Personalized Care enabled by activity monitoring

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This evaluation research will focus on six elements (1) the technical evaluation of the system (2) the validity and reliability of the system, (3) the succession of the protocol, (4) the effects of the Quiet Care System for the client, the informal...

Ethical review	Approved WMO
Status	Pending
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON33422

Source
ToetsingOnline

Brief title
Activity monitoring

Condition

- Other condition

Synonym
dementia, frail elderly

Health condition

dementie en kwetsbare ouderen, allen cliënten van thuiszorgorganisaties

Research involving
Human

Sponsors and support

Primary sponsor: Proteion Thuis
Source(s) of monetary or material Support: Transitiepogramma voor langdurige zorg (TPLZ) van ministerie VWS en bijdrage betrokken zorginstellingen

Intervention

Keyword: Activity monitoring, Dementia, Fraily elderly, Home care

Outcome measures

Primary outcome

- Living independently and self-management (GARS), quality of life (EQ-5D),

loneliness and feeling of safety and use of care of clients.

- The objective and subjective burden of informal caregivers (OBM, SCI en SBR).

- The work satisfaction of formal caregivers.

Secondary outcome

(1) What are the technical specifications of the QuietCare system?

(2) Is the QuietCare system reliable and valid?

(3) To what extend do health care organizations and formal caregivers respond

according to the established protocol?

(4) What are the costs of the implementation and use of the QuietCare system

for the care organizations?

(5) What are the consequences of the QuietCare system for health care

organizations?

Study description

Background summary

A quarter of the Dutch population will be over 65 years old in 2030. It is estimated that of this group, 10-15% are frail elderly (430,000 to 645,000). The number of dementia patients in the Netherlands will increase from 175,000 in 2005 to about 320,000 in 2030 (Ministry VWS, 2005).
Frailty is defined as the decrease in reserve of multiple organ systems, relatively small changes in internal or external environment can have major consequences for an elder to maintain an acceptable level of physical, social and psychological functioning. Frailty can be initiated by illness, inactivity, inadequate food intake and / or the physiological changes of aging (Ahmed, Mandel & Fain, 2007, Steverink, 2001). Dementia is a collective name for congenital disorders characterized by combinations of multiple disturbances in cognitive functions, mood and behavior.
This increase in the number of frail and demented elderly will increase the need for long-term care, which needs to be absorbed by both the formal and informal caregivers. The healthcare organizations are under pressure because of the growing scarcity of formal caregivers. In addition, the number of informal caregivers is decreasing.
The government encourages that this group of people stays at home independently for as long as possible, if they wish so (eg, care package "Full Package Home"). In addition, many older people prefer to live in their own home than to move to a care or nursing home.
However, there is a fear about the safety of the environment in the home, for example, waiting a long time before some one notices the elderly (eg. after a fall or stroke). To reduce these feelings of insecurity, technology could aid. Various domotica projects in the Netherlands have shown that the realisation of security by, for example by an active or passive alarm system, the elderly are able to remain living independent in their own homes (Van der Leeuw, 2004, kenniscentrumwonenenzorg.nl, 2008).

This research protocol focuses on the Quiet Care system. The system was developed by Dr. Anthony Glass Cock (Gerontoloog and Professor of Anthropology) and Dr. David Kutzik (Gerontoloog Assistant Professor of Sociology). The idea for the system arose during an interview. The interviewee answered the question whether he ever cared for an elderly or helped one: "Yes, every morning after getting up I look out my window to see if ther is smoke coming from the chimney of my father If smoke comes out, I know that he up and that he is making tea. If there is no smoke coming from the chimney then there is probably something wrong and I go to my father to check on him. "(Hutlock, 2004). Based on this information, Dr. Glass and Dr. Cock Kutzik developed an idea to develop a system, with which they can monitor the activities, from a distance, and infer how the elderly is behaving in his home. The development of this idea has resulted in the QuietCare system. The system through the infrared sensors ADL activities of an elderly in his own house. The underlying idea is that not being able to perform these activities puts independent living at risk.
Current methods for identifying problems consist of combinations of observations and questionnaires on the activities in the house. These have repeatedly declined and the decline of questionnaires is subject to recall bias

(especially in the elderly group in which cognitive problems). However, the QuietCare system automatically records the behavior of the elder in the home and does not run the risk of recall bias. Thus, an insight into how the elder behaves in its own house (Glass & Kutzik Cock, 2006).
In addition to capturing the activities of the ADL elder, the system generates an alarm if an unsafe situation arises. The QuietCare systeem learns the average activity pattern of the person. If there are large deviations in this pattern are detected, a notification is generated so a caregiver can take action (Glass & Kutzik Cock, 2006). On page 11-13 in the protocol, the technical aspects of the QuietCare system extensively described.

