Abstract

Healthcare organizations are increasingly becoming dependent on knowledge management activities to improve the quality of care, to maintain a high level of efficiency and innovation as well as to flexibly adapt to rapid change. Utilizing knowledge management support systems - e.g. Internet based knowledge portals - to manage medical information and healthcare knowledge aimed to support the full spectrum of knowledge needs has become an important issue for all healthcare professionals. This paper reports on the main findings from analyzing the characteristics and challenges of 15 Swedish knowledge portals containing healthcare information. The analysis is based on inspection of the portals and interviews with their owners. The main challenges found concern fragmentation of knowledge, structuring of knowledge content, usability, interaction and resources for maintaining knowledge content. Future successful development and use of knowledge portals to disseminate healthcare knowledge depend on addressing these challenges, which requires portal owners to have a long-term strategy as well as a systematic way of working.

Keywords

Knowledge management, knowledge portal

1. Introduction

Knowledge Management (KM) has established itself as good management practice for modern organizations that strive to be efficient and competitive, since it helps getting the right knowledge to employees when they need it [1]. Healthcare organizations are increasingly becoming dependent on knowledge management (KM) activities to improve the quality of care, to maintain a high level of efficiency and innovation as well as to flexibly adapt to rapid change. Utilizing knowledge management support systems (KMS) to manage medical information and healthcare knowledge aimed to support the full spectrum of knowledge needs has become an important issue for all healthcare professionals [2, 3]. On the other hand, adopting KM is a complex process. In the past, many KM initiatives and projects have not been successful and even the more successful ones have struggled to make a broader impact. Often it can be observed that KM approaches, methods, and tools are tried out but the results are unimpressive or they do not meet exceptions. One of the reasons for these problems is that the implementation process of KM system is too ad hoc and unplanned [4].

Healthcare organizations are knowledge-rich, yet healthcare knowledge is largely under-utilized at the point-of-care and point-of-need. It is well known that new healthcare knowledge is being generated at a rapid pace and its utilization can profoundly impact patient care and health outcomes. However, this growth of knowledge, dispersed across different mediums, is making it extremely difficult for healthcare professionals to be aware of and to apply relevant knowledge to make the ‘best’ patient care decisions. Recent research has shown that the inability of physicians to access and apply current and relevant knowledge, leads to the delivery of suboptimal care to patients [3]. It is often difficult to ensure that healthcare professionals use the latest and newest healthcare knowledge. Education is one way of spreading knowledge. However experience shows that education must be supplemented by other systematic efforts to ensure sustainable uptake of knowledge. Furthermore, knowledge that has been captured and packed as written knowledge in some form usually resides in repositories, manuals, the intranet, etc. An important issue identified is that knowledge shared through manuals may be difficult to absorb since the documents, in essence, are not adapted to the target group. A further complicating factor is that healthcare professionals need to relate to national, regional and local knowledge bases dispersed across different mediums. One way of accommodating a single point of access to knowledge is through so-called knowledge portals, often Internet based.

The goal of this paper is to report on an analysis of a representative number of Swedish Internet based knowledge portals. The second author of this paper has been involved, since many years, in developing methods and tools to create and maintain KMS, in particular Internet based knowledge portals, implementing them in both business and public organizations, e.g. in healthcare. A successful case of implementing such a system was reported in [4]. The experiences from this case form the basis of the analysis.
The remainder of the paper is organized as follows. In section 2 the method is presented, while section 3 contains the results. The results consist of a number of observations about the characteristics and challenges of the analyzed knowledge portals. In section 4 the results are discussed and some concluding remarks are given.

