

Health Vlogs as Social Support for Chronic Illness Management

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Studies have shown positive impact of video blogs (vlogs) on patient education. However, we know little on how patient-initiated vlogs shape the relationships among vloggers and viewers. We qualitatively analyzed 72 vlogs on YouTube by users diagnosed with HIV, diabetes, or cancer and 1,274 comments posted to the vlogs to understand viewers' perspectives on the vlogs. We found that the unique video medium allowed intense and enriched personal and contextual disclosure to the viewers, leading to strong community-building activities and social support among vloggers and commenters, both informationally and emotionally. Furthermore, the unique communication structure of the vlogs allowed ad hoc small groups to form, which showed different group behavior than typical text-based social media, such as online communities. We provide implications to the Health Care Industry (HCI) community on how future technologies for health vlogs could be designed to further support chronic illness management.

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1. INTRODUCTION

Researchers have long examined social media, such as online forums [Love et al. 2012; Welbourne et al. 2009], list-servs [Rimer et al. 2005], and blogs [Miller and Pole 2010], as places for peer-patient social support. Video blogging (vlogging) has been described as activities including text-blogs that have links to videos [Parker and Pfeiffer 2005], “blogs created in video rather than textual form” [Molyneaux et al. 2008], and a series of videos on a video-sharing social media website [Freeman and Chapman 2007]. Health video blogs (vlogs) have also emerged as various organizations and individuals produce

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vlogs containing health-related materials for patient support. Examples include videos of patient interviews about their experience, health professionals explaining consequences of certain treatments and strategies for prevention, or health promotion videos. Researchers found that these health vlogs can impact patients' psychological health [Song et al. 2012], promote health education for youth and young adults [Norman and Yip 2012], and improve health information literacy [Greenberg and Wang 2012]. This research trend suggests that health vlogs have great potential to improve patients' wellness and their ability to self-manage their disease.

Although researchers have studied organization-initiated health vlogs for health promotion and patient education, few researchers have examined the impact of patient-initiated health vlogs as tools for social support, especially the relationship among viewers and vloggers and the unique offering of the video medium for supporting health. Findings that 71% of online Americans used video-sharing websites in 2011 [Moore 2011] and that patients use social media as part of their illness management [Ohno-Machado 2012] suggest the importance of understanding the implications of health vlogs, specifically how to design vlogging tools to support the health needs of an expanding user population.

In this article, we present our study with 72 health vlogs on YouTube. The vlogs were created and uploaded by users with HIV, diabetes, and cancer. We also analyzed the 1,274 comments posted to those vlogs. We discuss what motivated people to post health vlogs and how comments reveal the unique kinds of support that health vlogs facilitate among vloggers and commenters. We end with a discussion of the implications for social support among vloggers and viewers in health vlogs for chronic illness management.

2. RELATED WORK: ONLINE SOCIAL SUPPORT AND VIDEO BLOGS FOR HEALTH

2.1. Social Support in Social Media Environments

Cohen [Cohen et al. 2000] showed that social support promotes health by protecting people from the adverse effects of stress (i.e., through stress buffering). This notion of social support comprises of informational (e.g., strategies and advice), instrumental (e.g., giving a ride, providing food), and emotional support (e.g., sending prayers).

Increasingly, networked social media environments provide venues in which such support can easily occur among peers. A systematic review of social media for health communication found the benefits of social media to be (1) increased interaction with others; (2) readily available, tailored, and shared information; (3) increased accessibility and widening access to health information; and (4) peer/social/emotional support [Moorhead et al. 2013]. Other studies saw benefits of peer social support in online health communities for specific populations, such as among cancer patients [Fogel et al. 2002], diabetes patients [Huh and Ackerman 2012], and the adolescent population [Love et al. 2012]. Numerous websites, such as [patientslikeme.com](#), [curetogether.com](#), and [WebMD.com](#), have provided online health communities where patients and caregivers can share support with one another.

Researchers observed various effects of informational and emotional support on health and community participation. Welbourne et al. [2009] found that the exchange of emotional support was positively related to the sense of virtual community, while also observing that informational support was negatively related to the sense of virtual community. Wang et al. [2012] found that emotional support in a cancer community played a major role in continued participation of members, whereas informational support did not. On the other hand, Huh and Ackerman [2012] presented the importance of informational support in online health communities for addressing individualized problems. Similarly, Hartzler et al. [Hartzler and Pratt 2011] found patient expertise to be an essential part of social support [Civan-Hartzler et al. 2010]. In addition, getting

help from peer patient mentors has been clinically proven to be far more effective than clinician mentors [Heisler et al. 2010].

Literature has shown the effectiveness of social support in social media environments, although the discussion has been mainly in the context of online health communities. Social support in the context of patient-initiated video blogs has been under-explored. Here, we discuss further how the literature examined the use of video blogs and blogs for health.

2.2. Blogs on Health

Both text-based blogs as well as vlogs have been used in the health domain. In text-based health blogs, researchers found social support to be a critical element. A study showed that cancer patients emotionally benefited by sharing their experience through blogs with other patients [Chung et al. 2010]. A study of young women who have cancer found that illness blogs helped patients express emotions, exchange information, and share social support [Keim-Malpass and Steeves 2012]. Ziebland and Wyke [2012] argued that reading and hearing others' accounts of their own experiences of illness will remain a key feature in all aspects of e-health.

Sundar et al. [2007] further characterized text-based health blogs. They found that health blogs are mostly written by young (20–30 years old) women who reveal personal identifiers more so than males, write mainly for themselves but are aware of the audience, and welcome their audience's feedback. These bloggers also explored multiple identities through blogging. The study further found treatments and coping to be the dominant content. Their style was often emotional in nature.

Although researchers have long discussed the aspect of social support in patient-initiated text-based health blogs, patient-initiated health vlogs have been under-explored. Health vlogs have been primarily studied as a tool for health promotion and patient education, often led by large organizations. The Kaiser Family Foundation used vlogs to educate young people about HIV prevention and testing [Hoff et al. 2008]. Similarly, *Redbook* has offered a vlog series among women with infertility problems¹, and Patient Voices in the New York Times² and Healthtalkonline.org have offered first-person accounts of various challenges patients cope with throughout disease management. The National Network of Libraries of Medicine created the Healthflicks project to target health information literacy among urban teens through the creation of web videos [Greenberg and Wang 2012]. The Youth Voices Research Group introduced interactive blogging, photographic elicitation, and video documentaries to help young adults explore health topics around tobacco use, mental health, and other issues [Norman and Yip 2012].

Researchers have also employed vlog interventions to study their impact on health outcomes and literacy. One study found high levels of interest in user-generated video for health information gathering [Donnell et al. 2011]. A randomized controlled trial on a video messaging mobile intervention for smoking cessation showed participants' positive feedback on the social support obtained by the role model video messages. Findings from another study of YouTube videos on inflammatory bowel disease indicated that 83% of their collected videos contained either informational or emotional support, showing the potential use of videos shared online among patients as social support [Frohlich and Zmyslinski-Seelig 2012].

Researchers also have begun to examine user-generated vlogging practices as a form of social communication in general [Warmbrodt et al. 2008; Christian 2009] and for health-related interests, such as hearing disability [Hibbard and Fels 2011] and

¹<http://www.redbookmag.com/health-wellness/advice/infertility-blogs>.

²http://www.nytimes.com/interactive/2009/09/10/health/Patient_Voices.html.

smoking [Freeman and Chapman 2007]. In our own previous work [Liu et al. 2013], we described how health vloggers attempted to establish connection with their viewers through various creative health vlog genre production. We identified genres in health vlogs: teaching, personal journals, self-documentaries, and video compilations. We also found that vloggers used nonverbal cues as an attempt to connect and build rapport with the viewers. Other actors and background captured as part of the vlog can also facilitate sharing of “in-the-moment” and the context of the vloggers’ situation.

The video medium allows for high personal information disclosure [Bruce 1996], which suggests new kinds of phenomena around health vlogging, where viewers and vloggers can establish unique types of supportive relationships. For this article, we build on our previous work, as well as on the existing literature to further examine motivations for health vloggers posting health vlogs, the viewers’ reaction to the vlogs, and the relationships that the vloggers and viewers can form together, one that is unique to health vlogs when compared to text blogs and other social media. We examine design implications for the Health Care Industry (HCI) community in further augmenting health vlogs as a tool for social support in chronic illness management.

3. METHODS: DATA COLLECTION AND ANALYSIS OF YOUTUBE VIDEOS

3.1. Data Collection

In this study, our primary aims were to understand how chronic-illness health vlog users—the vloggers and the commenters—exchange support and what unique role the video medium plays. By answering these questions, we can provide recommendations for how the HCI community can further augment health vlogs for enriched support for chronic illness. Our specific research questions included: (1) How do commenters react to health vlog content? (2) What does the relationship among vloggers and commenters look like? (3) What is the stated motivation of health vlogging? (4) What is the uniqueness of a video medium for supporting health vlog users?

To examine our research questions, we chose three chronic diseases that require self-management activities over time: human immunodeficiency virus (HIV), diabetes, and cancer. We chose these three diseases because (1) they are prevalent enough for us to collect representative data, (2) they differ in self-management strategies used, and (3) they have different levels of social stigma.

We considered all forms of diabetes and cancer. Using YouTube’s relevance-based search mechanism, we used keywords “<disease name> blog” to retrieve the search results. We received 2,090, 2,500, and 12,900 search results for HIV, diabetes, and cancer, respectively. We narrowed down the list to a set of vloggers who met all of the following inclusion criteria: (1) the vlog title contained words directly related to diabetes, HIV, or cancer (e.g., “blood sugar” for diabetes and “chemotherapy” for cancer); (2) the vlogger confirmed that he or she was diagnosed with the illness either verbally in the video or written in the caption; (3) the vlogger was the diagnosed patient and not an institution or organization; and (4) the vlogger had at least two vlogs posted considering our sampling strategy (described later). We chose these criteria because many videos uploaded by an institution are professionally edited and scripted, but we were interested in looking at what people choose to portray in their own vlogs.

