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## **A Descriptive Study of the Use of Multimedia Based Collaboration Technologies by Health Community Support Groups in New Zealand**

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### **Abstract**

*The move from doctor-centred healthcare to patient-centred healthcare has the potential to enable people to become more actively involved in the management of their health care, especially with chronic conditions. The increasing number of community based support groups devoted to health issues reflects this situation. With the advancement in information technology some of these community based support groups are increasingly using websites, bulletin boards, mailing lists, and other internet-based tools as a way to transfer knowledge between their members. A better understanding of the role of such information technology tools in supporting knowledge transfer in health-related community based support groups would enable better knowledge transfer outcomes. As a first step towards achieving such understanding, we conducted a study of the current usage of internet-based tools by community-based healthcare support groups in New Zealand.*

### **Keywords**

Knowledge transfer, collaborative technologies, community based healthcare support groups, internet

### **INTRODUCTION**

One of the biggest problems mentioned by many researchers studying knowledge management is knowledge transfer within organizations (Goh, 2002). There are many studies looking at factors determining the success of knowledge transfer within organizations – these factors include people, communication, trust, organizational culture, rewards and leadership (Davenport & Prusak, 1998; Eppler, 2006; Grant, 1996). Our goal is to contribute to these studies by focusing on the specific problem of knowledge transfer in community-based healthcare support groups (called health community support groups in this paper).

The choice of health community support groups as the focus of our research is based on the notion of patient-centred health care as a new paradigm in health care industry (Robb & Seddon, 2006). The paradigm of patient-centred health care is similar to customer-focused programs in marketing, but the difference with patient-centred health care is that the impact is not only on the patient's level of satisfaction with service provision but there is also a leverage of their status, empowering them to deal with their conditions in a more informed and proactive manner. In patient-centred health care, knowledge transfer occurs not only from doctor to patient, but also from patient to doctor. Both of these knowledge flows primarily occur in the context of a formal relationship defined by the duty of care on the part of the doctor. However, in addition there is a process of knowledge transfer between patients themselves. Often, this process takes place between members of health community support groups bringing patients (and their families) together for mutual support and knowledge exchange. Patient to patient knowledge transfer occurs in context of informal relationships. While there are many studies devoted to the relationship between doctor and patient (Ong, de Haes, Hoos, & Lammes, 1995), relationships between patients in health community support groups has received very little attention by researchers.

Many patients become experts on their medical condition/s because they access information concerning their medical condition while having an intimate knowledge of their own health history. Patient expertise is constantly improving because of increased access to health-related information via the Internet, including both the ability to access reference resources and the ability to share knowledge with other people with similar conditions (Suggs, 2006). Yet, there are no studies that would systematically consider the impact of information technology on knowledge transfer to patients in general, and knowledge transfer from patient to patient in particular.

The information technology tools most relevant to patient to patient knowledge transfer are the mass user collaborative technologies, such as discussion forums, blogs, email, on-line chat, and, less mainstream Web 2.0

technologies, such as collaborative tagging. Overall, the Web 2.0 phenomenon encourages user behaviours that are likely to increase the use of information technology tools in patient to patient knowledge transfer. As the first step in our research of information technology on knowledge transfer between patients as part of patient centred health care, we identified New Zealand based health community groups employing Web based technologies to connect their members. In this article, we review the use of Internet-based tools by these health community support groups.

## **THEORETICAL BACKGROUND**

### **Communities of Practice**

Health community support groups can be viewed as communities of practice - groups of people that are connected because they have a common identity, value, purpose, and goal (dealing with health conditions). A health community support group may involve people from diverse geographical locations, and people associated, directly or indirectly, with a variety of health care providers. Such a variety in terms of geography and organizational association is typical of communities of practice (Soekijad & Huis in't Veld, 2002). It is believed that knowledge transfer in communities of practice is more effective than in traditional formal organizations, due to more immediate rapport between members and the absence of a political component in interpersonal relationships (Davenport & Prusak, 1998). (Jackson, 1999) demonstrated that knowledge transfer in informal circumstances may be more effective. In terms of the information technology support of health community support groups, we consider that collaborative tools designed to support informal communications should be most effective in enabling patient to patient knowledge transfer.

