The use of telehealth (text messaging and video communications) in patients with cystic fibrosis: A pilot study

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Disclosure

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Introduction

• The chronic use of inhaled and systemic medications, nutritional support, physical therapy and regular exercise - required to maintain health in CF patients

• The treatment can be troublesome, time-consuming and costly → poor adherence

• Numerous reasons for poor adherence, incl. little positive reinforcement for adherence and forgetfulness

• To date, few studies have evaluated technologies to improve access to medical services and communication
Introduction - 2

- The improved life expectancy in CF is partially attributed to specialized care centers
- Access barriers related to distance can be partly addressed with the use of telemedicine technologies
- Mobile phone messaging applications (SMS and Multimedia Message Service) - self-management - medication reminders, therapy adjustments or supportive messages
- Limited evidence in diabetes, hypertension and asthma (de Jongh et al., Cochrane 2012), as well as in antiretroviral therapy (Johnson et al., J Telemed Telecare 2011)
COPD and asthma - telehealth is a potential method of reducing the burden on health-care systems

Identifying early changes in a patient’s condition → intervention and avoidance of exacerbation

In CF - small feasibility trials

We sought to examine the feasibility and acceptability of a telehealth-based approach, using WhatsApp and Skype communications, in CF patients followed at our center
Methods

- A single-center pilot study
- CF patients > 8yrs, followed at our Pediatric Pulmonology Institute
- Patients were consecutively assigned to one of two groups: intervention and control
- The intervention included Skype video chats and WhatsApp messages
- Each skype chat was performed by a different member of the multidisciplinary CF team
- Additionally, every patient in the intervention group received biweekly WhatsApp messages regarding the importance of adherence to the treatment regimen
14:30
8 דצמבר 2014

פייטורפיה עשים...
אנטיפיזיק דחית

05:43
8 דצמבר 2014

חרזת נשימה בחתילה
היום מאפריש לispens

21:57
9 דצמבר 2014

חרזת נשימה בחתילה
היום מאפריש לDisposed

12:40
11 דצמבר 2014

.fetch.
15 דצמבר 2014

ביצע פעילות גופנית
בחתימה... וה篙י אמר
לך חודה

05:54

Methods - 2

• All the patients completed age-appropriate versions of the Cystic Fibrosis Questionnaire – Revised (CFQ-R)
• Knowledge and adherence evaluation was performed based using CF My Way
• Questionnaires - before and after the intervention (intervention group), or two routine visits three to five months apart (control group)
• The patients were also asked to grade their satisfaction from their relations with the CF team (1-10)
## Results

**Table 1. Demographic characteristic of patients.**

<table>
<thead>
<tr>
<th></th>
<th>Intervention, $N = 9$</th>
<th>Control, $N = 9$</th>
<th>$p$-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years), mean $\pm$ SD</td>
<td>21.2 $\pm$ 6.2</td>
<td>24.8 $\pm$ 11.0</td>
<td>0.39</td>
</tr>
<tr>
<td>Age median (range)</td>
<td>21.2 (12.7–32.5)</td>
<td>13.0 (14.2–50.7)</td>
<td></td>
</tr>
<tr>
<td>Sex (female)</td>
<td>5 (56%)</td>
<td>5 (56%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Religion: Jewish</td>
<td>2 (22%)</td>
<td>1 (11%)</td>
<td>0.93</td>
</tr>
<tr>
<td>Arab: Moslem and Christian</td>
<td>6 (67%)</td>
<td>7 (78%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (11%)</td>
<td>1 (11%)</td>
<td></td>
</tr>
</tbody>
</table>
Results - 2

• Median of 5 (range 4–6) Skype video chats, and 22–45 WhatsApp messages

• The CFQ-R score was similar between the groups, and did not change during the study

• Intervention group - 65.4±15.7 → 62.4±14.3

• Control group - 62.5±26.1 → 65.9±18.09

• Knowledge questionnaire - similar between the groups; a slight increase in knowledge during the study period in both groups (NS)

• Combined reported adherence to inhalations, vitamins, pancreatic enzymes, physiotherapy and physical activity - an increase in both groups at the end of the study (NS)
Results - 3