Based on the criteria, we selected a total of 36 vloggers (the first 12 vloggers for each disease). For each vlogger, we analyzed their first and last health vlog posted (72 vlogs total). We chose to collect the first and last post for two reasons: (1) Every vlogger, even those with only two vlogs, will have first and last vlogs, and (2) we wanted to understand how the vloggers’ experiences might have changed over time. We also collected all 1,274 comments posted to those vlogs and textual descriptions around each vlog. Table I shows information on each disease vlog group, as well as the counts

Table I. Descriptive Data for Each Category of Vlogs

	HIV	Diabetes	Cancer
Sex	12M	9M/3F	8M/4F
Median age (Min/Max)	27 (21/51)	33 (15/75)	38 (25/49)
Median # of videos of a vlogger (Min/Max)	46.5 (2/150)	14 (2/1,027)	23 (6/197)
Median # of views of a vlogger (Min/Max)	37,180 (273/370,444)	5,441.5 (570/313,235)	14,808 (258/341788)
Median # of subscribers (Min/Max)	232.5 (1/1,457)	21 (4/405)	22.5 (1/505)
Total counts of vlogs that had comments	22 out of 24	12 out of 24	17 out of 24
Total comments (Min/Max)	1,108 (0/305)	42 (0/8)	124 (0/24)
Total unique commenters (Min/Max)	607 (0/187)	36 (0/8)	108 (0/21)

of comments and commenters. We changed the names of the vloggers throughout the article to respect people's privacy.

We applied for approval from the University of Washington and Michigan State University's Institutional Review Board and received letters from both institutions stating that our study is unregulated by the IRB because our data are publicly available.

3.2. Analysis: Vlogs and Comments

From the collected vloggers, we transcribed each vlog with timecodes, captured representative images for each scene change, and recorded the textual description of the vlog and comments posted to each vlog. Each of three coders (first three authors) separately analyzed six vlogs and their corresponding content (transcribed audio of the video, captured images, and textual descriptions of the vlogs but not the comments) for each disease, resulting in 18 videos of nine unique users in total to develop descriptive codes and open codes [Strauss and Corbin 1994] as a group. The resulting descriptive codes focused on the following attributes: basic information about the vlog (title, post date, vlog length, caption), demographical information about the vlogger, medical information about the author (disease timeline, emotional stage), visual information (video editing, scripted, location), and other information that describes the different styles of authors' performance and attitude, as well as the way stories are presented (attitude, message of the video, intended audience, purpose). The open codes at this stage were quite primitive because we focused on identifying any signs of support exchange.

Next, each coder continued to develop the open codes to analyze 18 more vlogs each, for a total of 54 in this round (72 in total, including the 18 to develop the coding scheme). We iteratively developed the coding scheme by continuously revising the codes, merging them, and then generating subsets of codes as we found common and contrasting themes.

For analyzing comments, all three coders independently analyzed a total of 21 comments coming from three vlogs (each from HIV, diabetes, and cancer vlogs) using open coding. The coders shared the codes and negotiated on the codes to be used for the remaining data. The larger categories of the resulting codes included Vlogger supporting commenters, Commenter supporting vlogger, Commenter sharing, Hate comments, Multiple Worlds (e.g., using multiple social media environments), Self-identifiable information, Spam, and Vlogger-commenter connection. We then assigned all 1,274 comments to the coders, where each coder had approximately one-third of the total data. After the analysis, the coders together went through a subset of the data to renegotiate the codes and rationale for coding. When applicable, coders went back to their assigned data and revised the codes for consistency.

Table II. Categories of Vloggers' Stated Purpose for Why They Post Health Vlogs, by Disease Type

Categories	HIV (% among all HIV vlogs)	Diabetes (% among all diabetes vlogs)	Cancer (% among all cancer vlogs)	Total (% among all vlogs)
Journaling	9 (38%)	5 (21%)	20 (80%)	34 (47%)
Self-reflection	5	3	4	11
Documentation	2	0	2	4
Update	2	2	14	18
Helping others	14 (58%)	17 (71%)	3 (13%)	34 (47%)
Educate	6	11	3	20
Encourage	4	3	0	7
Inspire	4	3	0	7
Responding to others	1 (4%)	0 (0%)	0 (0%)	1 (1%)
Entertaining	0 (0%)	2 (8%)	1 (4%)	3 (4%)
Total	24	24	24	72

The three coders then came together to perform an affinity diagram analysis [Beyer and Holtzblatt 1999] in which we collaboratively grouped the codes that emerged from the descriptive coding and open coding of the video and comments. Affinity diagramming provided an appropriate way to converge multiple codes and coders' interpretations of the data because it allowed us to (1) find salient, common themes, as well as contrasting themes across the codes produced by multiple coders; (2) identify any common breakdowns in vlog use; (3) understand the spatial layout of various complex relationships among the codes; and (4) identify main problems needing design solutions. Accordingly, using affinity diagramming helped us both to examine support exchanges and new phenomenon in health vlog use as well as to derive design implications.

4. VLOG ANALYSIS RESULTS: WHY HEALTH VLOG AND WHY VLOG?

In this section, we first describe the vloggers' stated reasons for why they vlog. We then describe the uniqueness that the video medium brought to social support in the health vlogging practice. We will use HIV#, DIB#, and CAN# to refer to each vlogger with HIV, diabetes, and cancer, respectively.

4.1. Purpose of Health Vlogging: To Help Myself and to Help Others

Using information from what the vloggers described at the beginning of their vlogs and in the written vlog descriptions, we found that the majority of the reasons for vlogging was to help oneself through journaling and reflection and to help others (see Table II).

4.1.1. Journaling for Self-Help. Through their health vlogs, vloggers shared self-reflection of their illness experience, documented events for personal records, and updated their status with their significant others. For instance, HIV6 wrote a letter to HIV and read it aloud to the camera (HIV6b). In his letter, he described HIV as a friend who helped him live longer and focus on his life:

Dear HIV, we had to make some arrangements since we met two years ago. Being with you was the biggest nightmare. Since our relationship began, I focused on what I lost, my life. Because of your sister AIDS we bully you, stigmatize you, even in our own community. We as a world don't understand you. We are the blame to have hatred against you.

For all the mankind your sister has created for you I apologize. Thank you for getting my life back. Should you be cured, I am sure you will be fine. Here is to our life together, [HIV6]. – HIV6b

Similar to HIV6, other vloggers reflected on their past diagnosis experience, as well as with various struggles around social stigma, social life, dealing with pain, dealing with workplace, and emotionally staying strong. For instance, CAN6 reflected on the emotional struggles of going through recurring cancer:

It's going to be a hard waiting period. It's all about ups and downs, really, isn't it? You just get over one thing, then you find out you got a tumor, then you get told you're going to have it removed, then you get told a procedure of how it's going to happen, then you get told we're going to check if you got another one. It's a bit shit really, isn't it? – CAN6b

Although CAN6 had focused on letting out his emotional struggles, DIB11 shared the positive things that have come out of her having diabetes:

I can focus on some of the positive things that have come out of [having diabetes]. Positive #1, it's taught me to be more organized because I have to plan more. Positive #2, it's taught me a lot more about nutrition and how the body works to control blood sugar. It's made me appreciate a lot more how important it is to take care of your health. Positive #3, more health checks. – DIB11b

Vloggers also updated the treatments they had just finished and mentioned future treatments and tests. Through these updating activities, vloggers made personal records to remind themselves of what they had accomplished and what future events were left on their treatment plan. For instance, after a breast mastectomy surgery, CAN4 shared her status that her surgery went well. She then shared the emotional struggles she had to go through, emphasizing her divorced situation and issues around caring for a child while being sick, weeping as she shared the information.

We observed differences among the three disease vlog groups. The majority of cancer patients' stated purpose for health vlogging fell into the journaling category (80%). HIV vlogs had more journaling vlogs (38%) than did diabetes vlogs (21%). However, HIV and cancer vlogs had different focuses within journaling. HIV vlogs tended to focus on self-reflection, which allowed the vloggers to reflect on their disease as they shared both their past experiences around diagnosis and their social relationships. On the other hand, most of cancer vlogs focused on updating about vloggers' physical and mental health statuses. Cancer vloggers stated they wanted to create a "personal record" while easily giving updates to their loved ones.

4.1.2. Helping Others: Educate, Encourage, and Inspire. Although cancer vlogs focused on journaling, many HIV and diabetes vloggers stated helping others as their purpose for health vlogging (58%, 71%, respectively; see Table II). A type 1 diabetes patient (DIB5a) was educating himself to become a diabetic coach. He used vlogs to gain experience in teaching others. Similarly, DIB1b urged viewers with diabetes not to give into peer pressure when going to a party where unhealthy food would be served. CAN9 provided information about what one might expect when conducting intravenous (IV) therapy:

They need to warm [my arm] up so the veins pop up more and they can insert the IV easily. – CAN9a

In contrast to diabetes vloggers who predominantly shared tangible tips and strategies for blood sugar management, a dominant number of HIV vloggers attempted to help peers through encouragement and inspiration. For instance, HIV2 repeatedly said that he refused to "participate in this world" as he was lying on his bed staring into the camera 7 days after being diagnosed as HIV positive. However, in the vlog description, he wrote that he posted the vlog to show others that it gets better:

This was a video I made 7 days after I was diagnosed. I show this simply so others can see that it does get better. Hard to believe that this video was made 35–36 days ago. – HIV2



Fig. 1. Left: An HIV vlogger (HIV1) 7 days after his diagnosis. Right: One year later, HIV1 showing himself as an activist.

