Online and Offline Integration in Virtual Communities of Patients – an Empirical Analysis

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1. Introduction and motivation

Virtual communities of patients (also mentioned as virtual communities in health care – VCHC) provide today mainly information and mutual support for their members. They offer information concerning diseases, treatments or new research results. Information shared among members includes experience reports on how the disease was contracted, how it affects the daily life and how to cope with it or even how to overcome it. In some VCHC, experiences with medical institutions, medics or treatments are being discussed.

   Patients also use other media apart from the VCHC to meet their need for information, social interaction and mutual support: Face to Face meetings, private conversation via phone, patient meetings organized by VCHC, physician patient seminars in which physicians and patients discuss selected topics related to the disease, or scientific conferences and congresses. Self-help groups that meet on a regular basis are another important way in the German health care system to organize the dissemination of health related information and mutual support of patients to patients. The topics that are covered by VCHC and self-help groups differ: treatments and medical information are typically an important topic in self-help groups while VCHC cover these topics in a very restricted way [4]. E.g. some VCHC have developed a culture to say that a certain treatment "helps me" but not that "it helps". Sometimes discussions about treatments are "forbidden". Although VCHC are important, they are not sufficient to

meet all needs for information and social support of the patients today. We analyse how different channels interact and what kind of channels are used to meet specific needs. Note that we did an empirical study in online communities of patients. We are interested in what kind of channels and e-services are needed to complement the online world. This is the view we adopt throughout this paper. Our goal is to develop e-services to support a better integration of the offline and online world to strengthen the position of patients offline and online.

The paper is organised as follows. First, we present in Sect. 2 the state of the art and literature review on self-help organizations and groups, online communities of patients and virtual communities, integration of the offline and online world. The research approach is introduced in Sect. 3. Results concerning the demographic characteristics of our empirical study follow in Sect. 4. Sect. 5 presents results concerning the online and offline integration. A summary and a discussion conclude the paper.

2. Health care and Virtual communities of patients

People use the Internet to find health related information, manage their personal health record via the Internet, and get information about health care services and regulations that govern them [7; 8; 18].

Moon and Fisher analyse the effectiveness of Australian medical portals and whether they meet the health consumers' needs [14]. They suggest that these types of portals do not sufficiently support the users '…The users' view on usefulness in terms of how relevant the information retrieved was and whether the information has cross-referencing were poorly received…' and the majority of the users in this study does not intend to use these portals again. This indicates that there is a need from a health consumers' perspective to get access to another kind of information source. The integration of the information available via the Internet with information people received by physicians is an important factor to make complex personal decisions [18].

2.1 Self-help organizations and self-help groups of patients

Self-help organizations and self-help groups are the 'traditional', offline form for people that are affected by a disease to exchange experiences. Self-help groups are self-governing groups whose members share a common health concern and give each other emotional support and material aid [17]. Self-help organizations typically inform members about all aspects of

a disease and they act as representative (patient unions). Janke et al. postulate that patients in self-help organizations are better informed on their disease than patients not attached to self-help organizations [9]. Borgaonkar et al. show that providing 'disease-related information only' to patients worsens health-related quality of life (HRQOL) in inflammatory bowel disease [1]. Interviews with operators of self help organizations confirm that providing information only and constantly reminding on the patient's illness (e.g. through mailing, brochures or newsletters) is counterproductive and frequently leads to the cancellation of the self-help organization membership. Kennedy et al. [10] showed '…patients given a patient-developed guidebook of self-management skills experienced significantly improved HRQOL'. This all together reminds that e-services that provide information only are not sufficient.

The participants in self-help groups meet each other on a regular basis mainly to exchange information related to a disease. Self-help groups have two main goals: mutual support and exchange of information [2]. Typically self-help groups have a number of experienced members that are affected for a long time by the disease and they are active in following research and know about treatments and all kind of medical institutions. Participants benefit from experiencing that they are not the only ones affected by a disease or the only ones with particular symptoms and disease related problems in the daily life. Topics discussed in self-help groups include medics, clinical institutions, rehabilitation centres, treatments, medicaments, research and participation in clinical studies. The culture is often being described as open, honest and the discussions are deep and without restrictions.