- All patients were satisfied with their relations with the CF team (8–10 at the beginning and at the end)
- One patient in the intervention group rated 4 before and 10 after the intervention
- The same patient asked not to receive WhatsApp, continued skype
The use of telehealth (text messaging and video communications) in patients with cystic fibrosis: A pilot study

Michal Gur MD¹, Vered Nir MD¹, Anna Teleshov RN, BA¹, Ronen Bar-Yoseph MD¹, Eynav Manor PT, MA¹, Gizelle Diab RD, MSc¹ and Lea Bentur MD¹,2

Abstract
Background: Poor communications between cystic fibrosis (CF) patients and health-care providers may result in gaps in knowledge and misconceptions about medication usage, and can lead to poor adherence. We aimed to assess the feasibility of using WhatsApp and Skype to improve communications.

Methods: This single-centre pilot study included CF patients who were older than eight years of age assigned to two groups: one without intervention (control group), and one with intervention. Each patient from the intervention group received Skype-based online video chats and WhatsApp messages from members of the multidisciplinary CF team. CF questionnaires, revised (CFQ-R) scores, knowledge and adherence based on CF My Way and patients satisfaction were evaluated before and after three months. Feasibility was assessed by session attendance, acceptability and satisfaction survey. Descriptive analysis and paired and non-paired t-tests were used as applicable.
But beyond the “raw” data...
It was a fascinating experience!!
Both for patients....
...and the multidisciplinary team
Results – cont.

• Some chats resembled a ‘virtual visit’ in the patient’s home, with other family members joining the chat.
• The patients enjoyed showing their rooms, and most of them were interested in speaking about their lives beyond the disease – their studies, hobbies and plans.
• The chats enabled better acquaintance with the patients, helped in planning adequate interventions and increased support.
<table>
<thead>
<tr>
<th>Team Member</th>
<th>Issues raised by patient</th>
<th>Issues raised by team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>Drug development (2)</td>
<td>Assess pulmonary exacerbation</td>
</tr>
<tr>
<td></td>
<td>Physical symptoms (9)</td>
<td>Medication adherence</td>
</tr>
<tr>
<td>Nurse</td>
<td>Inhalation therapies (9)</td>
<td>Assess adherence</td>
</tr>
<tr>
<td></td>
<td>Living style with a chronic disease (3)</td>
<td>Barriers to adherence</td>
</tr>
<tr>
<td>Dietician</td>
<td>Food supplements (7)</td>
<td>Adherence to dietary recommendations, vitamins and enzymes</td>
</tr>
<tr>
<td></td>
<td>Frequency of meals (9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difficulties with specific foods (8)</td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>Showed physiotherapy devices and nebulisers (9)</td>
<td>Adherence to physiotherapy</td>
</tr>
<tr>
<td></td>
<td>Cleaning of devices (7)</td>
<td></td>
</tr>
<tr>
<td>Psychologist/social worker</td>
<td>Feeling of loneliness (2)</td>
<td>Coping with a chronic disease</td>
</tr>
<tr>
<td></td>
<td>Fear of death (2)</td>
<td>Assess the need of further evaluation</td>
</tr>
</tbody>
</table>

The first column refers to the team member who was interacting with the patient on a given visit. The numbers in parentheses indicate the number of patients who raised the specific issue.
Discussion

• Difficulties with recruiting the patients for the intervention group - did not want to commit to the video chats

• With the patients who participated - challenges:
   Finding a suitable time for the video chats
   Technical aspect

• After overcoming the challenges, patients were very satisfied with the intervention

• We could not detect improvement in knowledge or adherence due to the small patient numbers, but our impression is that the technique is feasible and acceptable
Limitations & Future directions

• Main limitation – a small number of patients
• Some Skype chats were delayed → intervention period longer than planned

• A larger multi-centre study is warranted in order to examine the use and efficacy of these interventions

• Future directions - implementation of a telehealth-based system as an integrative part of care of patients with CF
Thank you –
✓ Prof. Lea Bentur
✓ The multidisciplinary team
✓ The patients
✓ Ronit Leiba - statistician
✓ Menahem!