In HIV2’s last vlog, he held up a picket sign saying “I have HIV+” in front of the White House (see Figure 1). He had become an HIV activist a year after he uploaded his first vlog. HIV1 also confirmed his purpose of posting health vlogs as supporting peers, for those who “might have been going through the same thing that [he has] been going through.”

Presenting one’s struggle during illness management was a common approach that many HIV and cancer vloggers used to inspire others. They contrasted the worst moments—either captured through video in the moment or as they brought back the memories and talked about those moments with tears—with an often improved current situation. In this way, vloggers demonstrated that other patients at their worst moments could see a more positive future for themselves, as described by CAN11:

I want to do a documentary. I want to share my experience with the world, hope that other people can understand and learn from what I’ve gone through and what I’m going through. – CAN11b

4.1.3. Self-Help and Helping Others: Intertwined Activities. Although many health vloggers’ explicit goals were to help others or themselves, those two goals often worked as intertwined issues and not as dichotomous ones, as described above. The health vlogging activity demonstrated itself as a critical source of giving as well as receiving social support during chronic illness management. For instance, one cancer vlogger commented that her main vlogging purpose was to record her journal. However, she also said “walk this journey with me” and wished that peer patients would take something from her vlogs and apply it to their lives (CAN4a). CAN5 also said that she wanted to share with those who wanted to know what it’s like to go through cancer treatment. DIB5, who had said his purpose for the vlog was to educate individuals with diabetes, stated that his personal goal for the blog was to have personal accountability:

If I have to actually propose my diabetic frustrations and problems to others, I should theoretically be able to have it in better check. – DIB5a

Similarly, HIV1 was able to reflect on himself as he looked back into his past, contrasting the past with his present status. Such self-reflection could encourage not only himself, but also the viewers who might be going through similar situations:

First five years was a living hell. I remember being very self destructive with alcohol, sometimes with drugs, and just hurting myself more, because I felt like if I was going to die, I might as well give up. It was a rough time. But as you can see, 9 years down the road, I’m still sexier than ever, still muscular, but I can tell you it wasn’t easy. – HIV1a

4.1.4. Responding to Others and Entertaining. Other categories of motivation included *responding to others* and *entertaining*. In one vlog posted in response to others, HIV11 was upset at those viewers who left harsh comments saying HIV was not real:



Fig. 2. Examples of capturing in the moment: Top row: Documenting a chemotherapy visit. Bottom: Documenting facial expression before and after the HIV diagnosis.

I don't know what you plan on achieving by telling me that all this crap that [HIV] is fake, that the government cooked it up, that we're just making money... carry that shit to someone else's page.
– HIV11b

As we further discuss later, hate comments were prevalent in HIV vlogs. Vloggers responded to these comments through their vlogs as well as through comments.

A few vlogs fell into the entertaining category, in which vloggers generated videos for entertainment purposes, such as making a rap parody about diabetes or creating a raffle contest for viewers to participate in:

[spoof to Snoop Dogg's Young, Wild, and Free] So what we shoot up, so what we got needs, we keeping alive, the diabetic in me. So what we count carbs, that's how it's suppose to be, living with diabetes.
– DIB7b

4.2. The Uniqueness of Video for Social Support

Using a video medium gave users unique ways of delivering information and providing support among health vloggers and viewers.

4.2.1. Capturing in the Moment. Video provided vloggers with the ability to capture “in the moment,” delivering unfiltered context of a particular moment, often difficult to find in text-based blogs. Vloggers documented hospital visits, self-care practice, and diagnosis through video. Delivering context with such visual detail to peer patients or caregivers could provide information that cannot be easily found elsewhere.

For instance, videos provided viewers with additional context about the vlogger that viewers could potentially use to enrich their support toward the vloggers. CAN6 documented his hospital visit from the chemotherapy waiting room and then returning back home while sharing procedural information about the treatment and putting his experience into words (Figure 2, top). From this video, viewers could tell that the vlogger was alone during the treatment process. To this vlog, a commenter responded, showing sympathy for getting the treatment done alone:



Fig. 3. Examples of intense personal connection and show and tell. Top left: Vlogger crying as she talks about emotional struggle going through cancer treatment. Top right: Cancer vlogger explaining where her cancer is located. Bottom left: Diabetes vlogger showing how to make a low-carb drink. Bottom right: Diabetes vlogger showing how his heart rate monitor works.

Are you fully recovered now?!? So sad to hear that you were alone for most of the duration of your treatment. – Commenter, CAN6a

Similarly, HIV5 captured the moment of being diagnosed with HIV, starting with before going into the hospital and leaving the hospital after the diagnosis (Figure 2 bottom). HIV5 captured his facial expressions as well as how he felt about the diagnosis. To HIV5's video, a commenter shared his experience of being diagnosed, comparing his own viral load to HIV5's, and another commenter thanked HIV5 for uploading the inspirational video:

Thx for sharing your video. i just found out a month ago of my status with a 1 million VL [viral load]. 3 weeks later I was put on hiv medication. only on meds for 9 days now. hopefully the medication is working for mine. *hugs* – Commenter 1, HIV5a

Omg, you're so inspirational. Please do update us on your condition. Thanks for this – Commenter 2, HIV5a

4.2.2. Show and tell. Vlogs also allowed vloggers to use drawings, hand gestures, and props to deliver information effectively. Such information could come as useful informational support to the viewers who are patients and caregivers.

For instance, DIB7 demonstrated making a sugar-free cotton candy drink (Figure 3, bottom left), and DIB4 showed how his heart rate monitor works (Figure 3, bottom right). CAN12 videotaped the process of exchanging gauzes for wound healing. CAN7 drew a uterus and indicated where her cancer resides to explain the challenges of becoming pregnant while having uterine cancer (Figure 3, top right). To her video, a caregiver showed gratitude, stating that the information had been useful:

Thank you for the great information you are giving us. I have found it very helpful. My step daughter who is 17 years old is going through this now. – Commenter, CAN7a

4.2.3. Intense Personal Connection. When vloggers talked to the camera, they used pauses, eye contact, or humorous facial expressions as if they were talking to a real person. Some vloggers cried in front of the camera, creating an intense personal connection (Figure 3, top left). For these vlogs, commenters left highly empathic words.

For instance, when CAN4 shared her experience of going through cancer treatment and divorce (Figure 3, top left), a commenter left a message of encouragement:

=) you are so strong keep up the good work I LOVE YOU – Commenter, CAN4a

To which CAN4 responded:

Thank you sweetie. And for all your encouraging words throughout this frightening journey. And,... I love you more! ;) – CAN4

Health vloggers also created intense personal connections with one another. CAN3 posted a vlog in response to another cancer survivor's vlog. CAN3 stared at the camera silently for a while and said, "*There is nothing else I need to say. I feel for you.*" As she murmured the words, she paused, trying to repress tears.

4.3. Summary

So far, we described our findings around health vloggers' stated reasons for health vlogging and the value of using video- instead of text-based blogs, as evidenced by the commenters' remarks showing gratitude and expressing how they were inspired by the vlogs. Next, we further discuss our in-depth analysis of the comments to understand how commenters perceived health vlogs and how commenters and vloggers provide various social support mechanisms to one another.

5. COMMENT ANALYSIS RESULTS: WHAT DO THE COMMENTERS SAY?

In this section, we report our findings from analyzing the comments posted to the health vlogs that we examined in the previous section. Given the limited information coming from the comments, we first describe who the commenters were and what connection they had with the vlogger that potentially brought the commenters to the vlog. We then describe the kinds of activities that were happening among commenters and vloggers, followed by the role of hate comments in health vlogs and how health vlogs provided a place for community building among vloggers and commenters.

5.1. Who Are the Commenters?

In this section, we describe who the commenters to our surveyed vlogs were and the kinds of relationship and connection that commenters had with the vloggers.

We were able to infer limited demographic information on the commenters from their comments. Some identified their age (e.g., teens to 40s or 50s) and where they lived (e.g., Florida, Australia); some were students studying to become nurses, and some were educators for chronic illnesses. Commenters often revealed their religion (e.g., Christianity, Islam) as a source of connection. One cancer patient had mentioned in her vlog that she was a strong Christian. A commenter followed up with, "[...] *how are things? I have been following your journey. I am also a Christian cancer patient*" (CAN4b).

Vloggers and commenters related strongly when both had the same disease or were going through similar difficulties. Many of the comments indicated a type of implicit connection that commenters had with the vlogger.

5.1.1. Commenters Dealing with Same Disease. Some commenters expressed the relatability of the vlogger or the vlog's content because they had the same disease. A type 1 diabetes commenter noted, "*Wow, we have a lot in common! I'm also a T1, I'm 18 and*

was diagnosed when I was 7 & I have the exact same pump attached to me right now. Great blog! ^_^ (DIB1a). The experiences and information in the vlog were familiar to commenters with the same disease, thereby strengthening the connection between that commenter and the vlogger. Other commenters proposed novel ideas of disseminating important information to others by teaming up:

I have been looking for a few guys that are HIV positive in different parts of the world and I think that we could do a combined channel – Commenter, HIV5b

One vlogger (DIB3) explained how her friend's child who was recently diagnosed with diabetes was shy about wearing both a pump and glasses. She then showed a compilation of videos and photos from various diabetics who were also wearing glasses and a pump to show that it wasn't as bad as the child thought. Many commenters were touched by the vlog's message (DIB3b), especially those who also had diabetes and could relate to the child:

Thanks guys for all your help I have type 1 diabetes and I am on insulin and I wear glasses and thx again for all u gave my heart touching – Commenter, DIB3b

Another commenter expressed how inspiring the vlog was, indicating that she “smile[d] and shed a few happy tears” because she was a type 1 diabetic for 10 years as well.