### **Type of Knowledge**

Knowledge that is shared in health community support groups is of two types. The first type of knowledge shared is evidence-based knowledge. This is knowledge that comes from rigorous research in the health care field (Gray, 2001). The second type of knowledge shared is of an anecdotal nature that comes from a limited number of observations and lacks rigorous empirical proof (Bryant, 2002). Information technology impacts on the transfer of both of these types of knowledge. Health community support groups may offer links to sources of evidence-based knowledge on their web sites. In their technology mediated communications, individual members may exchange both opinions rooted in evidence-based knowledge, and opinions based on anecdotal knowledge, their own experiences. It is an interesting question as to which type of knowledge transfer is better facilitated by information technology. In certain cases, the transfer of knowledge that is not evidence based may actually be considered to be undesirable or may even put patients at risk, as patients may have a limited ability to judge the quality of knowledge they pass on to or receive from other patients.

### **Media Richness**

Media richness (Carlson & Davis, 1998) is a factor likely to affect the effectiveness of information technology in facilitating knowledge transfer. Daft and Lengel 1986 in their study on media richness, argue that managers could improve performance by employing media with media richness characteristics matching the needs of the organization. Rich media approaches face-to-face contact in carrying emotions as well as facts, and tends to be more personal. Less rich media tend to emphasize the factual content of messages, and are poorly suited for conveying emotions. As assisting members in dealing with health-related emotional issues and providing moral support is an important function of health community support groups, media richness is likely to be relevant.

## **METHODOLOGY**

As part of the research into knowledge transfer in health community support groups, we have started by looking at what is currently happening. As health community support groups are interested in attracting new members, a typical health community support group has a web site. Considerable insight into health community support groups' activities can be attained by observing the information content of such web sites.

Health community support groups were identified by searching the Internet, starting from the New Zealand health information portal at everybody.co.nz, which provides a community support group directory. Not all community support groups listed in the directory have web sites; and we have focussed on health community support groups with publically accessible web sites. The use of open access web sites made it possible to analyse their activities via the Internet. We identified 80 community support groups fulfilling this criterion.

The health community support groups were then analysed by thematic analysis into the information they provide, resource availability, links to other resources, support for member-initiated online activities, and procedures involved in contacting the support group.

## RESULTS

### Information provided:

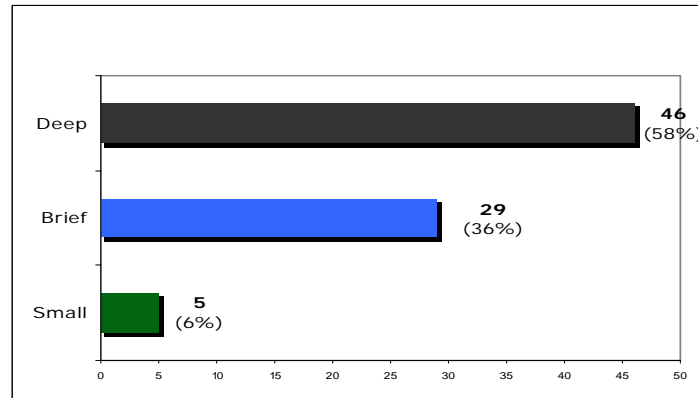


Figure 1: Information provided.

Not all the health community support groups listed in the directory provide comprehensive information about the health condition they cover. From the 80 health community support groups identified, only 46 (58%) provide such information in comprehensive manner. By comprehensive we mean that the support group provides a wide range of information, including most of the following: definition of the condition, how it could occur, the effect of the condition, and how to deal with the condition up to the post treatment period, with detailed explanations and evidence. The other 29 support groups (36%) only give a brief explanation about the health condition they cover. The remaining 6% essentially just name the condition, with no explanation provided.

