



Published in final edited form as:

*J Telemed Telecare*. 2011 ; 17(3): 142–145. doi:10.1258/jtt.2010.100503.

## Use of videophones to deliver a cognitive-behavioural therapy to hospice caregivers

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### Summary

We investigated the feasibility of videophones for the delivery of problem-solving therapy (PST) for informal hospice caregivers. Informal hospice caregivers were randomly assigned to receive PST from researchers using videophones, instead of communicating in face-to-face sessions. Outcome measures included caregiver anxiety, quality of life and problem-solving abilities, technical quality of videosessions and satisfaction of participants (including both subjects and researchers). A total of 42 hospice caregivers were enrolled (mean age 62 years). A total of 112 videocall attempts were documented. Of these, 100 (89%) resulted in successful videocalls and 12 (11%) were cases in which a call was not established. The average videocall duration was 38 min (range 18–84 min). The overall technical quality of the videocalls was very good. Caregivers reported a slightly higher quality of life post-intervention than at baseline, although this was not significant. Caregivers reported lower levels of anxiety post-intervention than at baseline ( $P = 0.04$ ). The subjects were generally satisfied with the videophones during their exit interviews.

### Introduction

Cognitive-behavioural interventions integrate aspects of two therapeutic approaches: cognitive therapy and behavioural therapy.<sup>1</sup> Cognitive therapies encourage participants to examine their thoughts and beliefs, and the ways this affects their behaviour. Behavioural therapies more directly target individual actions and aim to improve problematic behaviours. Some cognitive-behavioural interventions, such as problem-solving therapy, can also be considered psycho-educational because they include components designed to educate participants about specific problems or coping strategies.

One area where cognitive-behavioural interventions can be of great benefit is in hospice care, where informal caregivers (family members, friends, spouses or others who assume the caregiving role) face increased anxiety, isolation and depression as they take care of a terminally ill loved one. The caregiving experience affects caregivers' own morbidity and mortality.<sup>2</sup> Problem-solving therapy has been found to be effective for family caregivers of oncology patients and individuals with Alzheimer's disease but has not been tested extensively with families in the hospice setting. Problem solving is defined as the 'self-directed cognitive-behavioural process by which a person attempts to identify or discover effective or adaptive solutions for specific problems encountered in everyday living.'<sup>3</sup>

Problem-solving therapy (PST) is a brief, structured, cognitive-behavioural intervention that teaches people problem-solving coping skills to help them deal with major negative life events as well as daily problems that make them anxious or depressed.<sup>4</sup> The actual approach to delivering PST is summarized by the acronym ADAPT, which includes the following steps: *A = Attitude* (adopt a positive, optimistic attitude); *D = Define* (define the problem by obtaining facts, identifying obstacles and specifying realistic goals); *A = Alternatives* (generate alternatives for overcoming the identified obstacles and achieving goals); *P = Predict* (predict positive and negative consequences of each alternative and choose the one with the highest probability of achieving the goal); *T = Try Out* (individuals are asked to implement the solution in real life and monitor its effects).<sup>3</sup>

The aim of the present study was to explore the feasibility of videophones for the delivery of a PST intervention for informal hospice caregivers.

## Methods

The study was approved by the appropriate ethics committee. We enrolled hospice caregivers who were receiving outpatient services from several participating hospice agencies. The inclusion criteria were enrolment as a family/informal caregiver of a hospice patient, 18 years or older, access to a standard telephone line at home, without functional hearing loss or with a hearing aid that allowed the participant to conduct telephone conversations, no or only mild cognitive impairment and with at least a sixth-grade education.

During the initial consent visit, a member of the research team installed a videophone for the caregivers. The videophone was the Beamer Videophone (Vialta, Inc., CA) which operates over ordinary telephone lines, and has a transmission speed of 4–15 frames/s. During the first visit, caregivers were asked to review and prioritize common caregiver concerns using a checklist. This checklist also allowed them to define problems not included in the list.