Commenters shared their own experiences with the disease and offered hope for the vlogger. An HIV vlogger broke down in tears when he was first diagnosed. A commenter shared hope by commenting:

Bro, I can completely relate. I found out...sobbed like a baby... Things are much better now. Just continue to eat right, take your meds, exercise, take supplements, find support from love ones and be positive. A cure is going to come in our lifetime! – Commenter, HIV10a

Another commenter shared his experience as well:

I'm HIV+ just stay strong ad take your meds I'm 26 will be 27 in october and born with it and have a beautiful family so you can still live a healthy life – Commenter, HIV5a

A commenter who had non-Hodgkin's lymphoma shared her experience with a vlogger who had been diagnosed a month ago with the same disease:

I was diagnosed with NHL in December 1986 w/o much hope of surviving—2 doctors said 6mos to 1 yr, the Oncologist said up to 5. Surgery on Dec 26th. . .Chemo for 4 months. . .have been cancer free since then. God/Prayers and Attitude is the key – Commenter, CAN5a

5.1.2. Commenters with Different Disease. Although some commenters did not have the same disease as the vlogger, many indicated that although the actual disease was different, their emotional experiences were often similar. For example, one commenter said, “*I have had health issues (nothing like Cancer) but, just that makes me able to relate to you. It's nice to know that you do get sad and you don't pretend to be something you aren't*” (CAN4b). Others used their similar experiences as a way of showing the vlogger that they could still live a normal life:

i dont have HIV, but I am Hep C+, so i do know how it is. . . I found someone thats been with me for 3 years who is still Hep C-. . .had my 1st child this year, also negative. . . – Commenter, HIV10a

5.1.3. Commenters Who Are Fellow Vloggers. Commenters also turned out to be fellow vloggers as well. The fellow-vlogger commenters typically had the same disease. Many promoted their own vlog:

hey I love your video! I can really relate! i recently started a diabetes blog of my own and i would love if you checked it out and gave your opinion! thx! – Commenter, DIB1a

One commenter introduced himself as a fellow vlogger and pointed both the vlogger and other viewers of the vlog to his own channel (HIV5b).

We examined who the commenters were and the sources of connection they felt as they participated in health vlogs as commenters. Here, we describe what activities these commenters had with the vloggers and fellow commenters.

In the next few sections, we discuss how vloggers and commenters shared experience, knowledge, and advice, as well as emotional support in the comments. We also describe how a subset of commenters showed disagreement for the vlog content, which triggered other commenters to defend the vloggers, further eliciting supportive comments for the vloggers. These interactions among vloggers and commenters set up a solid ground for community building and social support.

5.2. Informational Support: Health Vlogs as a Platform for Sharing

The health vlogs and their commenting feature provided a platform for commenters and vloggers to share their personal experience, knowledge, and advice around the topic presented from the vlogs. The expertise shared was not necessarily directed to the vlogger nor to the commenters. We observed both commenters and vloggers thanking, challenging, or adding to the shared expertise through the use of comments. Commenters and vloggers also exchanged questions and answers as necessary to gain further contextualized information from one another.

5.2.1. Sharing Information, Knowledge, and Advice. In the examples given here, commenters and vloggers shared their knowledge around the disease, treatment information, advice, resources, and personal experience.

HIV5, in his vlog, stated that his viral load was 5.5 million at the time of his diagnosis. Commenter 1 responded to this information, questioning HIV5's health while comparing HIV5's viral load to his, which has only been 410 for the 2 years he has been HIV positive. Commenter 2 responded by clarifying that Commenter 1 may have a unique condition. Here, Commenter 2 provided his knowledge around a unique genetic condition that prevents HIV from becoming AIDS. Commenter 2 further advised Commenter 1 to monitor his viral load carefully:

If your viral load has held steady at 410 without meds, you are probably a rare individual known as an –HIV controller–, someone with a genetic makeup that allows you to prevent HIV from becoming AIDS. Just make sure to get tested every few months to be sure your viral load isn't increasing. If it does increase radically to a dangerous level, you need to start taking meds. – Commenter 2, HIV5a

Vloggers also triggered information sharing from the commenters by asking questions. DIB1 shared her experience with an insulin pump in one of her comments and further asked about a specific function of the pump:

I am 12 and I have a pink Animas pump! I switched about 2 months ago and I love it ^_^ Also what is a combo bolus? I woz playing around with my pump and realized this. What is it? – DIB1

A commenter responded to the vlogger's question with detailed instructions:

Your DEC (diabetes educator) should have helped educate you (or Animas Tech Support should have) on what a Combo Bolus is. you should also have received a large manual with your pump when it arrived, read it from front to back, then read it again. Combo can be used for foods that do not immediately affect your blood sugar (foods low on the glycemic index). combo's let you deliver a certain amount of insulin right away and a percentage of the total bolus over a chosen period of time later. – Commenter, DIB1a

Such information sharing also happened in the cancer vlogs. In CAN10b, the commenters were those going through similar stages of testicular cancer. This time, the vlogger shared with the commenters what to be careful of postsurgery:

My oncologist advised against working out heavily. . . can make things spread faster and further. gentle exercise is fine tho – CAN10

Commenters further provided resources that can be useful for vloggers and commenters, such as links to related informational videos (HIV11b) or ways to connect with other related societies, such as the Leukemia and Lymphoma Society (CAN5b).

5.2.2. Sharing Personal Experience. A unique type of help that peer-patients can provide to one another is sharing their personal experiences. As an example, a commenter showed appreciation for CAN10's shared experience. Furthermore, commenters on CAN10a's vlog shared their experience on diagnosing and treating testicular cancer. The commenter here thanked CAN10 for sharing his experience with seeing a doctor since the commenter can now understand what his brother might be going through:

Thank you so much for posting this inspirational video. My brother has recently had his operation to remove the offending testicle and has had a Chest X-Ray (clear) and a CT scan which were waiting the results for. I was so worried and concerned because like you, he didn't tell me or my parents until relatively late (after the op) but your explanation of how you felt and what you were going through has really helped me understand things better. Thank you. – Commenter1, CAN10a

This commenter expressed the value of experience shared by peers. Other commenters shared their own personal experience, which collectively would further help the vloggers and commenters understand the process of being diagnosed with testicular cancer and what it is like to go through treatments and surgery:

I think a LOT of us who have had testicular cancer put off going and seeing a doctor. . . It took me a solid 6 months after noticing a small lump to go see a doc. I really do hope you can go see someone soon though about it. You're not an idiot for not going to see your GP yet. . . Wishing you the best. – Commenter2, CAN10a

5.2.3. Further Contextualizing: Sharing Questions and Answers. The commenters and vloggers asked questions of one another to further understand one another's situation. For instance, commenters asked the vloggers if they had to do a stem cell transplant (CAN10b), which medication the vlogger is on (HIV10b), or how the vlogger contracted HIV (HIV11a). Vloggers responded to those questions, even those asking for highly personal information, such as when and how they contracted HIV (HIV12a, HIV4a).

5.3. Emotional Support: Support for Vloggers and Commenters

Compared to the informational support described so far, commenters and vloggers provided words and encouragements to support each other emotionally throughout the hard times as people dealt with chronic illness.

5.3.1. Commenters Supporting Vloggers. Commenters asked vloggers for updates and sent prayers and empathy. Sometimes, survivors of the same disease would leave encouraging comments for the vloggers. Vloggers showed gratitude and thanks for the support commenters gave them.

For instance, for CAN4 who has not been posting vlogs for many months, commenters left messages asking for updates. One example is shown here:

I hope you're doing better and can post a video soon. We are all praying for you! You're going to do fine, you seem like such a strong, wonderful woman. We are all learning so much from following your journey. God bless you, I respect the way you're handling this very much! – Commenter, CAN4b

This comment gives a representative example of commenters checking on vloggers to see how they are doing—this interaction shows something beyond commenters as simply viewers of the vlogs. The commenters have established a certain connection with the vlogger—enough to follow the vlogger and ask how the vlogger is keeping up with his or her illness. Commenters also frequently added prayers and empathy as forms of emotional support. We observed similar support in other illness vlogs:

my man. you need to be strong, love your first 2 videos, please make a new one soon, make a video about you, you are a great person – Commenter1, HIV5a

WHERE ARE YOU JOSH, PLEASE MAKE A NEW VIDEO, WE WANT TO SEE YOU AGAIN – Commenter2, HIV5a

Most importantly, fellow patients, caregivers, or anyone having gone through similar situations provided positive personal experiences that encouraged the vlogger:

I was diagnosed with NHL in Dec 1986 w/o much hope of surviving—2 doctors said 6mos to 1 yr, the Oncologist said up to 5. Surgery on Dec 26th, out of the hospital on New Years day. Chemo for 4 months (great weight loss program), and have been cancer free since then. God/Prayers and Attitude is the key. – Commenter, CAN5a

Hi Josh I'm Sarah and I'm HIV+ just stay strong ad take your meds I'm 26 will be 27 in october and born with it and have a beautiful family so you can still live a healthy life. I'm on Atripla – Commenter, HIV5a

HIV+ since 1992 and still here! – Commenter, HIV5b

In return, vloggers showed gratitude to their commenters, thus evidencing that vloggers were being supported by the commenters' encouraging words:

Thank you! That makes me feel so good to read, you have no idea. Thank you so much! I only hope that I can provide that same support in return – HIV10

people like you that are true friends make it great to get up every day – HIV7

Thank you all for your support! – CAN5

5.3.2. Vloggers Supporting Commenters. Commenters' comments to the vloggers, stating that the vlogger inspires and helps them, were strong signs that the vlogs provided support to the commenters. The following presents a few examples of many comments stating that the vlog has been their inspiration and help, regardless of the disease:

You're such an inspiration to HIV pos+ and HIV neg- people alike – Commenter, HIV10b

You are inspiring so many people by blogging. Stay strong, and know you are indeed helping others!!! – Commenter, CAN4b

It made me smile and shed a few happy tears. I have been type 1 diabetic for about 10 years, have had glasses for almost one year, and no pump yet, but that is my goal!! Thanks for posting this not only for that beautiful little girl, but all the other beautiful diabetics out there!! Thanks for making my day <3 – Commenter, DIB3b

Health vlogs provided a place for peers to “relate,” even for those who did not have the disease (Commenter, CAN4b).