2.2 Online health communities

Today, many of the self-help organisations have online communities or at least some forums somewhere at their website. An interview partner in our study (community operator of a VCHC) described the typical situation and that little has changed in the past years – as the forum has the size of approximately 100 regular, but mostly not long time visitors. The same 'newbie' questions are being asked over and over again, with the same (possibly dangerous) theories about origin of the disease and possible cures being discussed in a not very profound way over and over again, with newly diagnosed people coming to the forum asking one or two urgent questions and leaving again. Only relatively few people stay for a longer time and the profound discussions take place only partly online in the forum. This self-help organization is however proud of the collection

of relevant medical information it provides and of the many members it has that it reaches over a newsletter.

A look at the online groups of patients not associated with a self-help organization shows that there are plenty of them, a lot of them with hardly any online traffic, many of them are dedicated to a particular disease together with particular theory of origin and treatment with little (open-minded) discussion going on [3; 27]. Important to virtual communities is the kindness and appreciation the people give each other; this is a challenge for operators to handle [20]. People that hardly ever contribute (lurkers) are considered not to be a problem because they are perceived to be part of the VCHC [15; 16; 13].

We conclude that neither the online communities that are dedicated to an illness related topic nor the communities that are associated with self-help organizations are performing very well. We also conclude that VCHC and self-help groups differ concerning topics and the way people interact. We think that that both a valuable and that VCHC can benefit from collaborating with self-help groups and other offline media.

2.3 Virtual communities

Let us look at what defines the online world of virtual communities. The contributions of members distinguish virtual communities from other organizations or business models in the digital economy [24]. Knowledge contribution and sharing is a complex and social process that involves different actors that have different needs and goals [13].

Rheingold describes how this social network emerges. He defines a virtual community as a 'social aggregation' that emerges in cyberspace 'when enough people carry on discussions long enough, with human feeling, to form "webs' of personal relationships' [21]. Virtual communities are characterised by rules of interaction, value system, mutual trust, common goals and interests [26; 6; 22; 19; 25].

3. Connecting Online and Offline

The relation between the online and the offline world has been an issue in the research about virtual communities. The Well, the first popular system of online communities was created with a close link between the online and the offline world. The Well was originally planed to be a forum in the Bay area and the online community was expected to meet regularly offline [21]. LAN-parties or game-parties are another example of how offline

meetings complement online interaction in communities. Such a connection between offline and online world has always been a topic in literature on virtual communities.

In John Suler's work to the psychology of cyberspace [23] "The Integration Principle" shows how it is possible to connect the real (offline) world together with the online world. This is based on six assumptions:
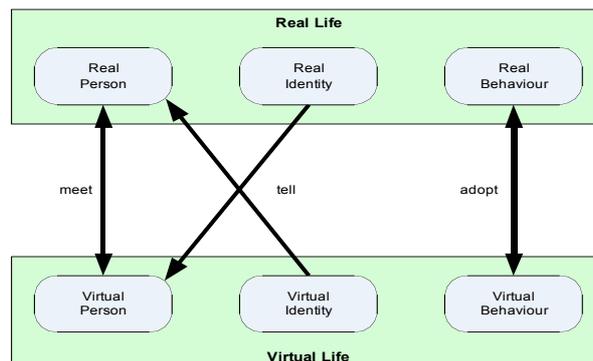
Fig. 1. "The Integration Principle" following Suler [23]

1. Telling online companions about one's offline life. (E.g. letting them get insights in preferred hobbies or work)
2. Telling offline companions about one's online life. (E.g. letting relatives know about the own online identity)
3. Meeting online companions in-person. (E.g. see them at an initiated offline event)
4. Meeting offline companions online. (E.g. chatting with them online)
5. Bringing online behaviour offline. (E.g. experimenting offline with different behaviours based on online experiences)
6. Bringing offline behaviour online. (E.g. Cyberspace gives a person the opportunity to try out his usual face to face (f2f) behaviours and methods of self expression in new situations, with new people).