Three follow-up intervention videocalls were scheduled between days 5 and 16 of the hospice admission, as close as possible to days 5, 11 and 16. During these three calls the therapist introduced and worked on steps of the ADAPT model, namely ‘Attitude’ and ‘Defining the Problem and Setting Realistic Goals.’<sup>5</sup> The agenda for the first call included an explanation of the purpose of the meeting, confirmation of the three specific problems the caregiver had selected from the concern list, and the first two steps of the model. During the second call (11–13 days after hospice admission) the therapist covered steps three and four of the ADAPT model. Step three encourages caregivers to be creative and generate alternative solutions. Step four focuses on predicting the consequences and developing a solution plan. The third call (16–18 days after hospice admission) focused on step five, namely trying out the solution plan and determining whether it works. In addition, caregivers received a telephone exit interview by a member of the research team a few days after the last study visit. This interview assessed how caregivers perceived the intervention, its delivery using videophones, perceived usefulness and ease of use of the telehealth tool and any concerns or barriers.

Standard demographic data were collected on caregivers, including age, gender, education level, marital status, occupation and diagnosis of the patient being cared for. In addition, three psychometric scales were used:

1. Caregiver Quality of Life Index – Revised (CQLI-R). This measures caregivers’ quality of life and includes four dimensions: emotional, social, financial and physical.<sup>6</sup> We have modified the CQLI instrument for use in oral interviews using 0 and 10 for each of the four anchors in place of the visual analogue scale.<sup>7</sup>

2. Problem-Solving Inventory (PSI). This is a 35-item Likert-type inventory that measures problem-solving appraisal, or an individual's perceptions of their problem-solving behaviour and attitudes.<sup>8</sup>
3. State-Trait Anxiety Inventory (STAI). This is a self-report assessment instrument that includes separate measures of state and trait anxiety.<sup>9</sup> The three psychometric measures were made prior to the intervention and during the exit interview after the intervention.

Technical quality of videocalls was measured using a previously developed instrument for assessing the technical quality of a 'virtual visit' in home care.<sup>10</sup> The instrument is a form that was completed by the therapist after each videocall. The main section of the form contains five items regarding the technical quality of the videocall. The first two items refer to the observations made by the therapist in regard to any difficulties with sound and images. The next two items address problems with video and audio at the caregiver's end, as reported to the therapist during the videocall. The last item addresses possible disconnections and their frequency of occurrence. This allows a score to be calculated for the overall technical quality of each videocall. The instrument has been tested for reliability and validity, and has been used to rate the technical quality of videocalls in home care settings.<sup>10,11</sup> Finally, the therapists were interviewed to assess the perceived usefulness of the videophone and the extent to which telehealth enhanced or impeded the delivery of the intervention.

## Results

A total of 42 caregivers were enrolled to receive PST via videophone in the 12 months from March 2009. The average age of the caregivers was 62 years. Thirty-four caregivers (81%) were women. Forty-one caregivers were Caucasian and one was African-American. Twenty-two were adult children of a hospice patient, 10 were spouses/partners and two were the grandchild of a hospice patient. The remaining eight declared some other type of relationship to the patient. Two therapists delivered the PST: one was a trained nurse and the other a social worker. Both therapists were supervised throughout the study to ensure treatment fidelity. Eight caregivers did not complete all intervention videosessions as their patient died during their study participation. One caregiver withdrew, citing increased workload. Thirty-three caregivers completed the entire video-based intervention (79%).

The caregivers reported a slightly higher quality of life post-intervention than at baseline (Table 1) although this was not significant. The only subscale within quality of life for which the average scores decreased was that of the physical dimension of quality of life (see Table 1). Furthermore, caregivers reported lower levels of anxiety post-intervention than at baseline ( $P = 0.04$ ). For the problem-solving inventory, a higher score indicates less effective problem solving (for each of the instrument's subscales and its total score). In our study, the average scores on all PSI subscales and total scores decreased post-intervention, indicating an improvement in participants' problem-solving skills. However, only improvements in the problem-solving confidence and approach-avoidance style were significant, whereas the improvements reflected in the personal control subscale or the total score of the PSI were not significant.

A total of 112 videocall attempts were documented. Of these, 100 (89%) resulted in successful videocalls and 12 (11%) were cases in which a call was not established (e.g. a connection could not be established leading to a second attempt, the caregiver did not answer the call). These twelve videocall attempts involved a total of three caregivers. The average technical quality of the established calls was 48 out of 50 (range 34–50) with a SD of 3. The average videocall duration was 38 min (range 18–84 min). Once the call was

established, the connection was not lost, except in two cases where the session was terminated because of sound problems. More technical problems pertained to audio than video, and of these, most problems were reported pertaining to audio at the caregiver's end.