2. Method

The analysis has been made according to the following steps:

Firstly, we selected a number of portals to analyze. We aimed at collecting a variety of portals which would demonstrate the multitude of approaches to creating knowledge portals. We took as a starting point the national projects initiated by the National Board of Health and Healthcare, e.g. Kunskapsguiden (www.kunskapsguiden.se). We then selected portals that have been initiated on a national basis, e.g. Vårdhandboken (www.vardhandboken.se) and Svenskt demenscentrum (www.demenscentrum.se). Finally we searched the Internet for portals initiated on a regional or local level, e.g. Sårwebben (www.vgr.se/skassarwebben), using a snowballing approach. All analyzed portals, 15 in total, contain healthcare knowledge. Swedish healthcare organizations, authorities and associations have created them. The following 15 portals were analyzed:

- Kunskapsguiden
- Vårdhandboken
- Internetmedicin
- Ungdomsmottagningen på nätet UMO.se
- 1177.se
- Svenskt demenscentrum
- IPULS-projektet METIS
- Nationella riktlinjer för Sjukdomsförebyggande metoder: Tobak, alkohol, fysisk aktivitet och matvanor
- Virtuellt Sårcentrum
- Sårvårdsboken Örebro
- Sårwebben
- Föräldrawebb Fyrbodal
- PS Young Support
- Nationellt kkompetenscentrum Anhöriga
- Vårdaktörsportalen i Västra Götaland

Secondly, we documented the selected portals according to the following aspects:

1. Type of content
2. Target group/s
3. Structure of the knowledge content
4. Technical platform
5. Possibilities for communication between users and portal owners
6. Organizational model for maintenance of the portal
7. Model for evaluating the effects of the portal
8. Possibilities and challenges relating to the portal

To collect the data two methods were used: 1) inspection of the portals and 2) telephone interviews with managers of the portals.

Thirdly, we analyzed the data to identify general patterns. All portals were analyzed by the first author of the paper and the overall analysis was made by both authors.

3. Results

The main findings of the analysis are presented organized according to the general patterns that we found.

3.1 Focus

A general pattern among the analyzed portals is that most of them are developed based on the need to disseminate knowledge about a particular medical specialty to particular target groups with particular needs of information, knowledge and learning. Considering an employee that needs to access knowledge about several specialties, i.e. a district nurse, or a patient with several health problems, this situation is suboptimal. A person then has to access several portals. Since there is no standardized way of structuring a knowledge portal this means that knowledge is fragmented and usability on the overall level, over several portals, is low. Also, learning and exchange of experiences is hindered by this fragmented approach. From this situation we conclude two things. Firstly, it is clear that a more conscious strategy is missing in healthcare organizations about how knowledge should be structured and disseminated through knowledge portals. Secondly, portal developers do not properly consider the needs and characteristics and usage situation of the target user group/s. One particular aspect of this is that portal developers in most cases neglect that the users of their portal will most likely use other portals as well.

Among the analyzed portals there is a dominance of portals focusing on mental illness, particularly in young adults. We also observe several portals addressing lifestyle related disease, e.g. related to alcohol. We can only hypothesize the reasons for this focus, but one can be that the Swedish government has prioritized knowledge dissemination in these areas.

3.2 Intended users

Among the analyzed knowledge portal we find three types of intended user groups:

- Healthcare professionals
- Patients and/or citizens
- Both of the above user groups
We believe that the Swedish National strategy for e-health\(^1\), initiated by the Swedish government, has motivated several of the analyzed portals. The strategy focuses on the introduction, use and benefit of information technology in healthcare. The goal is to create actual benefit for three main target groups: the citizen, healthcare professionals and decision-makers in healthcare and social services. Two particular areas in the strategy are related to the analyzed portals:

- Useful and available information – decision support for healthcare professionals, and
- Knowledge management, innovation and learning.

### 3.3 Structure of the knowledge content – a usability issue

As previously stated, most portals have different structures and they also have a varying degree of usability.

The knowledge is often structured in a hierarchical and linear manner, comparable to that of a book or report. As a consequence, the use of multi-media such as moving pictures (film and animation) and sound is hardly ever seen.