Suler also postulates, that "there is no simple answer to these questions. Under optimal conditions, translating troublesome issues from one realm to the other can be helpful, even therapeutic…" and "…offline/online "integration" that results in a blind acting out of impulses that hurts other people is not healthy." Online and offline self-help is different but closely connected as the two short examples illustrate.

A member of a VCHC described the relation between VCHC and self-help groups as follows: She is a regular member of a VCHC and attends self-help group meetings sometimes. Whenever she discovers new and important information online in the VCHC she will attend the next self-help

group meeting to disseminate and discuss this information face to face. She knows that the other self-help group members not access online information on a regular basis. This role of providing information motivates her to be active in the VCHC and the self-help group.

An operator of a VCHC describes the differences between the work in VCHC and self-help groups as follows: In the VCHC new members come to ask a few questions and leave. The same question is to be answered typically on a daily basis. In a self-help group meeting there are new members as well and they get the information relevant to them once per meeting and more profound and diverse information. Only people that are really motivated joining a self-help group and the likelihood that they will come again to a self-help group meeting is high. The discussions in a self-help group are open and profound while the interaction that goes in the forum of a VCHC is often dominated by a few people and their opinions and a lot of the profound discussions go on via e-mail or other forms of more private conversation.

3.1 Influence factors and e-services within VCHC

Dannecker and Lechner show in their work [4] the different factors that influence the bonding within VCHC.

They developed a model that gives insights in what is important to members of VCHC and how this important issues influence each other (see Fig. 2).
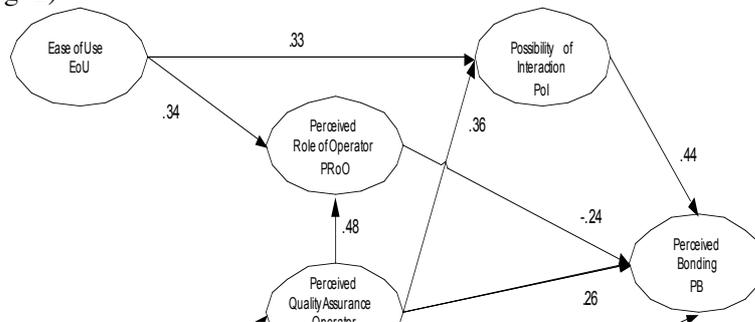
Fig. 2. Structural equation model (members of VCHC) following [4]

Two major aspects are the result of the empirical work. First, Interaction issues (PoI) do have the greatest influence towards the perceived bonding of VCHC members. Part of the interaction issues is setting up meetings in real life and push of interaction between members. Second, quality assurance issues (PGAO, PQAC) are important to members. Parts of these qual-

ity assurance issues are statements of members about physicians, clinical institutions, alternative methods of treatments etc. In the offline world these topics are part of discussion in self-help groups [2]. To discuss and to exchange information concerning these topics is important to participants of self-help groups. Dannecker and Lechner identified three dimensions to analyse the needs [5]: age, time people are affected by a disease, and the time of membership in VCHC.

4. Research method

Objective of our research is to analyse the integration of online and offline world. We did a survey to find out about important factors and demand for e-services. A questionnaire was developed on the basis of a study of web communities , expert interviews with self-help group leaders, an empirical study of Leimeister [12], and a literature review. The questionnaire consists of four parts. (1) Demographical aspects as age, gender, usage of the Internet etc., (2) aspects that cover the disease, (3) aspects handling the offline and online connection, and (4) questions to e-services and the social network. This fourth part consists of 34 questions to medical information and online content, quality assurance mechanisms done on contributions of members and the operator, role of the operator, technical issues, possibilities of interaction, and the emotional bonding of the members to the community.

A study to VCHC that analysed the interaction and the degree of usage of e-services showed that there is a difference in the usage of medical content available within the VCHC, in the culture (e.g. whether discussions about alternative methods of treatment allowed or not). Questions about e-services and the management of medical information within VCHC are added to the questionnaire.

