A Comparison of Video-Based Resident-Family Communication in a Nursing Home and a Congregate Living Facility

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Objective: To explore user perceptions of videophone communication in different long-term care settings by comparing interview transcripts of a study involving residents of a congregate living facility (CLF) and family members with findings of a case study involving a resident of a skilled nursing facility (SNF) and family member.

Methods: Semistructured interviews by telephone and in person were conducted with residents and family members, with both studies using an interview guide with similar questions.

Results: All themes found in the SNF study were also identified in the CLF data. There was consistency between studies in preferences for videophones (over telephones) for affective-oriented conversations and perceptions of acceptable usability. Both yielded generally acceptable technical quality, although 2 of 8 CLU participants' concerns were likely barriers to adoption.

Conclusion: Consistency in findings lends validity to the earlier SNF findings and suggests some degree of reliability across these settings. Additional insights were gained in the CLF study, a new context in the resident-family videophone communication literature. The theoretical framework of social presence and communication bandwidth holds promise as applied, but further explication and operationalization are needed. **(J Am Med Dir Assoc 2009; 10: 342–347)**

Keywords: Social support; communication; videophone; technology; long-term care

Videophone communication has been perceived as beneficial or positive by residents in long-term care settings and their family members.[1,2] Benefits have included enhancing affective communication[3] and helping family feel more involved in the nursing home care of loved ones with dementia.[4] Participants in health-related communication in other settings have also perceived videophones as beneficial or positive.[5,6]

Such findings are important to practitioners because they suggest a potential role of videophone (as compared to telephone) communication in ameliorating difficult feelings experienced by both residents and family in long-term care placement. Family members experience a loss of control, disempowerment, guilt, simultaneous feelings of sadness and relief, a sense of failure, and anxiety as a result of this transition of their loved one.[7–9] Residents feel lonely and socially isolated after leaving their home.[10] Family contact is an important source of social support,[11] which can decrease social isolation and depression in residents[12–15] and positively affect their health and life satisfaction.[16,17] Although there is less research on such effects in congregate living facilities (CLFs), findings suggest that these residents and families experience similar feelings and residents would similarly benefit from family contact.[18–20]

CONCEPTUAL FRAMEWORK

We adopt the basic conceptual framework of the earlier skilled nursing facility (SNF) case study,[2] which included the related concepts of social presence and communication bandwidth. *Social presence* in mediated communication has been defined in terms of the perception, "It was just as though we were all in the same room"[21,22]; as a "sense of being together"[23]; and as closely related to the concepts of intimacy[24] (in turn defined by factors such as physical distance, eye contact, smiling, and personal topics of conversation) and immediacy[25] (the psychological distance a communicator puts between him- or herself and the person with which he or she is communicating).

Short et al[22] regard social presence as "a quality of the communications medium." They cite 2 experiments by

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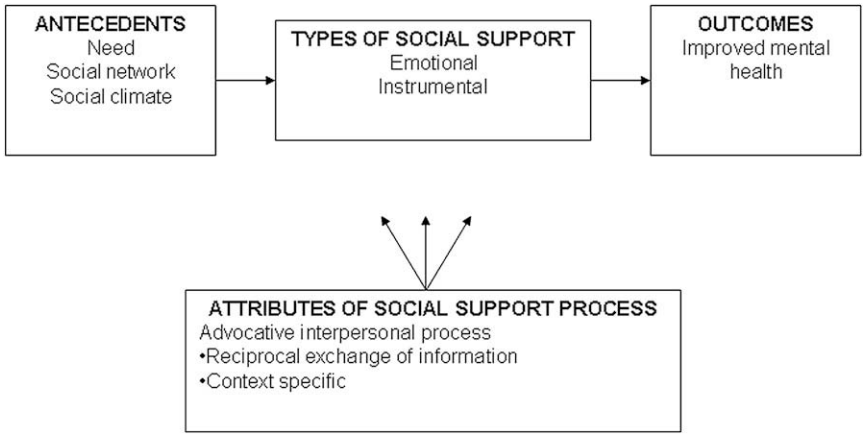

Fig. 1. *Model of Social Support.*

Christie[26,27] that found face-to-face communication to possess the highest level of social presence, followed by video (with audio), audio-only (eg, telephone), and last, written communication. They found that, on semantic differential scales, communication via media that accommodate greater social presence was rated as more sociable (versus unsociable), sensitive (versus insensitive), warm (versus cold), and personal (versus impersonal), all indicating positive affect.