Vlogs were more than just inspiration—they presented potential implications for public health:

You're very brave and it's so nice to see the message you're sending to people to practice safe sex. – Commenter, HIV5a

Knowing that commenters were getting support from the vlogs was also an encouraging experience for the vloggers:

WOW thank you so much it really means a lot to me when someone can take something from this and learn from it – HIV12

As observed from these examples, vloggers and commenters exchanged highly mutual and dynamic support.

5.4. Pushing the Social Circle

5.4.1. Hate Comments. As with any online social network application, some commenters disagreed with the video content or intentionally left hate comments. Hate comments working against the positive atmosphere of the vlog were often either collectively voted to be removed or flagged as spam by the author or YouTube. HIV vlogs had 94 hate comments (out of 1,104 total), whereas Diabetes and Cancer vlogs had none that we coded as hate comments. Instead, Diabetes and Cancer vlogs sometimes had comments that were not necessarily supportive of the video content. For instance, a commenter replied to a vlog about a pink lemonade recipe:

that is the grossest thing i've seen all day – Commenter, DIB7a

For HIV vlogs, commenters disapproving of video content or the vlogger mainly mentioned disagreements toward sex life, sexuality, life style, religious beliefs, or whether to take drugs despite side effects. The following is a typical example of a commenter who disapproves of the sexuality of the vlogger:

I praise your efforts, your kindness and sincerity - however homosexuality is a forbidden in the Holy Bible (Sodom and Gomorrah same story in the Quran), so is alcohol and so is pre-martial sex only difference is you chose to ignore it- In addition God in Islam is infinitely merciful and forgives all sins except one associating partners with him- not the same in the Bible! – Commenter, HIV10a

We also observed many hate comments presenting hostile forms of disapproval toward the vlogger:

Let all faggots die from HIV - it's their destiny! – Commenter, HIV6b

5.4.2. Forming a Territory against Hate Comments. The hate comments and comments disapproving of vloggers' lifestyles were not left unhandled. Vloggers and other commenters defended the vloggers by either debating with disapproving messages or sending supportive messages urging vloggers to ignore hate comments. In a way, the vloggers and their supporting commenters formed a sense of territory against the hate commenters.

For instance, vloggers defended themselves against hate comments either by removing the comments or responding to the comments:

[in reply to a comment flagged as spam] If you are not HIV+ nor are you a doctor, then there is no grounds for you to debate anything that I say, or do on MY video's. When you have walked in my shoes, and lived through MY experiences, then you may speak to me. When you have watched HIV+ people eat up the crap that HIV dissidents spew, and die from not seeking medical treatment, then you can debate me! – HIV11

In this vlogger's comment, the vlogger mentioned that the commenter cannot "do [anything] on MY video." This phrase highlights a territory that the vlogger is building against hate commenters. Similarly, other commenters drove away hate commenters or urged vloggers to ignore hate comments:

[in reply to a deleted comment] I would be mean, but that is just wrong. So I will say this nicely. If you don't want to watch this then why did you click it. If you didn't like it then don't comment. – Commenter, DIB6b

Thank you for posting this video. I am so sorry that you are going through this. It is tough to talk about. Pay no attention to the haters. You are very brave for putting this video out. God Bless you. May we find a cure for this horrible disease. – Commenter, HIV10a

Here, we present how rich information sharing as well as emotional support occurred not only between vloggers and commenters but also among commenters. Such interaction, together with territory building among vloggers and supporting commenters, set up a developmental ground for expanding their social circle.

5.5. Expanding the Social Circle

Vlogs played a role as a platform in which commenters and vloggers could continue to build connections using their shared interests (e.g., religion, disease experience, location, etc., as described in Section 5.1). Beyond simply interacting over the commenting feature, vloggers and commenters made personal connections, exchanged reciprocal help, and helped to expand the social worlds in which vloggers can participate.

5.5.1. Building Personal Connections. Commenters expressed sensing personal connections with health vloggers, regardless of whether the commenters had the same disease or not.

Many of the commenters found the vloggers' stories and experiences to be inspiring, which prompted commenters to become followers or even Internet friends. For example, one HIV commenter said that the vlog made her want to become friends with the vlogger:

So when I saw your videos, I had to subscribe to you and I want to be friends with you !!! – Commenter, HIV11a

In another case, the connection between the vloggers and their followers became apparent when a cancer vlogger's husband uploaded a final video to inform the viewers that the vlogger had passed away. Many of the vlogger's commenters expressed their sorrow:

I am so so sorry. I have been following [vlogger]'s journey and have been thinking about her so often, and praying for her] – Commenter, CAN1b

Another commenter commended the vlogger's personality:

She was a SPECIAL lady, and i only know her from her videos on here – Commenter, CAN1b

Not only did many commenters consider themselves followers of the vlog, but they also saw the vlogger as their Internet friend as well.

For commenters who are going through the same disease, especially for those who have a relatively hard time finding people in similar situations, health vlogs became places where they could relate to and get support from others:

Thank you so much! There's hardly anyone out there who is a teen who had diabetes and talks about it :D im 13 and im a type 1 :) – Commenter, DIB11a

Even those who ran into the vlog regardless of having the same disease felt a personal connection with the vloggers. HIV11's vlog helped change the commenter's view on his or her life:

Ok so I'm just up late at night and came across your video. I had no interest in it but my heart just said watch it and now i am on video like 4 and i want to thank u for changing my life in 15 min. – Commenter, HIV11a

Here is another example of an individual without the disease relating to the vloggers and what they are going through:

I just wanted to comment again. I have had health issues (nothing like Cancer) but, just that makes me able to relate to you. It's nice to know that you do get sad and you don't pretend to be something you aren't. Like you said, you're only going to get stronger from this experience. You are inspiring so many people by blogging. Stay strong, and know you are indeed helping others!!! – Commenter, CAN4b

As described in our findings with the vlog content, having a visual presentation of the vloggers' face allowed connection between the vlogger and commenter stronger:

You are amazing! I can see the disappointment all over your face. It reminds me of my face when I found out. I love you for your bravery & I hope you are doing better. Love & support always! – Commenter, HIV5a

5.5.2. Commenters Offering Help. Because of the personal connection they had, commenters even offered help or more tangible forms of support, such as tweeting the vloggers' video. Below are examples of commenters volunteering to help vloggers:

if you're willing to chat about this I'd be happy to catch you up with what I've been through and my own research and give you the run down in a way where you know – Commenter, HIV11b

if you ever need any advice hit me up. – Commenter, HIV12a

Commenters further suggested sustained relationships with the vlogger, either by following the vlog, exchanging emails (HIV5a), or even meeting in person (HIV10a) and offering to introduce him to people he could be a mentor to:

My Friend, You rock! I wish you to come to Toronto and meet me. I have connections to a group that you can be a mentor for. – Commenter, HIV10a

A fellow patient offered to give help, given his experience:

I too am HIV Positive and lived with it for over 15 years. Seems people withdraw after being diagnosed with HIV, Cancer and many others. I am healthy and love all people. I show people what I did to live a happy fulfilled life. You are welcome to contact me through my website if you like. I would love to talk to you. Beautiful heart felt video. – Commenter, HIV10aa

A fellow vlogger also reached out to help:

You look strong mate but if you ever need help i have a you tube site [YouTube ID] and i would love to talk to you – Commenter, HIV5a

Commenters also showed that they would follow the vlog, showing empathy and attention—the emotional support that vloggers needed:

you are great in all aspects you just got a new subscriber. – Commenter, HIV3a

5.5.3. Health Vlogs Sparking Community Building. Commenters not only attempted to build personal relationships with the vlogger, but also among commenters themselves. Commenters asked for each other's email addresses and updates, thanked each other, and shared concerns. Commenters showed a sense of community building around the vlog. The following shows a conversation among commenters of a prostate cancer vlog (CAN10a):

Commenter 1: I'll start chemo in a week :(

Commenter 2: [one month later, in reply to commenter 1] How is it going?

Commenter 1: [three months later] Hi there, sorry for late reply! I have already finished chemo. . . my 1st one was 3 weeks ago. Im fine, get tired easily but my hair is growing back :O

Commenter 3: [in reply to commenter 1] Live strong :)

In this exchange, over many months, commenters asked and shared updates. Another commenter came in and asked a question about the specific procedure of prostate cancer surgeries, and a number of commenters answered the question. The exchange here resembled that of a community forum, where community members ask questions, share their experience, and exchange support. The following example shows that the support exchanged in the health vlogs was not just between vloggers and commenters, but also among commenters as well:

Please, if anybody needs answers or just needs to talk about this, I am all here. Lets fight this together and make other people check themselves, since this illness is much easier to fight when found out earlier. I wish the best to all of you! – Commenter, CAN10b

Commenters even discussed, in the absence of the vlogger, how the vlogger is doing. To a commenter's question asking how a vlogger was doing, a commenter shared her finding about the vlogger on her Facebook page:

[The vlogger] looks very well- happy on her face book page. Her last name is [anonymized], was starting to wonder if she was doing ok. Glad to see she is well – Commenter, CAN4b

The fact that commenters were sharing vloggers' health status without the vlogger present showed that the health vlog was not simply a place for commenting about the vlog itself. Rather, it was an anchor that the vlogger provided, by which commenters could connect, share information, and support one another.