We often find usability problems related to the book type of structure. E.g., when a large amount of information is presented to the user at once, she is often confused and experiences difficulties in filtering unnecessary information, which leads to problems to manage situations when choices need to be made [5]. Also, this type of structure focuses on gathering of information rather than on learning. This problem emphasizes that portals need to be developed using a governing method for how knowledge should be captured and structured. We have found a small number of portals that have a clearly identifiable structure that is systematically implemented throughout the portal, and that truly take the user situation into account, but they are unfortunately a select few.

The target group of some portals is broad, e.g. both healthcare professionals and patients. This is a particular challenge in terms of designing the user interaction and structuring the knowledge content, something that many of the portal owners experience.

### 3.4 Interaction through knowledge portals

Very few knowledge portals include facilities to support interactive meetings – between healthcare professionals and citizens or between citizens - through the Internet. Several evaluations (see e.g. [6]) have concluded that this is a feature that should be prioritized. However, such interaction through the Internet can be sensitive, which requires that personal integrity can be managed in a secure way. On the other hand, security and integrity issues must be balanced with the benefit that the interaction can give the users. Also here it is necessary that there are guidelines and strategies that govern how this interaction can take place. This could be functions for moderating discussion forums, e.g. in order to remove improper material.

### 3.5 Technical platform

The general patterns is that Internet based knowledge portals are seen as web-pages that are created through a traditional publishing process where texts are produced, reviewed and published. Therefore, the pre-dominant technical platform is traditional web-publishing tools such as Microsoft SharePoint\(^2\). One challenge related to this type of platform is to manage overview when the amount of knowledge increases and knowledge “chunks” in the portal becomes increasingly linked, internally and externally to other portals and sources on the Internet.

### 3.6 Processes and resources for maintaining knowledge portals

One of the problems with knowledge repositories in general is that their use decreases over time, often because their contents become out of date and hence becomes less relevant for its users. A common reason for this is that processes and responsibilities for continuously updating the content do not work in the organization [1].

One aspect of this is that decision-makers may be willing to invest in the creation of a knowledge portal, but fail to see that keeping the portal up-to-date and useful over time requires that more resources are continuously invested.

The majority of analyzed portals follow this pattern. Their owners find it challenging to manage them over time, particularly in terms of resources. E.g. several important and useful portals targeting young adults are at risk since financial resources are lacking.

Situations where several organizations collaborate to create/maintain a knowledge portal are particularly challenging. In these cases it has shown to be very difficult to agree on common standards, e.g. for structuring the knowledge content. This is the same pattern of difficulties that can be observed regarding standardization of IT solutions in Swedish healthcare as a whole.

### 4. Discussion and concluding remarks

Internet based knowledge portals are becoming more and more common in modern healthcare, not only in Sweden but throughout the world. They have the potential to contribute to both prevention and treatment of health problems by supporting both healthcare professionals and citizens with the knowledge that they need and when they need it. However, in order for knowledge portals to live up to expectations a number of challenges need to be addressed, some of which has been discussed in this paper. These issues have impact on the survival of a knowledge portal over time.

From the implementation projects that we have been involved in (list included in [4]) we conclude that there are critical success factors that can make or break the long-term survival of a knowledge portal:

\(^{1}\) http://www.nationellehalsa.se/English/Default.aspx

\(^{2}\) http://sharepoint.microsoft.com/en-us/Pages/default.aspx
• The portal is important enough for management to champion it
• The value to its users is high
• The usability of the portal is high
• The knowledge structure is robust but still flexible enough to cater for changes over time
• Processes and resources for maintaining the portal over time is in place
• There is a strategy in place for the future developments of the portal

The portals that we have analyzed have several weak spots related to these factors. From what we see it is quite common that portals are developed and maintained by healthcare professionals, while managing several of the factors (e.g. usability and knowledge structure) is clearly outside their expected expertise. Portal development projects therefore need to also involve other categories of competencies, such as usability experts, experts in knowledge structuring and IT experts.

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References


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