resulted from the e-learning package's identification and explanation of cancer care terminology, patho-physiology of cancer, and current surgical procedures. An example of this is comes from an interview with Tina:

*'A patient was asking me about stenting...Um....and what it actually involved and what difference would it make. I think they'd already been told but I don't think.....I think they find it quite ... easier at night to talk to someone because a lot of them state... you know ....they don't sleep very well, so you go and talk to them.... And, um..... I was able to go through that a little bit easier with them, because of what I'd learnt from the course'*

Tina

This increase in knowledge led to the nurses feeling increasingly able to talk with greater confidence to patients. Robert outlined this:

*'And if they [the patients] say "I don't understand. What is the oesophagus and what exactly is it that I've got there" then you can kind of explain to them, can't you?*

Robert

This sentiment was echoed by Tina:

*'.. I think it's made me better at talking to patients about things. If they, you know, if they say to me, "Well I've had this done," at least I know what they're talking about'*

Tina

The biggest impact from the new learning was the positive effect it had on the nurses' confidence to care for cancer patients undergoing surgery. Sally for instance stated:

*'There is a confidence in the fact that you think, well yes ... I'm not an expert in any sense of the word, but I have actually got some knowledge'*

Sally

Developing knowledge though, is in itself not enough; the application of knowledge to patient care and the development of new or improved skills are the ultimate outcome, a sentiment echoed by Klass (2004) who notes the application of knowledge is vital to effective care delivery. The interviews suggest the nurses who participated in the study were able to transfer their learning to their clinical practice. Individual nurses reported an increased level of confidence in their ability to provide patients with psychological support and

information throughout the surgical journey. This suggests the e-learning programme has helped develop the nurses' knowledge base. It is acknowledged that nurses are more able to offer more effective psychological support if they have a greater understanding of the patient experience and are able to answer patients and their family's questions about their treatment and care.

This finding is echoed by the results of two studies. Attack (2003) explored nurses' experiences of online learning in Canada; where participating nurses reported the learning enabled them to develop evidence based practice. Attack et al (2005) explored the outcomes in terms of nurses' knowledge and clinical skills of an online triage programme provided for emergency practitioners, concluding that improvements in clinical performance and knowledge had resulted from knowledge gained through the medium of the programme. Psychological support is an important aspect of cancer nursing. The National Institute for Clinical Excellence (NICE) guidance on cancer services paper *Improving Supportive and Palliative Care for Adults with Cancer* (NICE 2004) emphasises the need for nurses to develop their role in providing emotional support for patients and their families. Without the learning acquired through e-learning programme it appears that the nurses in this study felt they were not able to provide this aspect of care.

### 3.1.2 Understanding the patient journey

The nurses who participated in this study worked within relatively enclosed surgical environments and had very little understanding of the patient experience of cancer care, including screening, diagnosis, chemotherapy and radiotherapy. All of the nurses who worked through the e-learning package felt they appreciated and understood the cancer patients' clinical journey in a way they had not previously. Most felt this better understanding would enable them to support cancer patients through their surgical journey. Examples of this come from Luke, Kerry and Sally:

*'I learnt a lot more really .. especially the kind of aspects that we don't see on the ward pre-op .. staging results and investigations. It all kind of happened prior to their operation .. and also the follow up they get after leaving the hospital'*

Luke

*'I was primarily dealing with post surgical patients. You don't have the appreciation of what happened before with the patients and also after .. and the fact that some patients aren't suitable.. and I think with chemo and radiotherapy that was quite .. you know, it was quite difficult to understand, but that gave you [the e-learning package] quite a simple .. breakdown. I think of it and I have definitely think I have taken that into my new job'*

Kerry

*'I think it does give you a better awareness of the whole patient journey. You forget there is a whole world that goes on around them just coming in for an oesophagectomy'*

Sally

Learning at work Gulanti (2006) suggests is a major part of nurses' development. It is apparent however, that nurses are often working within one environment for some time and are not necessarily exposed to learning opportunities beyond that environment. It is difficult therefore to develop an understanding of a complete patient journey. E-learning materials have in this case provided exposure to the complete patient journey and enabled the nurses to understand some of the care and treatment decisions made prior to patient's arrival and have an insight into follow-up treatments.

### 3.2 Confidence in computer use

Not all of the nurses who initially began the project completed the e-learning programme. There were clear differences in the level of information technology (IT) skills and confidence in using computers between those who completed the programme and those who didn't. This suggests that those who did not complete the programme were inhibited by the lack of personal IT skills and confidence. The nurses who did complete the programme found the e-learning easy to use. Comments from Jane, Luke and Tim support this:

*'The actual site was quite user friendly and it didn't take as long as I thought .. I thought it would be more complicated'*

Jane

*'.. Well I'm not a computer buff, but I could, I understood how to use the online learning'*

Luke

*'I surf the net quite a lot and play around with the computer .. but yes, I mean it was quite an easy way to do a course .. I didn't have any problems with the IT side of it at all'*

Tina

This suggests that learners need some level of IT skills and confidence prior to embarking on an e-learning programme and that those considering this type of learning who are lacking in skills or confidence are less likely to complete the course. Undoubtedly a successful completion also increase the confidence of all the learners, as Jane and Kerry noted:

*'The more you use computers the more confident you get with it'*

Jane

*'Yes definitely .. I also signed up to another course on the same, you know, website'*

Kerry

Those embarking on e-learning packages often report an increase in computer skills and personal confidence in those skills following the completion of an online package. A recent study by Moule (2006) found nursing students showed a marked improvement in confidence levels following a six week online learning experience. Barriers remain for those nurses who do not have the necessary IT skills and the gap between those with and those without could potentially widen if opportunities are not created to bring all nurses up to a defined minimum level of acceptable skill.