The concept of *communication bandwidth* helps to explain why some media are more likely to convey a sense of social presence than others. Greater communication bandwidth generally corresponds with greater perceived social presence. Communication bandwidth in mediated human communication is determined by the number and types of communication cues (both verbal and nonverbal) a technology can accommodate.[27] Verbal cues include pitch, loudness, tempo, pauses, and inflection. Nonverbal cues include facial expressions, gestures, trunk and limb movements, and posture.[28] Visual, nonverbal cues have been found to be particularly important in sending and receiving affective information (feelings and emotions).[22,28,29]

The SNF study[2] found social presence and communication bandwidth to be useful in describing and understanding its results. One of its themes, taken from actual quotes of participants, represents a summary definition of social presence: "It was almost like being in the same room." Participant comments supported the role of visual nonverbal cues in communicating affective information. In this way, greater communication bandwidth appeared to enhance interactions.

The relationship between social presence and social support is central in this study. Finfgeld-Connett[30] provides a model of social support (Figure 1). As a phenomenon of communication, we argue that social presence directly affects the variables of emotional social support and advocative interpersonal process. Finfgeld-Connett notes that an important attribute of social support is advocacy, in which the social network (family) serves as an advocate by motivating and empowering residents to act on their own behalf and maintain as much control as possible. Emotional support consists of comforting gestures (including phone calls) that are intended to alleviate uncertainty, anxiety, stress, and depression. Instrumental support provides tangible goods or services such as food, money, and transportation, whereas emotional support can be directly communicated. Social presence is postulated to enhance communication of social support and advocacy (motivation and empowerment of the receiver). Of course, this is context specific and would be the case only when assumptions are met concerning the model's other variables: need, social network, social climate, and reciprocal exchange of information. The present study postulates that, because of greater communication bandwidth in the addition of a visual component, social presence is greater in videophone-based, as compared to telephone, communication.

OBJECTIVE

The present article explores resident-family videophone communication across long-term care settings by comparing a secondary analysis of interview transcripts collected by Demiris and colleagues[1] in a study involving residents of a CLF and their family members, with interview findings of a case study involving a resident of a skilled nursing facility (SNF) and family member.[2]

METHODS

Interview guides used in both studies were developed based on research on resident and family experiences in nursing home placement[31–34] and using concepts from interpersonal communication,[22,27–29] including via technology. While interviews in the 2 settings were collected by different individuals, they relied on a similar instrument and the first interviewer trained the second. The research team included scholars in health communication, health informatics, and social work, with expertise in instrument development as well as practical experience in long-term care. All appropriate Institutional Review Board approvals were secured.

The CLF data were from a convenience sample of 2 residents from a Midwestern facility and 6 family members, both geographically close and distant.[1] The facility admits residents at the independent- or assisted-living level, but is specially licensed under an aging-in-place model so that it

can provide higher levels of care through home care as residents' needs increase.

The studies include 10 participants in total. The SNF case study data were from one female resident from a Midwestern facility and her niece who lived several hundred miles away. The CLF sample of 8 included a female resident and her son and niece, a male resident and his son and daughter, and 2 additional nonrelated family members, a daughter and a niece, whose father and aunt were not interviewed. Two of the 6 CLF family members lived close enough to visit regularly. Participants in both studies were asked to communicate via videophone at least once per week, but could do so more often if they wished and were allowed additional contact via telephone. No participant in either study had apparent physical or cognitive problems in using or communicating through the videophone. All residents from both studies were older than 65.