One important aspect in interviews with operators of VCHC was the interplay between self-help groups (meetings in the real world) and VCHC. Members of VCHC are being part in meetings of self-help groups. The operators and members feel that there is a competition between these two kinds of organization and that the culture and the topics handled in these organizations differ. Therefore questions covering these topics were added.

To the topics of the connection between the offline and online world, we gave the possibility to give feedback as free text to two questions, first why they feel more comfortable in either the offline or online world and if they knew other members in real life how this was be established. This was done to get the first and most important impression on these topics.

Two versions of the questionnaire were created: one for the members and one for the operators of the VCHC. The operators provide the community platform and typically the contact data of operators are provided at the website of the community. Ten VCHC (we already had relations to these sites) were contacted to send their operators a first version of the questionnaire with the request to review the questionnaire.

We found VCHC in the German speaking context based on an Internet research done on Yahoo and Google. Cross linked sites in the context of VCHC were also taken into consideration. 250 VCHC in the German speaking context were identified. VCHC with less than 50 members and communities with the most recent contribution older than one year were eliminated. This led to 117 VCHC from which 73 (63%) were chosen randomly and the ten VCHC to which the first version of the questionnaire was sent were added to the sample.

The questionnaire was sent to the operators of VCHC with the request to support the study, to provide a link to the questionnaire to their members, and to fill out the operator version of the questionnaire. The questionnaire was available in the Internet for three weeks in June 2005. After eliminating all empty entries and duplicate entries (same values and session id), 295 entries of members and 21 entries of operators formed the sample.

For interpretation and validation of quantitative results, qualitative interviews with operators and members as well as two presentations with the management team of two self-help organizations have been done.

Following the empirical study of Leimeister et al. [12] a bipolar verbal ordinal scale (cf. Tab. 1) was used for most questions such that statements were to be accepted or rejected.

Table 1. Bipolar ordinal scale and re-interpretation into numbers

Agree strongly	Agree	Undecided	Reject	Reject strongly	Not specified
=4	=3	=2	=1	=0	=9

5. Demographic characteristics

People participating in this study are active in a total of 145 different VCHC. The 'Top Ten' of the VCHC according to the number study participants' account for about 50% of the participants (cf. Tab. 2).

Table 2. Top-Ten of the VCHC according to the number of study participants

	VCHC	Number of participants	Ratio
1	rheuma-online.de (rheumatism)	50	11.74%
2	fibromyalgie-aktuell.de (pain patients)	35	8.22%
3	dccv.de (morbus crohn / colitis ulcerosa)	31	7.28%
4	croehnchen-klub.de (morbus crohn / colitis ulcerosa)	24	5.59%
5	sylvia.at (morbus crohn / colitis ulcerosa)	15	3.50%
6	diabetes-world.net (diabetes)	14	3.26%
7	prostatakrebse.de (prostate cancer)	14	3.26%
8	sd-krebs.de (thyroid cancer)	10	2.33%
9	leukaemie-betroffene.de (leukemia)	9	2.10%
10	kisp.de (prostate cancer)	9	2.10%

16 communities account for two study participants and 100 communities for one participant. More than 95% of the study participants are affected by a chronic illness. Most participants suffer from rheumatism (incl. fibromyalgie) (20%), followed by morbus crohn (17%), cancer (11%), diabetes (6%) and tinnitus (5%). Note that the majority of participants are affected by a chronic illness that allows an analysis on a homogeneous sample.

The research sample (Nmembers = 295, Noperators = 21) consists of 69% female and 31% male participants. Shown below in Tab. 3 are the characteristics and general results separated by the operators´ and members´ views.

Table 3. Demographic characteristics of participants

	Members	Operators
Gender f / m	208 / 87	10 / 11
Average age	41.68	40.52
Number of memberships in VCHC	1.50	1.38
Member since (years)?	2.22	4.55
Are you affected by the disease?	yes 281 / no 14	yes 11 / no 10
How long are you affected by the disease? (years)	9.89	6.95
Do you join meetings of self-help groups (SHG)?	yes 154 / no 141	yes 16 / no 5
If so how often? (very often 4 – sometimes 2 – never 0)	0.99	1.14
How often do you write articles within the forum? (several times a day 4 – weekly 2 – never 0)	1.88	2.81

Particular for an online study are an average age of above 40 years and a very high percentage of women in the categories members and operators.