5.5.4. Health Vlogs Expanding into Multiple Social Worlds. The interactions among vloggers and commenters involved places beyond YouTube, such as other organizations and social networking websites. Health vlogs also involved commenters from the vloggers' real-life family and friends, which made the health vlogs not just a virtual social place but also a place involving social connections from both offline and online worlds.

For instance, a commenter suggested that DIB7 post his videos on TuDiabetes, a social network site for "people touched by diabetes" (www.tudiabetes.org). Commenters at a cancer vlog shared website addresses that provide information for cancer patients. Commenters asked whether vloggers had a Twitter account and notified that they microblogged the video. One health vlogger was asked to be on a radio show:

Hello I am a radio show host for [anonymized] radio. We are doing a show about getting tested for HIV awareness, would you be interested in sharing your story? Please feel free to email me at [email address] or inbox me for my number. – Commenter, HIV5a

Not only did online worlds collide within health vlogs, but the vloggers' family and friends from real life also became part of the conversations in the health vlogs. A commenter, supposedly a close friend from real life, directed a supportive comment at HIV12a:

Commenter: [Vlogger's name], you know I love you. You're a precious gem, and I'll always be in your corner.

HIV12: [Commenter's name], how are you I miss you man how are you?

Commenter: I'm well, and I miss you, too! *HUG*

The vlog became a place for social networking among friends in common:

Subscribed! Thanks for sharing your story! A friend of Kengi is a friend of mine! (Commenter, HIV11a)

Health vlogs, together with their commenting features, presented themselves as a dynamic social places where vloggers and commenters share informational as well as emotional support, sometimes push each other's comfort zones, and where multiple social worlds collide.

5.6. Summary

In this section, we described how commenters and vloggers shared dynamic social support, both informationally and emotionally. Health vlogs, as distinct from text blogs due to the vlogs' rich content, extreme personal connection between the vloggers and the commenters, and deanonymized experience-sharing, provided a platform on which communities of interested vloggers and viewers could build social connections and help one another.

Next, we briefly describe breakdowns and workarounds that vloggers created to use health vlogs as places for social support before discussing implications for health vlogs as social support.

6. STRATEGIES IN USING HEALTH VLOGS AS SOCIAL SUPPORT

Since its early development, YouTube has incorporated many innovative features, such as adding captions and annotations that allow viewers to read through a transcript as they watch the video or get additional information through annotations. However, we observed several challenges in using YouTube as a platform and noted how health vlogs and health vloggers had to develop strategies to overcome these challenges. Examining vloggers' appropriation practice allowed us to uncover health vloggers' unmet needs in using health vlogs as a form of social support.

6.1. Challenges in Information Organization

Many vloggers documented their progress in their illness over a series of vlogs. However, vloggers also posted videos unrelated to their health vlogs. Accordingly, viewers could face challenges in identifying which post was part of the health vlog series. To solve this problem, many vloggers added numbered sequences (e.g., Cancer vlog #2) or themes (e.g., Diabetes vlog: what to do for parties) to their vlog titles.

Vloggers also planned what they wanted to cover for each vlog. For educational vlogs, for instance, at the end of the vlog, health vloggers reminded viewers of their plans for the next vlog. Even though health vloggers had plans for their vlog series, we saw no infrastructure in place that helped vloggers easily convey their plans to their viewers. Accordingly, health vloggers used titles and video descriptions to either put the videos in a series or explain what their theme was going to be for that vlog. However, the order of vlog listing might still change according to popularity, making it confusing for viewers to easily track and follow a vlog, especially when large volumes of vlogs are posted.

CAN12 showed another example of challenges around information management issues, where the vlogger uploaded a 5-second video of himself changing the dressing on his wife's stomach. This vlog did not contain any description about his purpose for having the vlog public. However, such a vlog can provide information to many peer cancer patients who want to know what to expect after surgery and what caregivers need to prepare for. This case happened because YouTube allows users to upload videos without adding descriptions about the video's content. Similarly, for vlogs in response to other vlogs, viewers have no easy way to track which vlog the vlogger is responding to.

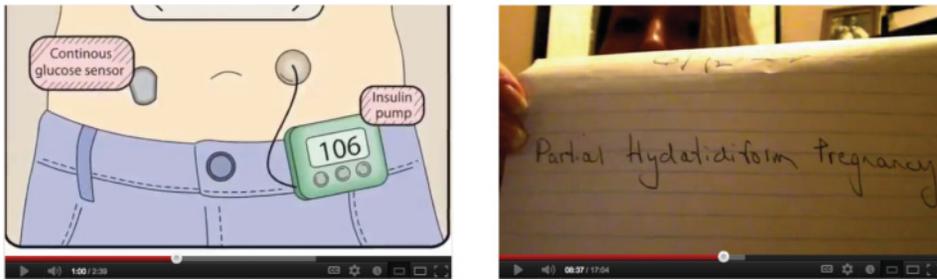


Fig. 4. An example of using advanced editing tools by DIB1 (left), in contrast to paper-based illustration by CAN7a (right).

6.2. Strategies for Editing Vlogs

For educational vlogs, the ability to use advanced editing tools can help deliver educational materials. Also, for inspirational vlogs, vloggers may want to go beyond talking in front of cameras or posting raw footage of videos. However, because YouTube does not provide advanced editing features, some vloggers used external video editing programs to add transitions, assemble multiple videos, and add subtitles. For instance, a girl was concerned about her appearance when wearing glasses and an insulin pump at the same time. To make her feel better, a health vlogger assembled several examples of multiple individuals with diabetes who wear glasses and an insulin pump to tell her that she is “still awesome.” In another vlog, HIV5 edited multiple cut-out sequences to dynamically portray his time of diagnosis, using an audio-only blank screen with subtitles.

Instead of using sophisticated editing tools, another vlogger incorporated a background by filming himself talking in front of a red brick wall, which he said he used to symbolize “strength” and to tell his viewers to stay strong. Others used various camera angles, such as pointing at the bottom of the screen or walking into the scene to create scene transitions. Figure 4 shows a contrast between a vlogger who used an external graphic tool and another vlogger using a low-tech approach of drawings on a paper.

6.3. Establishing Intimate Support Network

We saw the lack of explicit ways for health vloggers to establish an intimate network with peers to either form a supportive community or provide coaching. Accordingly, health vloggers appropriated papers, presentation of the video, and information fields on the vlogging page to establish that social support network with peers.

For example, HIV6 offered help to any of those who were struggling with HIV. He wrote his phone number and email address on A4 size papers for viewers to contact him and presented it close against the camera (Figure 5, left). In another video, CAN9 wrote on his iPad, as he was demonstrating his DJ mix on cancer, “please pray for me,” and held it up against the camera (Figure 5, right). Others pointed to their vlog description page to refer to their websites and blog addresses that viewers can visit.

7. DISCUSSION: IMPLICATIONS FOR HEALTH VLOGS AS SOCIAL SUPPORT

Here, we first discuss how health vlogs facilitated community building among vloggers and commenters dealing with similar situations and how disease differences were observed in health vlogs. We then discuss how the video medium contributed to intense community building among the vlog users and the unique vlogger-commenter relationships that are difficult to find elsewhere. We end with implications for the HCI community in designing health vlogs for social support during chronic illness management.



Fig. 5. Left: an example showing a vlogger sharing his phone number on a piece of paper. Right: a vlogger using creative ways to ask viewers for help.

7.1. Facilitating Community Building among Vloggers and Commenters

Experiencing a chronic illness is not an acute, exotic event, but rather something that patients have to accept as part of their everyday lives. Patients build new identities around dealing with various social and physical consequences of having the disease [Mankoff et al. 2011]. Such processes can be lonely and challenging. In the health vlogs, vloggers used various visual forms of presentation to reveal deeply personal sides of experiencing the illness. Commenters appreciated such efforts and offered to give help back. Commenters themselves provided support to one another. Health vlogs were not merely vlog posts where people shared opinions and experiences. Health vlogs provided a platform upon which vloggers and commenters could build a mutual sense of community, in which they could together provide support to one another.

7.1.1. Self-Therapy as a Form of Social Support. Through journaling activities, vloggers attempted to gain ownership over their disease, make sense of their illness, and cope with emotional struggles, essentially for self-help. Monologues, often shown in journaling vlogs such as self-reflection and updating vlogs, have been shown to have self-therapeutic effects, especially for patients dealing with mental health issues [Rostworowska and Opoczyńska 2008]. Given that depression and emotional support is critical in chronic illness management [Gallant 2003], journaling was a crucial activity, working as a type of self-therapy. Helping others took form in many ways as well, including educating others with personal experience over time, encouraging others to be strong while they muddled through the illness experience, and inspiring others by showing how one has overcome the darkest moments in coping with the disease.

Although helping others by giving tips and strategies was one of the main purposes of the vlogs, the very activity of such informational support became a placeholder for personal accountability. As research shows, helping others can be self-therapeutic, and patient support groups are based on such research findings [Levy 2000]. Thus, using health vlogs for self-help and to help others resulted in a venue for social support among chronic illness patients.

Multidirectional characteristics of social support. Social support was not passively passed on in one direction from the vloggers to the viewers—commenters actively provided emotional and informational help, and, even among the commenters, they shared personal experiences, resources, and help for one another. Accordingly, the social support we observed from health vlogs was happening multidimensionally, essentially forming a sense of community among people who share similar interests and concerns.