The videophones used in the 2 projects were different. The SNF dyad used the stand-alone videophone model Vizufon GVP-1000F (C&S Technology Inc., Gyung Gi-Do, South Korea). The CLF project used a picture frame component connected to the residents' personal telephone (Beamer Videophone, Vialta Inc, Fremont, CA, Model No. BM-80). Both applications operated over POTS (plain old telephone service) and required both parties to consent for a video-call. The video-screen of the model used in the CLF was slightly larger than of that used in the case study. Participants in both studies were shown how to use the videophones and encouraged to ask questions and report difficulties.

Responses were recorded and transcribed. The coding scheme from the SNF study was applied to the CLF transcripts. Consensus in coding was reached among the 4 authors. The analysis compared the following between settings: (1) the 5 themes identified in the SNF case study with the congregate living findings; (2) perceptions of videophone as compared to telephone communication in cognitive- and affective-oriented conversations; and (3) perceptions of videophone usability and technical quality, including the impact of transmission speed on conversation flow. In addition to these comparisons, the current article describes and discusses unique insights from the CLF analysis.

FINDINGS

Themes from the SNF Study

The 5 SNF themes were also found in the CLF sample. These themes, expressed by both the SNF resident and her family member, are listed as below in the underlined headings of exemplar quotes. Beneath these are exemplar quotes from CLF residents and family members that are representative of the given SNF theme. The number of CLF residents and family members expressing each theme is indicated.

<u>It was almost like being in the same room</u> (SNF theme)

> The visual aspect helps me to feel connected, almost there sitting and talking to her, like a real visit with her. *(Expressed by 0 of 2 CLF residents; 4 of 6 CLF family members.)*

<u>I could see how she's doing</u> (SNF theme)

> …because you can literally see how the person is doing. *(1 of 2 CLF residents; 4 of 6 CLF family members.)*

<u>I can see that she's being cared for</u> (SNF theme)

> [I]. . .feel better about his care. *(0 of 2 CLF residents; 2 of 6 CLF family members.)*

<u>I shared more of her life</u> (SNF theme)

> . . .my son had sent us [college] shirts and so we were all dressed alike and we were all watching the game and. . .it was a really fun time even though we were [many] miles apart. *(1 of 2 CLF residents; 1 of 6 CLF family members.)*

<u>We had a lot of fun</u> (SNF theme)

> . . . the video is kind of a "toy" with unexpected pleasure. *(1 of 2 CLF residents; 5 of 6 CLF family members.)*

Affective- and Cognitive-oriented Conversations

Similar to the SNF findings, CLF study participants voiced a general preference for videophones for affective-oriented conversations. When asked if they had a preference in affective-oriented conversations "that involved emotions and feelings," 2 participants did not and 6 preferred such communication via videophone, assuming, as directly stated or indicated by their examples, *positive* emotions and feelings were involved. All CLF participants expressed an advantage of seeing nonverbal cues, specifically identifying facial expressions, hand gestures, posture, gaze, and body language. A number of comments described a positive affective nature of videophone communication, including that it was "more personal," "more comforting," and added "joy to a joyful occasion."

When asked the same question for cognitive-oriented conversations with "a lot of factual information and description," 4 CLF study participants did not have a preference (one, because of technical problems with the videophone) and 4 preferred such communication via videophone. Both SNF participants preferred the videophone for these types of conversations. In the CLF study, the visual component allowed a family member to show the resident clothes purchased on a shopping trip. Another family member showed a camera bought with Christmas money from the resident. A family member summed up this visual advantage as being "fun to 'see' the description instead of imagining it."

Usability

Participants in the SNF study encountered some initial usability problems that they remedied independently, voicing no additional concerns. Of the 4 CLF study participants (1 resident) who expressed at least 1 concern about usability, 3 did not like having to sit in 1 spot and thus not be able to move around the house while conversing; the fourth was concerned about the time and problems to connect, feeling that the videophone "just wasn't as user-friendly as I thought it would be." This participant thought that living closer and being able to regularly visit may have affected this perception: "I also think that it has to do with distance, because we see him so often we many times didn't take the time to turn the

videophone on." One family member commented that the videophone was easy to use: "I like that it is uncomplicated and easy to use. You just hit a button and go."

