Videophones for the delivery of home healthcare in oncology

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Abstract. A videophone system was used to link cancer patients, undergoing chemotherapy at home, with care providers in the Home Healthcare Facility at the University Hospital Centre of Grenoble. The participant patients expressed their satisfaction both with the use and the technical quality of the system. Improvement was observed in the Hospitalisation Anxiety and Depression Scale (HADS), SF36 Health Survey Questionnaire and Palliative care Outpatient Scale (POs) scores during and at the end of the experiment. The results indicated that the use of videophones was both feasible and satisfactory, and that they may have a positive effect on the cancer patient’s quality of life at home. Further studies are necessary to prove this final observation.

Keyword. Telemedicine, videophonic system, oncology, home health care, telehealth, acceptability, satisfaction, patient’s quality of life

Introduction

Telemedicine provides new systems to deliver home healthcare for chronic diseases including cancer [1, 2].

Cancer patients often become anxious or even depressed a few months or years after the onset of their illness. The potentially devastating evolution of their disease along with the psychological suffering they experience gives rise to an increase in the number of hospitalizations, and consequently the consumption of health resources.

Several studies have evaluated the use of telemedical applications in oncology with the aim that health professionals share their sources of knowledge and exchange their experiences (expert opinions, imagery, pathological analysis of biopsies, radiotherapy, chemotherapy…) in order to improve cancer patient care [1, 3-12]. However, to our knowledge, no study has assessed the usability of videophones to deliver home healthcare in oncology.
Starting from this context, our study aimed to evaluate the feasibility and the utility of a videophonic system used for the delivery of health care to cancer patients undergoing chemotherapy at home.

1. Materials and methods

The study was carried out in the Home Healthcare Facility (Hospitalisation A Domicile - HAD), at Grenoble University Hospital (Centre Hospitalier Universitaire de Grenoble - GCHU), within the framework of the Medical Care Continuity project (MCC: http://www.eten-mcc.org).

1.1. Population

The study evaluated adult cancer patients receiving chemotherapy provided by the HAD facility at home.

The following patient inclusion criteria were used:

- Cancer sufferers receiving chemotherapy
- Age over 18
- A life expectancy of over 12 weeks.
- Show a vital stable state.
- Be receiving specialized medical care at home.
- Patient and general practitioner consent given prior to the experiment.

Patients who did not have adequate assistance at home and/or were unable to understand how to use the videophone system were excluded from the study.

1.2. Materials

A videophonic system was used to link each patient at home to the hospital staff. Videophonic communication was established by installing one videophone at the hospital (central work station – see figure 1) and a second one at the patient’s home (patient work station – see figure 2).
We evaluated the following items using standard scales and customized questionnaires as detailed below:

- Patient and patient family satisfaction and their acceptance of the use of the videophone. This was evaluated using three questionnaires each for the patient and for the family, all of which were prepared by the HAD facility team at GCHU.
- Patient anxiety and depression evaluated by the Hospital Anxiety and Depression Scale (HADS).
- Patient quality of life using the SF36 Health survey questionnaire.
- Quality of life and health care evaluated using the Palliative patient Outcome Scale (POS).

2. Results

Six patients, five women and one man, were included in this study. The median age of the patients was 66 years (minimum: 45, maximum: 76). Four patients were suffering from breast cancer, one from ovarian cancer and one from Myelodysplasia. The duration of participation in the study was three months for each patient. One patient died during the study and another was hospitalized for a long time following an exacerbation of his Myelodysplasia.

The HADS, the SF36 survey, the POS and specific questionnaires to evaluate patient and patient family satisfaction and acceptance of the videophone were completed 3 times during the study (at the beginning, middle and end). For the first patient studied, the POS and the HADS were not completed due to their later inclusion in the experiment.

2.1. The Patients’ acceptance of the videophone

The participation in the study was proposed to twenty-two patients in the HAD facility at GCHU:

- Ten patients (45% of the total) agreed to participate in the experiment, among them the 6 patients recruited for the study. The four remaining patients could not be included for the following reasons:
  - Non-availability of a broadband internet connection.
  - No fixed phone at home.
  - Termination of their chemotherapy programme.
  - Termination of the study before being able to install the Videophonic equipment at the patient’s home.
- Twelve patients (55% of the total) decided not to participate in this study owing to:
  - Feeling ill at ease with the technical machinery: two patients.
  - Lack of space at home: two patients.
  - Personal problems: two patients.
  - A feeling that such assistance was unnecessary given their good functional state: six patients.
2.2. The Patients’ satisfaction

At the time of the initial presentation of the videophonic system, all the patients found its use simple and thought that it would accelerate and facilitate contact with carers and enable them to obtain a first medical opinion more rapidly.

No patient met with any difficulty in the use of the videophonic system during the study. Of those who continued, three found that the quality of the image was good, but not the quality of the sound. The other patient found that the quality of the image as well as the quality of the sound was good.

At the end of the experiment three of the four patients expressed their wish to keep the videophonic equipment

2.3. The Patients’ anxiety and depression

The HADS scores were improved for the three patients who completed this scale (see graphs 1 and graph 2).

![Graph 1. Evolution in Patients’ Anxiety – beginning, middle and end of study](image)

![Graph 2. Evolution in patients’ depression – beginning, middle and end of study](image)

2.4. The Patients’ quality of life

The three patients who completed the pos showed an improvement in its sum score by the end of the study (see graph 5).

![Graph 5. POS sum scores - patient version at the beginning, middle and end of the study](image)
The SF36 scores relating to emotional role and mental health improved for all the patients (see graph 3 and graph 4).

Graph 3: SF36 scores for emotional role at the beginning, middle and end of the study.

Graph 4: SF36 scores for mental health at the beginning, middle and end of the study.

3. Discussion

This study showed the feasibility and patients’ acceptability of using videophones for the delivery of home healthcare in oncology [13-15].

The refusal to participate in this study was due to a rejection of videophones in two cases only. Six cases from the total refusals to participate were related to those patients’ good general and functional state and their overall satisfaction with the home healthcare already delivered by the HAD facility without the use of videophones. The unease with technology, which was expressed by two patients in our study, is one of reasons for the refusal of technology not only by patients but also by caregivers [16-17].

The participating patients used the videophonic system to check their appointments at the hospital and to obtain explanations about the results of the different blood and radiological tests realised from their care providers. They also used it to check up on the doses of their new medicines. The apparatus was used by nurses visiting the patient’s home to obtain the HAD facility doctor’s agreement to administer chemotherapy in the case of the appearance of clinical symptoms, such as a rise in the patient’s temperature or an alteration in blood results. The HAD facility doctors used the system to verify the position of the catheter used for giving chemotherapy in one patient, and to inspect the arm of another patient looking for a subcutaneous oedema.

The patients used the system successfully without any problems during all the duration of the experiment. At the end of the study they confirmed that the videophonic equipment had enhanced their feelings of security and their relations with the HAD facility doctors. They expressed their satisfaction relating to the technical quality of the system and the immediate answer obtained from the HAD facility doctors at each call.

The results showed a decrease in the patients’ anxiety and depression levels exhibited by the falls in the HADS scores. The improvement in the SF36 scores for emotional role and mental health correlates with the decrease in the HADS scores. This result could be related to the positive effect of the videophonic system on the patients’ anxiety and depression and on their state of mind, and in turn the effect of these on the
patients’ quality of life and feelings of security[18]. This last is an observation that could not be proved in the study due to the small size of the sample.

In conclusion, while the use of videophones to deliver home healthcare seems to improve the cancer patient’s quality of life, further studies are necessary to confirm their utility and effectiveness in the care of the cancer patient at home.

References