Dual forces of social support. Although we artificially separated informational support from emotional support in our analysis, informational and emotional support as a joined force was essential to creating the community-building atmosphere of the

health vlog. While commenters and vloggers shared informational aspects of their experience, they often ended with emotionally supportive comments, such as “wishing you the best” or “A big treat for you for giving me all the information.” In cancer vlogs, although emotional support showed as the dominating type of support, the experience vloggers and commenters shared became useful information for others. Similarly, although diabetes vloggers often provided informational support, commenters encouraged one another in battling with the illness, showing the emotional side of the social support. Such findings—that informational and emotional support were often intertwined—in our data present contrasting insights to previous work [Welbourne et al. 2009; Wang et al. 2012] that emotional and informational support each play different roles in online health community participation.

Another duality of social support we saw was hate comments intertwined with supportive comments. Hate comments constantly interrupted the flow of conversation among vloggers and commenters because they generated their own thread of debate about whether HIV is a scam or whether it is irreligious to attempt to cure cancer, for instance. On the other hand, hate comments pushed supportive comments to emerge so as to reconstruct the positive atmosphere created in the thread for each vlog.

In summary, vlog posts triggered vloggers and commenters to share the extremely personal side of illness, engage outside resources and websites, share similar experiences and appreciation for one another, push back against hate comments, offer personal help, and build a sense of community with one another.

7.2. Considering Disease Differences

Although we discussed health vlogs as one type of vlogs, we did observe disease differences. Such disease differences provide insight for how health vlogs can be utilized for difference diseases.

First, certain diseases have higher barriers to posting health vlogs than others due to the level of social stigmatization and commonly understood cause for the disease. For example, HIV vlogs had a tremendously higher number of hate comments compared to other vlogs. All HIV vloggers we observed were male homosexuals. Accordingly, by posting a vlog about HIV, they had to challenge their socially stigmatized status twice—revealing that they are homosexuals and that they have HIV. The act of revealing oneself in such a situation is not something that everyone might be able to handle. HIV vloggers also deal with judgments by the viewers who might criticize those vloggers’ actions that might have led to the disease and the fact that the disease is infectious. Accordingly, the conversations occurring in HIV vlogs expand beyond sharing social support. Despite such caveats, vloggers and commenters found HIV vlogs increasingly meaningful for their society.

Second, the expected mortality of the disease might also characterize the focus of social support. For instance, cancer patients had more predominant forms of emotional support than did diabetes vlogs. Although diabetes can also be a fatal disease, some level of control over the disease does exist. Accordingly, for diabetes vlogs, information sharing for managing the disease was a common form of support. Still, depending on cancer types with different mortality levels, the kinds of support that vloggers need and how commenters respond to the vlogs can vary.

Last, populations common to each disease can vary. Type 2 and type 1 diabetes involve different age groups (with type 1 diabetics often being younger than type 2), lifestyles, and comorbidities, and all have distinct needs. HIV patients can range in age from the teens to early 20s and growing into adulthood; they may belong to a minority (such as being gay) and may be dealing with stigmatism without even having HIV [Keller et al. 2004]. Cancer can vary in its populations, depending on type, and patients with one type of cancer have distinct needs that might not be shared with patients with

other types (e.g., breast cancer vs. prostate cancer). Accordingly, the effectiveness and appropriateness of health vlogs largely depend on the population characteristics that a certain disease possesses and their social media adoption characteristics.

7.3. Catalyzing Unique Vlogger–Commenter Relationships

7.3.1. Health Blogs vs. Health Vlogs. Peers sharing their experiences through blogs with other patients have been shown to be emotionally beneficial in text-based blogs [Chung 2008]. This finding was also true for the health vloggers in our study. However, several findings around text-based health blogs contrast with our findings.

Sundar et al.'s study [2007] showed a demographical bias of text-based health bloggers toward young women and that women reveal personal identifiers more than do men. However, we saw that all the HIV vloggers we studied were male and identified as homosexual; and even in diabetes and cancer vlogs, male vloggers participated more dominantly than did women. This contrasting result seems ironic because vlogs reveal far more personal identifiers than do text-based blogs. The majority of the vlogs we collected contained vloggers' faces, and they identified their real names. Vloggers even shared their email addresses and phone numbers for viewers to contact them for social support. It may be that males find the video medium easier to deliver their messages to others than written text. More research is needed to further explore gender differences in health vlogging.

Sundar et al.'s study also found that text-based health bloggers write mainly for themselves but are aware of the audience and welcome audience feedback. In health vlogs, we found mixed purposes for who vloggers are posting the vlogs for. Sometimes vloggers explicitly stated that their vlogs were for self-reflection, while others stated that their vlogs were to intentionally bring awareness and education to others who were struggling. Such purposes were not clearly separated at all times, showing multiple intentions behind what vloggers state as being the main purpose of health vlogs.

Unlike what we know about text-based health blogs, we found little evidence that vloggers explored multiple identities. Vloggers revealed their real-world identity and genuinely shared their everyday struggles face to face with their audiences. HIV vloggers intentionally disclosed their stigmatized status to a worldwide audience to overcome the stigma of being HIV positive. Thus, the very act of health vlogging worked as a healing process for them. Ben (HIV10) created a term "B.I.V." (Ben Immunodeficiency Virus) to tell his viewers that he had taken ownership of himself, not the HIV. Viewers stated in their comments that they "loved the idea" and that Ben inspired them.

Researchers of text-based health blogs found their style to be often emotional in nature. We identified emotional videos, but the vloggers emphasized staying positive, encouraged, gave advice, and even used humor at times. Although we observed vloggers showing tears as they shared their struggles, those vloggers tended to present themselves as compassionate and understanding rather than purely emotional.

7.3.2. Intense Personal Disclosure, Leading to Intimate Personal Connection. As we discussed, vlogs show different and sometimes contrasting characteristics than what we know about text-based health blogs. Health vlogs propose positive, encouraging, and intensely supportive relationships between the vloggers and peers who are watching and responding to the vlogs. This finding is in line with video as a medium that facilitates identifying people, reading emotional expressions, detecting subtle differences in speech, and enabling viewers to read gazes that express intimacy and power [Bruce 1996]. The characteristics we described around health vlogs, along with what video as a communication medium is known to offer in the literature, suggest unique opportunities for generating social support for chronically ill patients. For instance, we can adopt prior work in strategies for generating intimacy through technologies, such as gift giving, joint action, and physicalness [Hassenzahl et al. 2012] in health vlogs.

Vloggers revealed their private life and put themselves “out there,” exposed to the gaze of millions of viewers. Viewers were able to see the faces of the vloggers, providing credibility and relatability. The fact that the vloggers were brave enough to show their faces to the world despite having such stigmatized diseases as HIV or having a swollen face due to chemotherapy helped vloggers gain respect from their commenters. Accordingly, intense community building happened among both the vloggers and commenters. Commenters gave evidence through their comments that they were inspired by the vlogs. Commenters found information about the vlogger (e.g., that the vlogger was alone through the whole treatment process in the hospital) that was not explicitly addressed in the vlog and voluntarily provided support to the vloggers.

Perhaps the openness of the medium triggered commenters to establish this intense personal connection with vloggers and to post comments stating that the vlog was a “life changing experience” or to say “I love you” to one another. Thus, they provided a catalyst for community building among those in need.

Hate comments, as discussed in the findings, were often left uncensored and even used as a facilitator for stronger community building. Lange [2007] also found in his research with YouTube videos that the addition of the visual did not help to reduce antagonism. In fact, behind this phenomenon, we see that the de-anonymized characteristic of the vlogs allowed the hate comments to become more of a personal attack. The commenters’ protection against those personal attacks generated intense social connection and community building among the vloggers and commenters. A strong territory against hate comments was formed among the vloggers and supportive commenters, evidenced by quotes such as “if you don’t like it don’t comment.”

7.3.3. Enriched Information and Context through the Flexible Video Medium. Vlogs provided context for enriched information and context through the flexible medium provided to the vloggers. Vloggers could experiment with visual props, such as computer-generated illustrations, paper-based drawings, show-and-tell of the context of their experience (e.g., surgery room), documentation of their tragic diagnosis, and writings on an iPad to convey unique messages to their viewers. The rich and flexible video medium fueled discussions among commenters and vloggers characterized by inspiring and intense back-and-forth supportive dynamics. Furthermore, this flexible visual tool of health vlogs allowed unique practices, specific to each disease, to occur thus generating a disease-specific culture of vlogging practices. This finding is unique with regards to the literature based on text-based health blogs, where no disease differences have been explicitly investigated. In online health communities, the majority of posts are ignored and receive no replies [Huh et al. 2013]. Most of the vlogs we collected had received replies.

7.3.4. Ad Hoc Small Groups: Unique Communication Structure of Health Vlogs. Social media facilitating community structure (e.g., online communities) offer membership within a bounded space. These websites are often moderated either formally by staff or by informal leaders [Zhu et al. 2012], and members have access to structured community facilitating features. Examples include online forums where members introduce themselves, themed forums that subgroups of the community members can participate in together, friending features, badges and rewarding systems for continued participation, recommendation systems for referring matching members, and private messaging features allowing private one-on-one conversations among individual members.

On the other hand, video- or text-based blogs maintain a simpler structure, especially in the YouTube videos that we examined. These videos did not follow the traditional community structure. The commenters gathered around a single blog post, creating ad hoc small groups. The difference between text- and video-based blogs is the intensity of connection that these thread-based small groups generate. Especially with the intense personal connections commenters and vloggers produce due to the de-anonymized,

extremely personal characteristics and enriched content that health vlogs provide (as discussed earlier), we observed that the small groups of health vlog threads enabled tight relationships to form among commenters and vloggers. The groups even sustained over time, as our findings in Section 5.5. illustrate, with commenters asking other commenters how well the vlogger was doing when the vlogger had not posted for a while. This finding corresponds with literature on group cohesion [Lott and Lott 1965] stating that the level of social engagement increases as group size reduces [Finn et al. 2002].