Technical Quality

As with usability, SNF study participants had initial concerns about technical quality, which they remedied and were then satisfied. Of the 6 CLF study participants (including 1 resident) who expressed at least 1 concern about technical quality, 3 experienced what their comments implied were relatively minor concerns with the delay between video and audio. One of these 3 experienced some disconnections. An additional participant's concern about the video was more serious but still interpreted as moderate. This resident wore a hearing aid but did not read lips, and stated that the delay "bothered me."

Comments of the other 2 CLF study participants (both family members) expressing concerns about technical quality were relatively more serious. One experienced at different times a fuzzy picture and audio echo, and stated about the delay: "our conversation would become disjointed every now and then as we tried to fight for who would be talking." The other also had concerns about the delay and stated, "Occasionally there were times when the quality of the picture itself wasn't very good." This participant found the additional accommodations necessary in videophone communication frustrating, including lighting and centering oneself in the screen, stating that, "The conversation was about the picture."

Additional Insights in the CLF Data

A family member and a resident expressed some frustration about having to sit in one spot and not be able to do other things while talking.

> . . .It does make it difficult to do other things while on the phone.

(The family member recognized the converse benefit of consequently having to focus more on the conversation.)

Participants elaborated on with whom and in what situations they preferred videophone (over telephone) communication. One resident described how the more personal nature of videophone communication would affect this choice.

> Well that all depends on who I'm talking to. If it is family members, sure I would like the videophone. If it is some stranger that is calling me on something I don't care to see them. . . I don't want to make that kind of connection. . . .

Concerning use of the videophone in conversations in which there is conflict, this same resident said,

> I think that the videophone would probably end the conversation sooner.

Two family members noted benefit in seeing affective responses in serious conversations.

> Videotape was nice for more serious conversations talking about my kid's future. Seeing my dad just showed his concern.
>
> But also we've had to have some serious discussions about some family members that have been ill. . . . I knew that I would be able to see his facial features to get a feel for could I pursue this conversation or is it getting to be too much for him.

One family member who lived closer and visited regularly stated that she would deliver any "sad" news in person.

> I think something happy would be great with the videophone. If it were something sad we would probably tell him in person.

One family member did not see an advantage of the videophone over telephones in understanding her loved one, but saw that this could change if the communication abilities of the resident changed.

> Not at his present state, no, but there may be a time I could see that happening somewhere down the road; but he is pretty clear and pretty "with it" and I don't think so now.

Last, one family member saw an advantage of videophones when she was ill.

> . . .I had the flu and I didn't want to get around him to risk that he would get the flu. He was worried about me being sick too and it helped him to be able to see me and realize that I wasn't on my deathbed.

CLF comments included those about geographic distance. One resident and a related family member both expressed the opinion that videophones were of greater benefit to geographically distant family members and residents.

> After the first few times my using the videophone with my daughter and her family, it lost its advantage since I see them all of the time.
>
> I also think that it has to do with distance, because we see him so often we many times didn't take the time to turn the videophone on.

DISCUSSION

Because this is a qualitative study, our goal was not to test generalizability of findings. Moreover, even if we had quantified responses, small samples, not randomly selected, would have precluded statistical inference. Still, even recognizing these limitations in sample size and selection, confirming the 5 SNF themes in the CLF data—or more specifically the perceived benefits and uses they represent—is noteworthy. It suggests some consistency across these settings, at least for participants without physical or cognitive limitations in using and communicating via the technology.

The theme expressed by the most participants, *We had a lot of fun*, would seem to be dependent on the type of relationship the communicants have—one that has included or allowed "having fun." It also raises the question of how important "fun" is to sustained use and whether there may be a novelty aspect to videophones that could wear off over time. The theme, *I shared more of her life*, also implies a closeness in

the relationship. These interpretations support the conceptualization of social presence as determined by multiple factors[35,36] including the relationship between communicants.