### Types of Resources Available

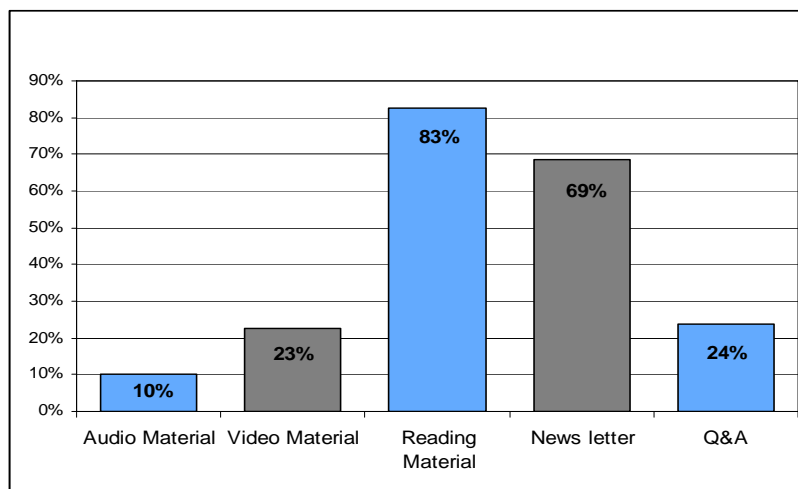


Figure 2: Availability of different types of resources.

There are few health community support group websites that use audio material as their resource material. Only 8 websites provide audio material, and most of the audio materials they provide are available offline for their members. 23% of the websites offer video material (linked from outside the website). 24% contain a Q&A section listing answers to frequently asked questions (FAQ). Most of the support group websites provide relevant reading material such as articles, pamphlets, brochures and books that can be accessed online or offline. Online reading materials are mainly in pdf format and they are free for anyone to download. But to access offline material such as books, formal membership is required. Several support groups sell books related to the condition that they cover via their websites. Nearly 70% of the websites use a newsletter to regularly provide information to their members. Some of these newsletters can be downloaded freely in PDF format. Other groups, however, send their newsletters only to their members. Membership can usually be obtained via on-line

registration. There are two types of membership: free and full (involving some sort of a payment). In general, to become a full member, one has to donate a certain amount of money annually.

### Links to Other Sites

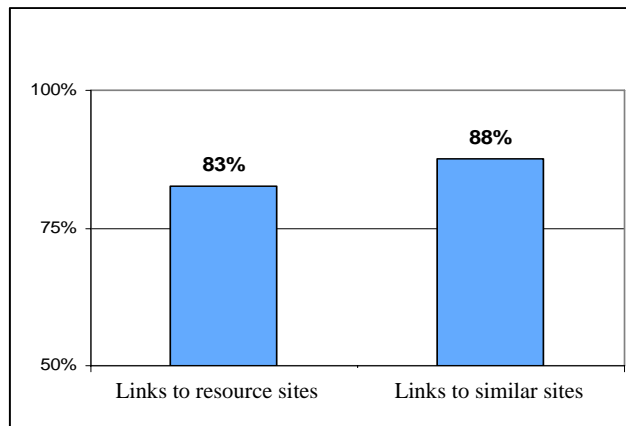


Figure 3: Links to sites with useful resources and to other health community sites.

In general, health community support groups' websites provide links to other sites, which are either related or that just contain additional information useful for their members. Links to useful websites increases the information available via the site. 83% of the 80 community support group websites considered provide such links. 88% of the 80 community support group websites considered provide links to other, similar community health support group websites.

### Direct Member-to-Member Interaction

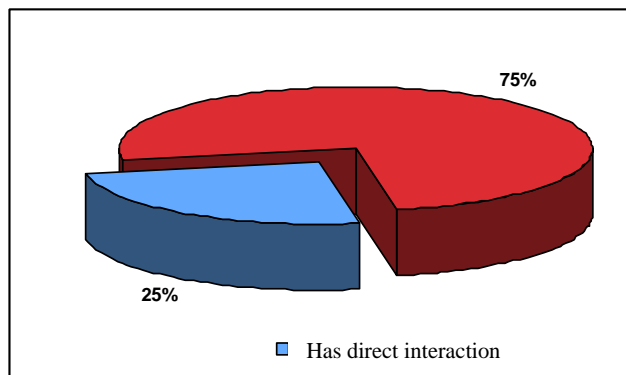


Figure 4: Percentage online forum from health community support groups (N=80)

Only 25% of the websites provide media for health community support groups to interact with each other. Most of these use discussion forum software as the media for interaction, although some use blogs, chats, or mailing lists.

