ePartner for Self-Management

Personal Computer Assistants for a Healthy Lifestyle

Olivier Blanson Henkemans

TNO

Applies scientific knowledge to strengthening the innovative power of industry and government

4500 employees

Governmental funding and contract assignments

Quality of Life - Prevention and Care
  • Youth and health
  • Activity and health
  • Care innovation

Healthy Lifestyle and Chronic Care

Demographic change
  Increase in unhealthy and chronically ill people
  Decrease in care givers
  Imbalance in care demand and supply

Self-Management

John (58)

Diabetes Type II

Self-Management Activities

Self-Management

Taking Health and Care in Own Hand

Insight in own health condition

Informed decisions about self-management

Developing self-management habits

Involving the environment in self-management

Good quality of life!

eHealth

Information and Communication Technology in the Care Domain

Contributes to care quality and self-management stimulation
eHealth

Users

Varying user requirements in various settings

ePartner: Personal Computer Assistant for Self-Management

How can eHealth services contribute to self-management?

Personal Computer Assistants that help adhere to self-management goals

User friendly coaching
- Coaching Model
- eCoaching

Coaching

Coach Model

Initial Condition

Goal Path

Goal Condition

Iterative Monitoring and Feedback

Habit Formation

Coaching Stadia

1. Pre-diagnosis
   - Diagnosis en medical history
   - Health literacy and preferences
2. Anamnesis, diagnosis en treatment
3. Assessing patient perspective on diagnosis
   - Understanding diagnosis
   - Valuing diagnosis

Coaching Stadia (2)

4. Setting goal and goal path
   - Strategy: Preferences and intention
   - Tactics: Problem definition and contingency plan
   - Operationalization: SMART behavior
5. Goal realization
6. Goal maintenance and habit formation
   - Iterative monitoring and feedback
     - Empathy
     - Self-efficacy
     - Independently overcoming setbacks

Coaching ICT Support

Care Giver

Patient

Self-management

Self-management

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**ePartner: eCoach**

eCoach prototype, based on Coach Model
- Self-monitoring
- Medication intake
- Lifestyle (nutritional and physical activities)

[www.DieetInzicht.nl](http://www.DieetInzicht.nl): Lifestyle diary on internet

**Overweight keep diary: diet and physical activities (4 weeks)**

- Setting personal goals
  - Nutrition
  - Exercise
  - Diary use

Assistant monitors diary and provides coaching feedback

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**ePartner Feedback**

You have achieved your goal for today. Congratulations! Try to maintain it the coming days.

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**ePartner Feedback**

You have achieved your goal for today. Congratulations! Try to maintain it the coming days.

You did not achieve your goal for today. This is unfortunate, but do not let it discourage you. It goes step by step. Try again the coming days. For information about your goal, click [here](http://www.DieetInzicht.nl).

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**ePartner Results**

- Diary more user friendly
- Better use of the diary
- Healthier lifestyle
- Stronger decrease in weight
- Use of lifestyle diary increases health literacy
- Variance in performance due to personal characteristics

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**ePartner Discussion**

ePartner contributes to eHealth use for successful self-management

Further testing ePartner: Does it contribute to long term development of self-management habits?

Integrating in care system: ePartner is used by patient, but is it supported by care giver (care standard), insurance companies and government?
ePartner for BeweegKuur (NISB)

Aims at improving people’s health with (increased chance of) diabetes mellitus type II.

On referral of general practitioner, motivated patients receive support with their self-management.

Lifestyle coach (1 year)
- Sport
- Activity
- Diet

Also
- Sport instructor
- Physiotherapist
- Dietician

Health insurance

Issues
- The target group will be extended to overweight and obesity (increase of clients)
- After the course, people fall back in (unhealthy) habits

Assignment TNO: Develop eCoach, which address these issues
- Coach activities are reallocated to eCoach
- eCoach accessible after end of course

Approach: Cognitive Engineering

Complex task environments with dynamic user requirements

Phase I: Domain Analysis

Activities
- Literature review
- Studying existing initiatives
- Interviews and focus groups
- Observation (organizational structure)

Result
- Success factors in coaching of self-management, trade-offs
- User requirements (coaches, clients, specialists)
- Task analysis

Phase I: Design Specifications - Core Functions

Assessing core functions:
- Medical encyclopedia
- Personalization of information
- Maintaining calendar and diary: Personal Health Record (PHR)
- Monitoring and feedback
- Connecting PHR with Electronic Patient Record (EPR)
- Community participation

Phase I: Design Specifications - Claims

<table>
<thead>
<tr>
<th>Core Functions</th>
<th>Features</th>
<th>Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personalization of information</td>
<td>Creating account, logging in, adjusting medical information to user profile and goals</td>
<td>Information is geared to the patient’s needs and will increase health literacy. Information is specialized and difficult to recycle for others.</td>
</tr>
<tr>
<td>Maintaining calendar and diary</td>
<td>Keep personal self-care details chronically and in relation to daily life with the use of diary</td>
<td>The diary can be used to determine behavioral patterns. Patient has to constantly maintain the diary for accurate and consistent overview, which may decrease the satisfaction.</td>
</tr>
<tr>
<td>Community participation</td>
<td>Communicating with medical specialists and with peers, e.g., through forum</td>
<td>Patients can share experience with peers which can help increase self-care motivation. Erroneous information can easily be spread out, which decreases effectiveness.</td>
</tr>
</tbody>
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ePartner for BeweegKuur
Phase I: Design Specifications - Scenarios

Drawing out problem and user scenarios

- High level goal: Who is the story about and why did it take place?
- Low level goals: How do actors reach their goal by using specific technology in a specific context?

Scenario for lab studies

**Breakfast**

This morning you get up. You feel well and had breakfast with your family.

You feel:
- Tired with eggs
- A glass of orange juice and
- A cup of coffee

Afterwards, you took your medication.

Then, you got back on your computer to fill in your diary.

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ePartner for BeweegKuur
Phase II: Prototyping and Evaluation

Developing eCoach prototype covering core functions

Evaluating
- Piloting in Smart Home Lab (with scenarios)
- Longitudinal evaluation

Measurements
- User experience (clients, coaches, specialists)
- Increased number of clients and care quality
- Following course, clients continue maintaining healthy lifestyle
- Improved wellbeing and health condition

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Questions?

Olivier.BlansonHenkemans@TNO.nl