When asked if there were any questions that they did not ask that they would have asked if they were meeting in person, therapists reported only two cases (2% of all conducted videocalls) in which that applied. The therapists rated the overall technical quality as very good on average. On a scale from 1 to 5, the average score was 4.4 (SD 0.8). The average usefulness of the videocalls was rated as 4.8 (SD 0.7).

The subjects were generally satisfied with the videophones during their exit interviews. One participant commented on the benefit of having someone there in her living room without actually having to have another guest in the house. Two participants did not see benefits to the video-component. One of them commented on the slight time delay between audio and video and the other did not see an added element compared to an ordinary telephone.

Therapists found value in the use of the videophone. They cited cases where the visual feedback allowed them to interpret silence or see facial expressions that indicated emotions not necessarily reflected in the audio (e.g. one case where a subject was crying silently during one of the sessions, or other cases where subjects were smiling or looking uneasy or emotional at different times of the videocall). In several instances, they felt that facial expressions allowed them to better assess the process by which subjects were engaging in the problem-solving steps and to adjust the time spent on specific steps. Furthermore, the therapists acknowledged that while technical problems did not occur frequently, they were potential barriers to efficient communication. This led them to develop strategies to address such problems, while ensuring that participants did not become anxious.

## Discussion

Our study confirms the feasibility of using videophones for problem-solving therapy for informal hospice caregivers. There was an improvement, although not significant, in quality of life outcomes and problem-solving abilities, and a significant reduction of anxiety post-intervention for hospice caregivers. It is known that in the absence of videophone-delivered PST, caregivers' quality of life worsens as the patient approaches the end of life, and their anxiety increases.<sup>6</sup> The majority of hospice caregivers expressed high satisfaction with the videophone and therapists identified value in the visual feedback. However, the present study had several limitations. One limitation was the sample size which did not allow us to identify significant differences for the pre-post intervention assessments. Attrition was another challenge, although expected given the short length of stay and the stressful events surrounding the end-of-life trajectory. A third limitation was not having a control group.

The videophones used in the study operated over ordinary telephone lines (PSTN) and were therefore limited in both the audio and video quality. Better quality is available via broadband Internet.

Vide Conferencing has the potential to replace costly and time consuming face-to-face sessions for the delivery of a cognitive-behavioural therapy which would allow increased access to such specialized services for rural and underserved populations in their own homes or other community settings. However, this has not been examined and further work is needed to compare face-to-face sessions with video-mediated ones. The present study provides insight into the use of videophones for a specific cognitive-behavioural intervention. It focused on the hospice setting where such interventions are much needed but often not adopted by hospice agencies that struggle with limited resources. Our findings

confirm the potential value of home videoconferencing for the delivery of PST to informal caregivers.

## Acknowledgments

The study was partly funded by the National Institute of Nursing Research Grant R21 NR010744-01.

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Table 1

Baseline and post-intervention measures for the hospice caregivers

	Baseline (n = 42) Average (SD)	Post-intervention (n = 33) Average (SD)	P value	Effect size Cohen's d
CQLI-R				
Emotional	6.2 (2.1)	6.7 (1.8)	0.1	20.004
Social	6.5 (3.0)	6.8 (1.8)	0.3	20.07
Financial	6.1 (3.2)	6.2 (2.1)	0.4	20.01
Physical	6.3 (2.6)	5.8 (1.2)	0.2	20.003
Total	26.7 (8.1)	28.0 (6.1)	0.4	20.09
STAI				
Total	44.2 (9.2)	31.2 (8.1)	0.04	0.25
PSI				
Problem-solving confidence	58.3 (9.2)	44.1 (9.8)	0.06	0.69
Approach-avoidance style	88.0 (18.4)	64.2 (16.1)	0.04	1.08
Personal control	23.0 (4.8)	18.1 (4.2)	0.1	1.07
Total	105.0 (21.4)	89.2 (20.2)	0.1	0.75