This rather interesting quote is also supported by quotes of participants within VCHC provided by the operators in follow up interviews. The participants contribute more than once a week in average. In average the members are affected by their illness for nearly 10 years, and their time of membership in average is two years and four months which is rather long, e.g. in comparison with the study of Leimeister et al. [11] where 25% of the membership period was less than 1 month (4.6% our study), 12.5% between 1-3 months (5.3%), 12.5% between 4-6 months (9.6%) and 50% longer than 6 months (80.5%). So the sample includes a lot of experienced community members and community members seem to stay relatively long within the VCHC.

Offline and Online integration

First we present some general information about the connection of the offline and online world and a gender specific analysis (Tab. 4).

About 52% of the women that participated in our online survey are joining self-help groups on a more or less regular basis (at least sometimes) where 50% of the men do so. 42% of the women and 32% of the men feel more comfortable within the VCHC and 6% of the women and 10% of the men within self-help groups. This does not coincide with interviews with self-help group leaders that indicate that the self-help groups are more frequented by women than by men. We conclude that the women that participated in our online survey feel comfortable in the online world.

Table 4. Offline / online connection – considering gender

	Women	Men
Do you join meetings of self-help groups (SHG)?	yes 110 / no 98	yes 44 / no 43
If so how often? (very often 4 – sometimes 2 – never 0)	yes 110 / no 98 0,96	yes 44 / no 43 1.06
Where do you feel more comfortable? VCHC / the same / SHG	42% / 52% / 6%	32% / 57% / 11%
Do you know other members in real life?	yes: 104 no: 104	yes: 32 no: 55

Note that our online survey showed that most of the women (52%) and men (57%) think that both VCHC and SHG are equally important and neither the VCHC nor SHG make them feel more comfortable. 50% of the women know other people from the VCHC in real life whereas 37% of the men do so. So for women online and offline networks are more interrelated than for men.

Let us discuss the motivation to join VCHC or a self-help group. The reasons to join VCHC or SHG were provides as free text and are summarized in Tab. 5. Note that the answers provided by the study participants are coded to the phrases provided in Tab. 5.

Table 5. Motivation to join a VCHC or self-help group (numbers in braces indicate how often the item was mentioned by a study participant)

VCHC	Self-help group
Available 24/7 (39)	Face to Face meeting (18)
Anonymity (26)	Establishing friendship (7)
Ask questions that are uncomfortable (10)	Better understanding (12)
More differentiating answers to questions (9)	Know the people and people know me (6)
More and up-to-date information available (28)	Discussions about information of VCHC face to face (15)
"Global" events (7)	"Local" private events (4)
Neutral support for medical issues (clinical institutions etc.) (2)	Better support for local medical issues (physicians etc.) (5)
More opinions to problems (25)	Deeper discussion about problems (8)

Let us discuss some of the results summarized in Tab. 5. VCHC support anonymity (mentioned by 26 of the study participants) to people especially if they want to ask question they feel uncomfortable with (10 answers). Self-help groups support more easily to establish new friendships (7 answers). Participants of the survey reflected that in VCHC they can get more opinions to a certain problem whereas in self-help groups discussion about a certain problem is more profound. So online and offline world do have their advantages and disadvantages. As we are interested how to improve the connection of the offline and online world we have to analyse how people know other people from a VCHC in real life. In discussions with operators and members of VCHC several possibilities were mentioned how people establish contact in the offline world (cf. Tab. 6).