Perhaps the lack of structured community features, such as private messaging features and new member introduction pages, might have pushed the commenters and bloggers to connect offline. Also, the already exposed personal information unique to vlogs (e.g., vloggers' faces) helped reduce the barrier to connecting further in an offline environment, through personal emails, and on Facebook, as we discussed in Section 5.5.4. We witnessed that instrumental support [Cohen et al. 2000], often challenging to provide in online community environments due to the geographic distributions of members, has been offered among health vlog users: meeting offline, offering support through phone calls, and tweeting the vlog to distribute it widely.

7.4. Design Implications for Health Vlogs in HCI

We investigated the potential advantages of health vlogs for patients with chronic illness and the unique benefits that health vlogs deliver over other forms of social media not involving video. The following are several design implications to consider when building health vlogs for patients with chronic illness.

7.4.1. Augment Vlogger-Commenter/Viewer Connection through Vlog Metadata. We found that finding commonalities among vloggers and commenters, such as where they live, which religion they believe in, and what kinds of illness experiences they had, led to an instant feeling of connection to one another. This finding aligns with literature on interpersonal attraction in groups [Lott and Lott 1965], which argues that similar people attract one another. At the same time, complementarity [Vinacke et al. 1988] explains attractiveness among commenters and vloggers who are in disparate situations (e.g., one just went through chemotherapy and the other is cancer-free) but potentially have had deeper relationships together [Vinacke et al. 1988].

Considering the increasing number and variety of users with illness experiences available on the Web, automatically finding out properties that can define similarity and complementarity among users will be tremendously useful for enhancing social support in online social networks. Accordingly, researchers have actively examined how to better match patients [Hartzler et al. 2012] and create a coalescing group [Lott and Lott 1965].

Vlogs present additional metadata to inform metrics for similarity and complementarity that are otherwise missing in text blogs. One representative example includes demographical information. In text-based online social networks, extracting demographical information often meets challenges because it depends on the poster to disclose any demographical information about him- or herself. However, in vlogs, which often exposes the vlogger's face, we can extract race, age, and gender using existing image- and video-processing technology [Chen et al. 2013; Yeasin et al. 2006]. Also, systems can capture the constantly changing emotions expressed in vloggers' faces [Sanchez-Cortes et al. 2013]; this may be used to suggest new vlogs that viewers can watch to help them realize they are not the only ones who might be going through difficult emotional processes (such as crying in front of camera after chemotherapy). We can also learn from prior work in gestures for understanding the communication cues of the vlogger [Quek et al. 2002].

These video-based metadata extractions can be further enhanced in combination with audio-based information extraction and the text that commenters provide, as evidenced in quotations where commenters would state (1) the status of their disease and (2) that, regardless if the vlogger's disease was similar to or different from their own, they were still able to relate to the vlog and the vlogger.

The rich metadata produced from health vlogs—including demographical information, emotional state, race, gender, and stage of disease along with additional textual metadata provided concerning the vlogger's specific disease stage information—can help vlog users watch the right kinds of vlogs or segments of those videos. We can collect health status information from a willing vlog user, and, if the user is in the midst of deciding which cancer treatments to use, the vlog system can suggest vlogs that have others' experiences around various treatment strategies. When necessary, as when dealing with stigmatized diseases, similar race, age, and gender can be considered to further enhance empathy between the vlogger and the viewer.

7.4.2. Address Disease Differences. Support for addressing the needs of disease characteristics should be incorporated in health vlogs. For instance, the age of male HIV patients can include those in their teens and 20s, and these patients may need help in facilitating individual personal growth. These individuals might also struggle with being young and without resources and support due to the stigmatized aspect of the disease. HIV patients in those situations can greatly benefit from having matched personal mentors, as previously explored in online health community and clinical settings [Hallett et al. 2007; Heisler et al. 2010] and as many of our vloggers and commenters offered to do. Some aggregated resource suggestions presented along with the vlogs can help.

For cancer patients, help geared toward tracking one's health and struggling with mortality and the grieving process can be helpful. For diabetes patients, giving practical tips on how to live with diabetes can be helpful.

Using the flexible, open video medium, various support materials can be created, from a series of educational materials to witnessing touching, personal stories spoken by patients or caregivers themselves. For users not wanting to disclose their faces to the public, replacing their images with avatars allows them to incorporate gestures and body movements while retaining anonymity, as a previous study demonstrated to be successful [Kennaway et al. 2007].

7.4.3. Connect with Online Health Communities. We saw that health vlogs provided a platform for building a sense of community. Online health communities have been shown to work as great resources for providing social support among peer patients [Love et al. 2012]. Online health communities can incorporate health vlogs as a new avenue through which patients can share their experiences and receive and give social support in unique ways. As well, the health vlogs can incorporate social dynamics that incorporate community membership, including places for welcoming newcomers and a persistent space for the community to collectively build common knowledge and conversations. Whether the semi-anonymous culture of online health communities and openness of health vlogs will mesh is an issue that needs to be further studied and explored.

7.4.4. Support Self-Monitoring. We found that one of the motivations for vlogging was for vloggers to journal their experiences. Not only was journaling helpful for the vlogger, it also benefited others. The metadata produced, such as emotional changes, could help one monitor how vloggers changed over time. One HIV vlogger was first seen in bed, with depressive characteristics. Gradually, his videos showed him becoming an HIV activist. Metadata capturing various things like facial expressions or whether the presentation is a video collage or a self-portrait can potentially inform changes in the person's status. This metadata can also be used to inform the vlogger on his or her own changes over time.

7.4.5. Support Education and Outreach. More organizations are taking advantage of Internet access and wide use of video-based patient testimonials [Norman and Yip 2012]. Currently, the patient testimonials that organizations distribute to their audience and user-generated health vlogs are not closely connected. What the HCI community can offer is linking both user-generated health vlogs with official, publicly available patient testimonials for the purpose of outreach and education, combined with related links, demonstrations, and various ways to inspire people. The rich, contextual cues that patients present in their show-and-tell videos allowed one commenter who is a caregiver to understand what her stepdaughter must be going through. Using metadata to aggregate show-and-tell sources for caregivers presents another opportunity for an application.

Studies have shown the great potential that new technologies can have related to the rise of citizen-consumerism [Clarke et al. 2007] and to giving voices to marginalized groups [Rakow and Navarro 1993]. Health vlogs can help further empower people, especially those with stigmatized diseases, as we saw from our HIV vloggers' active efforts to reach out to those who might be in similar situations. Studies show that creative activities can contribute to improving such isolated illness experiences [Stuckey and Nobel 2010]. The HCI community can apply its existing research and practices around crowd creativity [Yu and Nickerson 2011; Nickerson and Monroy-Hernandez 2011]—collaborative drawings, sketches [Obrenovic and Martens 2011], and projects to produce games—to help patients manage challenges in dealing with unanticipated illness experiences.

7.4.6. Provide Editing and Organization Vlogging Tools. Health vloggers should not have to worry about using advanced third-party editing tools to effectively convey their messages. Easy-to-use editing tools integrated into health vlogging systems can help peer patients easily exchange experiences and knowledge. To further facilitate social support among chronic-illness patients, we should improve the ability to organize vlogs to allow viewers to browse health vlogs easily, according to their stage of disease, as well as to meet their informational and emotional needs. Health vlogs should help patients who have similar interests connect with each other both online and locally, and these vlogs should help facilitate prolonged conversations.

7.4.7. Address the Lifestyle of Chronic-Illness Patients. We observed vloggers and commenters coming back to the same vlog and commenting after being away for months. Going through surgery and recovering can take months—incorporating such distinct lifestyles instead of more frequent, daily engagement with social network services can be important. For instance, health vlog users can have an option to incorporate automatically generated information on certain surgery procedures for the audience while the user is away. If the user is scheduled to have a breast implant at a certain date, the system will inform the audience about average time of recovery for breast implant patients and what help mechanisms can be helpful for the patient. The audience of the health vlog can provide appropriate help.

We can further examine how vlogs should be part of the chronic-illness management routine. For instance, can insulin pumps interact with video blogging tools to record patients' interactions with the pump, which can later be presented to the health vlog viewers? Furthermore, once the video data are captured, how data are filtered and used for vlogging presents another research problem.

We envision that an ideal vlogging tool would incorporate a way to designate certain disease stages for vloggers or viewers, to aid in bringing vlogs and users together to create a helpful community. Considering the slow progression of a chronic disease, how vlogs take part in the community-building process will also be a continuing question.

8. CONCLUSION

In this article, we showed the unique advantages that health vlogs bring in providing support among chronically ill patients and the implications for how the HCI community can further expand the benefits of health vlogs to patients with chronic illness. The video medium provided intense personal disclosure, leading to intimate personal connection among vloggers and commenters. The flexible video medium enabled enriched information and context delivery to users who created ad hoc small groups, which is a unique communication structure compared to canonical online community structures. Considering the uniqueness that the video medium brings, we discussed implications for how health vlogs can address various needs in chronic-illness management, such as addressing disease differences, using video metadata to further facilitate vlogger–commenter connection, enabling self-monitoring, and supporting education and outreach. Potential next steps include conducting interviews with both vloggers and viewers to further understand how health vlogs have been part of their daily disease management practices. Future studies should seek to understand the influence of health vlogs on health outcomes.

Our work helps us understand how emerging social media can deliver new kinds of support mechanisms to patient self-management. With improvements on the social-technical design of vlogging tools, health vlogs bring a new avenue through which patients can share experiences, encourage, educate, and support one another in unique ways.

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