Only two nurses who failed to complete the programme agreed to be interviewed; both were clear that their lack of IT skill had played the major part in their non-completion:

*'Although I have familiarised myself with computers to a point, I've never had any official training on them and I'm just not familiar with sort of computers on a wider level'*

Lorna

*'I don't have a computer at home and in some ways I suppose, for a lot of time, I bottled it, in all honesty .. My use of computers is completed limited, I mean to switch it on is a big thing. I've no idea. I'm a bit of a technophobe really'*

Sally

Research during the 1980s revealed that many nurses felt anxiety about using computers (Martyr, 1988). It is concerning that this anxiety remains today (Moule, 2006); with many nurses revealing in a survey undertaken by the Royal College of Nursing (RCN, 2004) limited IT skills and knowledge. Despite the widespread use of computers within the home and the workplace availability does not always lead to use and skill development. Despite the introduction of formal IT training through the European Computer Driving Licence available for nursing staff working in the National Health Service (NHS) there are still staff requiring IT skill development. As online learning becomes a more popular mode of learning there is the potential for a significant minority of registered nurses to be left behind in developing the necessary skills and knowledge required to support evidence based nursing care.

### 3.3 Personal experiences of using e-learning

#### 3.3.1 Protected time

Staff identified a need for protected time to complete the package, which was for the most part not available. Only two of the group were able to complete any part of the package at work and this was only facilitated as they worked at the weekend or on night duty where it may be easier to free individuals from the on-going ward work. The group felt that in general the work place did not provide an environment where this type of learning could take place:

*'I worked on a weekend and it was so quiet, I just literally was able to hide away by the computer and just do it'*

Robert

*'I did about 10% on night shift ... the vast majority was in my own time. It's just not possible when you're on a shift to, you know, physically, even take an hour, or half an hour'*

Luke

Those who failed to complete the programme also identified the lack of protected time as a problem. This may have been of greater importance for these nurses, if they, as a result of their poorer skills, needed longer to work through the package.

*'I think the biggest thing is the time allocation .. not having the allocated study time. Another idea is that we'd perhaps be able to do a little bit while we're on shift, it was absolutely impossible'*

Sophie

### 3.3.2 Computer access

Most of the nurses in the group had Internet access through their home computers and worked on the package away from the clinical area. Despite widespread computer ownership it is unrealistic to expect all nurses will have this facility. Indeed it could be viewed as discriminatory if nurses without home computers were not given the same access to learning and professional development; as one of the non-completers noted:

*'I would have to have had to make special journeys into work or into the Education Centre to use the computers'*

Sophie

There is an expectation that the increased number of computers within the workplace will enable healthcare staff to access information (NHS 2006), however, as Latchford (2003) noted there is inconsistency in the availability of computers within the NHS. Feedback from the group supported this view as Sally commented:

*'The computers on this ward are ancient and overloaded and slow, and there's a wealth of research stuff and I'd love to say to everyone, go onto it, have a look at it, that's great, but we have you know, the computers are overused and anyway getting access to them [is difficult]'*

Sally

Those who did not own computers were not overly keen to use computers within a purpose built computer centre, they preferred to use a computer within their work environment. Having a home computer was viewed by all to be the ideal scenario for those undertaking this form of e-learning, and those who did work at home welcomed the flexibility of being able to work at 'anytime':

*'I would access at home and do it just as easily, and stop and start as it suited me'*

Tina

Both Conole et al (2002) and Moule (2002) found learning at home provided distinct advantages for those with access to the internet, space and time to study, allowing individuals to arrange their study at a time, place and pace to suit them.

### 3.3.3 Organisational barriers

The group highlighted that if e-learning were to become more common along side class room learning then hospitals as employers would need to ensure the necessary support and structures to facilitate this mode of learning. These would need to include managerial support, infrastructure, the provision of web based material and passwords for those who access it, a process that is not without complications:

*'You have to apply to .. for an online password to use the Internet at work .. and that sometimes you know, it takes quite a long time to get a password. So if you were to apply to go on a course in two weeks time the hospital would often take a month to get you an Internet password.'*

Luke

Despite the move to increase technical specifications within the NHS (NHS, 2006) provision varies and can be locally determined. Organisations considering e-learning would need to review the technical capability of systems needed to support and enable the use of visual and interactive media (for instance sound cards). This will need to be coupled with a review of organisations teaching and learning strategies. Those offering variety in the mode of provision must recognise the needs of e-learners, providing support that enables access to learning materials and recognition of the learning activity wherever it is completed. This might also include developing the manager's awareness of online provision and support strategies that enable nurses to engage with the course and transfer their learning to practice.

## 4. Limitations

This study is limited by the small numbers recruited from two hospital sites. This affects the transferability of any results.

## 5. Conclusions

In conclusion, this is the first study of a stand alone online programme related specifically to cancer of the oesophagus and its use and applicability for nurses in clinical practice. Although using a small sample the results clearly show that staff who undertook the CancerNursing.org e-learning program benefited from completing the programme and increased their knowledge of cancer care. In addition the nurses reported an increase in their ability to transfer their learning to practice through improved emotional and psychological support of cancer patients and their relatives. The study identified important issues for consideration for those intending to develop or use e-learning for clinical nurses. It is clear that a significant number of nurses need preliminary assistance with learning IT skills before embarking on this form of professional development. Secondly there needs to be serious consideration about protected study time and access to IT equipment. Lastly online learning cannot be seen as a 'quick fix', a way of enabling nurses to professionally develop in their own time with limited support from employers.

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