Table 6. Communication channels of members of VCHC to complement the online communication

Item	Description
Self-help Group	Typical organised meetings with the focus of the relevant disease
Clinic	E.g. during a stay in a clinical institution
Patient meeting	A meeting of physicians and patients to discuss special topics concerning the disease

Phone/E-Mail	Outside the VCHC people communicate also via phone or e-mail, mostly leading in a private meeting
Meeting of forum	Special events initiated via members of a forum, e.g. annual meeting of forum members
Private meeting	A one to one meeting in a private context, e.g. in a café etc.
Lecture/Congress	Special events to topics related to a disease, organised by a self-help organisation, health insurance, physicians or other organisations.
Physician	People meet each other at a physician.
Organisational meeting of VCHC	Meetings that are initiated by the operators of a VCHC, e.g. strategic meetings etc.
Misc (e.g. by fortune)	Everything else

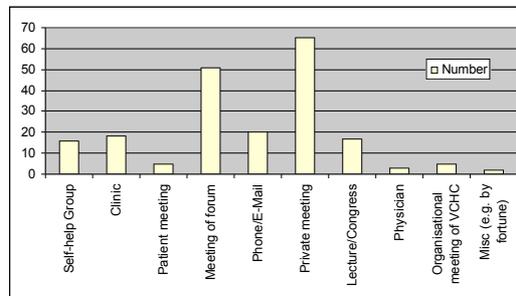Let us analyse the use of the above mentioned communication channels

Fig. 3. Number of "real world" connections

The most connections of members to other members of VCHC are established by private meetings and meetings of the forum (cf. Fig. 3). Most of the private meetings were initiated by establishing contact via phone or e-mail. The number of connections done by phone and e-mail are connections that are just established through this channel.

We analyse the gender specific use of communication channels to establish connections in the offline world (Fig. 4).
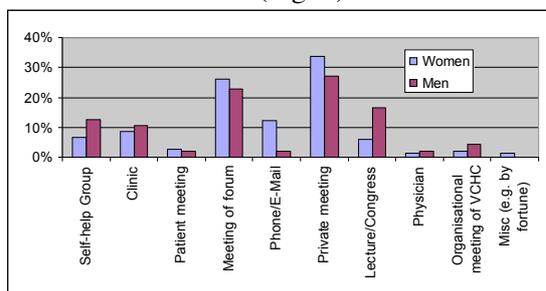

Fig. 4. Distribution of "real world" connections – considering gender

Again the most frequented connection channels are private meetings and meetings of the forum. Women establish more contacts via phone and/or e-mail. Men establish more contacts within self-help groups and on congresses. We observe that the greatest differences between men and women are that men establish connections in lectures and congresses. Women establish their connections in forum meetings, private meetings and through phone and e-mail.

The loose connection between members that know other members from self-help groups to the rather high number people are going to self-help groups might have several reasons. Mostly, and this have interviews with operators of VCHC shown, the self-help groups are not integrated in VCHC, sometimes by a loose connection (list of self-help groups) and sometimes by a tighter but not integrated connection over a self-help organisation. It is always seen as two different "worlds" and none of the parties really thought about getting a tighter integration of the offline and online world. In the next three subsections we analyse the data according to different roles: age, time of membership and the time the people are affected by their disease [4].

Age – until 25 years and older than 55 years

In this section we analyse the data w.r.t. the age. Note that we are interested in the differences between "young" and "old" VCHC members. We consider people younger than 25 years and people older than 55 years.

Table 7. Offline / online connection – considering age

	until 25 years	older than 55 years
Do you join meetings of self-help groups (SHG)?	yes 30%	yes 62%
Where do you feel more comfortable? VCHC / the same / SHG	30% / 67% / 3%	28% /57% / 15%
Do you know other members in real life?	yes: 39 %	yes: 74%

Older people join twice as often self-help groups as younger people do so (cf. Tab 7). This is also reflected by the work of [2]. 74% of the older VCHC members know other members in real life. For the younger members the percentage is only 39%. I.e. personal relations are more important to older VCHC members. This might be due to the fact that older people had the opportunity to build up their network for a longer time.
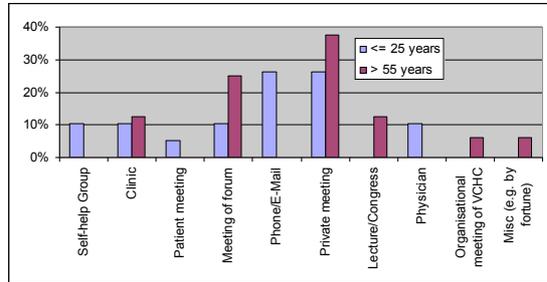
Fig. 5. Distribution of "real world" connections – considering the age