The second most commonly expressed theme, *I could see how she's doing*, indicates that both family members *and* residents are interested in seeing via videophone how the other is doing. Consistent with the case study, we did not find *I could see that she's being cared for* expressed by a CLF resident, as family members in these studies are not receiving care in a facility. This latter theme was expressed by only 2 of 6 CLF study family members, which may be explained by the context of congregate living, where residents have less acute care needs than those in SNFs. It is noteworthy that this is the only difference in the data that could prima facie be explained by the differences between settings. Greater communication bandwidth of videophones allows family members, especially of nursing home residents, to visually inspect aspects of physical care—to *see that she's being care for*. The remaining theme, *It was almost like we were in the same room*, a summary indication of social presence, was also found in the CLF study. As a general indicator of social presence, however, this broad perception does not aid identification of the specific cues (and their interactions) within communication bandwidth that most facilitate it.

More participants preferred videophones for affective communication, consistent with the conceptual framework of social presence and communication bandwidth. There were a number of comments in both studies that support the proposition that videophone communication is more intimate and immediate; thus, higher in social presence than telephone communication and consistent with Short et al's[22] finding of more sociable, sensitive, warm, and personal interactions. It is assumed that greater communication bandwidth contributed to these perceptions.

Consistent with Biocca et al,[36] CLF data support the contention that affect associated with social presence is bidirectional in valence: that making "that kind of connection" with someone who one does not want to talk to may result in negative affect. Findings suggest that videophones are preferred and seen as best for personal conversations (such as with family) and those without conflict. But this does not mean that they were preferred only for light and pleasant conversations. Two participants voiced the potential of videophones for serious conversations, although another stated they would deliver sad news in person.

A CLU study family member felt that videophone communication may be valuable should her loved one experience dementia, as the visual component would supplement verbal deficits. Savenstedt et al[4] found this opinion in family members using videophones to communicate with their loved ones with dementia.

The use of the videophone to show objects (ie, a new dress and a new camera) reminds us that "a picture speaks a thousand words." This insight has importance to cognitive communication with the goal of detailed description.

Consistent with the SNF study, usability concerns in the CLF interviews did not appear to present general barriers to adoption and use. Also consistent with the SNF study, technical quality did not appear to be a barrier to adoption and use for most CLF participants. The technical quality appeared generally sufficient to support some indications of social presence, consistent with Cukor et al's[6] finding that "social presence …can be created …with even low-cost POTS… videophones." However, the concerns of 2 participants, pertaining to the audio-visual delay, were serious enough to be likely barriers to adoption and use. Last, findings also include the innovative use of videophones to prevent exposure of residents to contagious illnesses of family members, representing a likely unintended benefit of the technology.

CONCLUSION

The consistency of CLF data with the themes, preferences, and perceptions in the initial SNF case study lends validity to the earlier findings. It also suggests a level of reliability across different long-term care settings. Additional insights were gained, and questions raised, in the CLF study, a new context in the resident-family videophone communication literature. Total findings aid understanding of resident-family videophone communication and support testing in larger studies. Randomized and controlled studies are needed to compare different settings and media (ie, telephone versus videophone).

CLF findings support further research on how use and satisfaction vary with geographic distance, or more specifically between dyads in which family members can (and do)/cannot visit regularly and the potential clinical outcomes which may improve with such contact. They also support further research on the types of conversations—even relationships—that are positively or negatively enhanced with an additional visual component.

Social presence and communication bandwidth hold promise in contributing to a theoretical framework for examining resident-family videophone communication and informing technological design as well as new application areas for telehealth tools and systems. Social presence is an appealing concept in that it describes some common subjective experiences in mediated communication. Communication bandwidth has potential as a typology within which to identify cues that contribute to social presence and enhanced communication. But conceptual and operational clarifications of social presence are needed for the concept to be measured and then explain differences between videophone and telephone communication involving long-term care residents and family members. A review and explication of social presence as applied to this line of research is supported. Additionally, the link between social presence and social support needs to be explored. The variables in Finfgeld-Connett's[30] model should be added and measured in a larger framework.

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