The development of the QuietCare system ranged from the idea to the development of the system in the laboratory and initial testing, followed by a field test (for the reliability and validity of the system) and a pilot study (the effects of the system on the client and the caregiver). After development of the system in the laboratory, the system was installed in an ADL suite along with a video camera to record activities. During this test phase was systematically tried how many sensors are needed and how they should be placed. At the beginning of the trial, all rooms, cupboard and drawers were monitored. This led to an abundance of information. Systematically sensors were removed to determine the activities that are informative for caregiving. This resulted in a basic set of five sensors that can be expanded if desired. The placement of the sensors is determined by experimenting on how best the information collected (Glass Cock & Kutzik, Unpublished). After this initial test was a field test (12 months) to test the reliability and validity of the system tests (Glass & Kutzik Cock, 2006). The reliability of the system was set at 99%. The validity of the system was set at 97%. Following these results was a pilot in the USA to ensure the effectiveness of the system designed to evaluate (Glass & Kutzik Cock, 2006). There were a total of 26 clients participating in the pilot. The clients had various diseases including heart failure, pulmonary emphysema, HIV, Parkinson's disease, Alzheimer's, diabetes and cancer. During this pilot, the participating providers used in more than 100 cases the information from the QuietCare system to alter the care for the clients. The caregivers indicated that they experienced it to be pleasant to discuss specific issues with clients. The participating customers indicated that they felt safer at home because someone was keeping an eye on them. Currently the system operates in more than 2,500 people in the United States and more than 300 people in Great Britain.

Study objective

This evaluation research will focus on six elements (1) the technical evaluation of the system (2) the validity and reliability of the system, (3) the succession of the protocol, (4) the effects of the Quiet Care System for the client, the informal caregivers and the formal caregivers, (5) the costs for the implementation and use of the system and (6) the influence on the health care organizations.

Study design

This evaluation study has a longitudinal design in which each participant (client, informale and formal caregiver) are included for a period of six months. Measurements are carried out through interviews. It is a quasi-experimental design with pre and post measurements.

Time of measurement
At the start of the study (T0), after 3 months (T1) and at the end of the study (T2) clients, informal and formal cargegivers are interviewed. The following questionnaire will be used in the interviews:

Client: GARS, loniness, EQ-5D, feelings of safety and care usage.
Informal caregivers: Objective Burden Informal Caregivers, Self-Rated Burden and the Caregiver Strain Index.
Formal caregivers: Job satisfaction questionnaire. Are also monthly meetings for them with the objective to identify bottlenecks and resolve.

Intervention

QuietCare system, activity monitoring

Study burden and risks

There are no risks for the client, informal and formal caregiver by using the QuietCare system.

Estimated burden of interviewing clients: once 90 minutes and 2 times 60 minutes (210 minutes total).

Estimated burden of interviewing the informal caregiver: 3 times 40 minutes (120 minutes total)

Estimated burden of interviewing formal caregivers and monthly meetings: 3 times 15 minutes and the monthly meetings are estimated at 6 x 60 minutes (405 minutes total)

To establish the rate of false negative alerts; all participants are called 3 times during the 6 month period about possible incidents (that did not generate an alert).

Contacts

Public

Proteion Thuis

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- The person lives independently at home and receives home care by Proteion Thuis or Savant.
- The person lives in independently in the community or in sheltered housing.
- The person is a frail elderly (with a GFI score > 4) or recieves care based on psycho-geriatric indication authorised by Centrum Indicatiestelling Zorg (CIZ).

Exclusion criteria

- no phone line available at home
- for the group of dementia:
- young dementia (age < 65)
- severe cognitive problems (MMSE score < 17)
- for the group of frail elderly:
- recieves care based on psycho-geriatric indication authorised by Centrum Indicatiestelling Zorg (CIZ).

Study design

Design

Study type:	Interventional
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)

Primary purpose: Prevention

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-02-2009
Enrollment:	320
Type:	Anticipated

Ethics review

Approved WMO

Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL26474.022.09