Younger people know more people from self-help groups (cf. Fig. 5). None of the older people reflected that they know other members of the VCHC from self-help group. This is rather surprising because older people join more often self-help groups. Note furthermore that phone and e-mail is the most common channel to other members for younger people. For older people meetings established by the forum and private meetings are in the main focus. I.e. younger people are more interested in social relations to complement the VCHC. Older people seem to be more interested in some information and do their social networks on such occasions.

Time people affected by the disease

In this section we analyse the data w.r.t. the time people are affected by their disease. In the focus are the short term affected, less than 1 year and long term people affected, more than 20 years. Tab. 8 lists general issues.

Table 8. Offline / online connection – considering time people are affected by the disease

	until 1 year	more than 20 years
Do you join meetings of self-help groups (SHG)?	yes 46%	yes 65%
Where do you feel more comfortable? VCHC / the same / SHG	42% / 58% / 0%	41% / 59% / 0%
Do you know other members in real life?	yes: 25 %	yes: 44%

For short term affected people self-help groups are not that important than it is for long-term affected people. Nearly twice as much of the log-term affected people know other members of the VCHC in real life than short term affected people do.
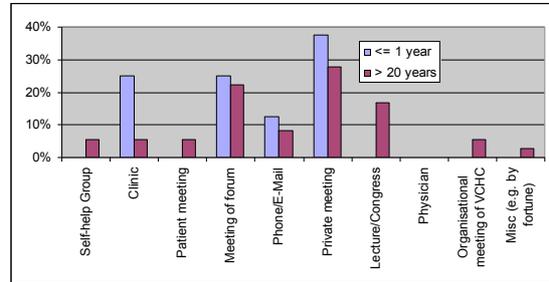
Fig. 6. Distribution of "real world" connections – short-term and long-term affected view

There are three important channels for short term affected people to know other members in real life (cf. Fig 6.). First of all they get known to each other in clinical institutions. They are actively looking for social contacts and they get them in the meetings established by the forum and private meetings. For long term affected people the social contact is also important but beside that they are also interested in new information concerning the disease e.g. at health related congresses.

Time people are member of a VCHC

In this section we analyse the data w.r.t. the time people are member in the VCHC. We analyse members that are member for less than 6 months (newbies) and experienced members that are member longer than 36 months. Tab. 9 lists some general issues.

Table 9. Offline / online connection – considering the duration of membership

	until 6 months	more than 36 months
Do you join meetings of self-help groups (SHG)?	yes 44%	yes 63%
Where do you feel more comfortable? VCHC / the same / SHG	37% / 57% / 6%	37% / 55% / 7%
Do you know other members in real life?	yes: 32 %	yes: 37%

The values are similar beside the fact that it is more important to experienced members to join self-help groups than it is for newbies.
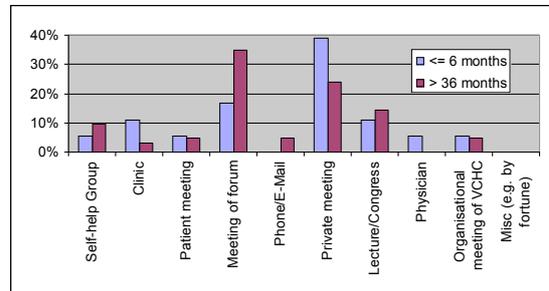
Fig. 7. Distribution of "real world" connections – newbies and experienced member view

Two aspects are interesting (cf. Fig. 7). First, the major connection channels for newbies (about 50%) to get known to other members are private meetings, searching for personal contacts. Second, for more experienced members another kind of social event is important, the meetings that are established by the forum (Meeting of forum).