### Contacting the support group

People who are interested in a health community support group can contact that support group by phone, mail or fax. Health community support groups provide those phone numbers, postal addresses and fax numbers in their websites. 95% of health community support groups considered provide postal addresses and phone numbers. However, only 73% provide a fax number in their website. Some websites also give contact numbers of their representatives separately for each region in New Zealand.

## CONCLUSION

Health community support groups are run by volunteers – typically, their most active members assume roles of content creators, moderators, treasurers etc. All knowledge transferred via such support groups is transferred informally (with no duty of care attached), and is essentially patient to patient knowledge transfer.

Our analysis of health community support groups' web sites content demonstrates that in terms of the use of information technology, there are three distinct mechanisms of knowledge transfer involved:

- 1) Knowledge transferred via the community web site in the form of documents, multimedia materials and newsletters.
- 2) Knowledge about knowledge available via the community web site in the form of links to external resources.
- 3) Knowledge transferred directly from member to member via discussion forum or similar collaborative technologies.

One can argue that mechanism (3) allows for the richest knowledge exchange, as knowledge can be conveyed in the context of addressing specific problems, and personal insights and emotional support can be provided along with facts. However, only 25% of the health community groups' web sites explicitly support it. Mechanisms (1) and (2), relying on dissemination of controlled, edited information, are supported more widely. This comparison is in terms of the numbers of web sites only – a comparison in terms of the amount of knowledge transferred may lead to a different result, although it is much more difficult to make.

Clearly, there is a wide range of health community support group web sites in New Zealand, offering a variety of IT-based resources intended to facilitate knowledge transfer. They will be an important source of data in our further research on the impact of information technology on knowledge transfer in health community support groups in New Zealand.

## FURTHER RESEARCH

Some of the propositions we intend to address in further research are as follows:

1. Informal direct patient to patient exchanges making use of collaborative technologies result in greater impact in terms of knowledge transfers than documents, multimedia materials and news made available via the community web site.
2. Both evidence based and non-evidence based knowledge is being transferred.
3. Reference resources (both on-site and external links) assist members in judging the quality of knowledge.
4. Rich multimedia (such as video) leads to better transfer of knowledge.

In terms of methodology, our further research will consist of two stages.

First, we are going to employ content analysis to explore the types of knowledge being transferred (e.g. evidence based or otherwise), and to highlight the important events related to knowledge transfer. For content analysis, we will employ both a positivist coding scheme using predefined categories, possibly based on the one developed by Connolly et al. (1990). The coding scheme by Connolly et al. was widely validated in application to analysing interactions in group support systems (see Trauth and Jessup, 2000, and references in it). In particular, we will focus on analysing direct member to member messages posted via discussion forums, as this is likely to result in an intimate understanding of knowledge transfer dynamics in health community support groups. We note that changes in the state of knowledge are observable via content analysis of replies and comments.

In addition to using a positivist coding scheme, we will also apply an interpretive analysis, involving coding using an open coding scheme, in the spirit of the grounded theory. Here, we will follow the approach developed by Trauth and Jessup, 2000. The interpretive analysis will allow us to make sure that events of interest not covered by the positivist coding scheme (if any) are detected.

Second, we are going to extend the information systems success model developed by DeLone and McLean (2003) to take into account findings obtained via content analysis. We plan to administer the resulting survey instrument to health community support groups' members to directly inquire about the impact of information technology on the success of transfer of different types of knowledge. The survey will allow us to achieve triangulation with the results of content analysis (main conclusions should be consistent). Also, the survey will allow us to obtain statistically significant results representing the target population (the members of health community support groups in New Zealand).

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