6. Summary

The objective of our research is to find out which e-services eventually benefit virtual communities of patients. This paper presents results from an empirical study on success factors for virtual communities of patients. Success factors comprise e-services and issues in communication design and community management. We analysed the integration of the offline and online world w.r.t. different roles of VCHC members.

The third result is the specific needs for particular subgroups of a community for e-services and for community management. We look at the need of newbies and experienced members and short-term affected and long-term affected patients. The data sample suggests that health related communities fail to attract the newly diagnosed, that they do not very well in keeping and activating members as there is no correlation between the time of membership and the people are affected by the disease.

We expect that the different groups need different kinds of e-services. The study gives results on what kind of e-services the various groups think to be important to them and, in fact different kinds of e-services are needed for the different status groups.

Table 10. Summary on connection channels (10% <= **O** < 20% <= **X**)

	Self-help Group	Clinic	Patient meeting	Meeting of forum	Phone	E-Mail	Private meeting	Lecture Congress	Physician	Organisational meeting of VCHC	Misc (e.g. by fortune)
young	O	O		O		X	X			O	
old		O		X			X		O		
short-term		X		X		O	X				
long-term				X			X		O		
newbie		O		O			X		O		
experienced	O			X					O		

Entries in Tab. 10 with an "O" indicate that 10% of the members with the associated role know other members based on the communication channel. Entries in underlined in grey and with a "X" indicate that at least 20% of the members with the associated role know other members based on the communication channel. The most popular channels are meetings initiated by the forum (that means in some sense by the VCHC itself) and private meetings. Note the wide spectrum of communication channels used to complement VCHC and the intensity of the use of these channels. I.e. a good strategy for VCHC needs to integrate these channels. New e-services might be useful in providing a richer communication experience.

7. Discussion

We conclude that a tighter integration of the offline and online world benefits VCHC and SHG. The integration of different communication channels is important to members and in contrary to the view of operators of VCHC, SHG and VCHC complement one other. An enhanced integration does have an impact to the bonding of the VCHC. There are meetings organized by the forum (or VCHC) as a special event. This can be an annual meeting or a more local meeting to a certain region. Both need a special event management that supports to setup such events. This starts by identifying the need of such a meeting, planning the event, announcing it and perhaps reflecting the event again within the community. So the VCHC mirrors the offline event and this enhances integration. Assume that the meeting has a local character, a localisation service that allows inviting especially the relevant target group, w.r.t. area codes etc might be helpful. Such new services and design of the platform are also useful for private

meetings – the second important way to integrate online and offline world. E-mail and phone conversations can lead to private meetings.

This has implications for the design of e-services. A user profile enhances the trust as Leimeister et. al. [11] showed. A user profile might have two positive effects to a VCHC: to enhance the trust within the VCHC and to enhance the bonding to the VCHC. Such profiles prerequisite for e-services finding matching members.

Many of the participants are joining on a more or less regular base self-help group, but just 10% of the participants know them also in the VCHC. This illustrates that the integration of the offline and online world not just has to be established on a personal level between members but also on an organisational level. That means, it might be positive to talk within the VCHC about self-help groups and their advantages and on the other way round talk within self-help groups about the VCHC. If at least the leaders of self-help groups can be involved in a better way within the VCHC, e.g. administrate the dates of the self-help group meetings, foster reports of the topics discussed within the self-help group meetings etc., this could increase the visibility of the self-help groups within the VCHC.

The next step in this research is to design such e-services. Second not all of the VCHC that are part of the survey support so called forum meetings. There are VCHC that initiate such meetings on a regular basis and there are other VCHC that do not have any forum meetings (announced in the forum etc.). Adequate e-services need to be designed. Further research has to be done to get more insights on which channels are important and useful to support via a VCHC.

Concerning generalization of the results we found that VCHC are a very special kind of virtual community in the way the community use e-services and the importance of interaction and information for the social network of a community. The main channels the VCHC members use to know other people in the "real world" are anything but special to VCHC (cf. Tab. 10). They use private meetings or meetings initiated by the forum as the most important one. So the result might also be of interest to other communities that want to strengthen their communities by a better integration of the offline and online world.

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9. References

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