Telecare: Human-Centred Design Analysis
For Elderly People with Mild Dementia

1. Research Objective

The aim of “Telecare: Human-Centred Design Analysis For People with Mild Dementia” research paper is to (1) investigate how modern remote technologies could support elderly people with Dementia so to handle their daily activities, communication, and familiar tasks with minimal physical supervision of care providers. (2) To explore opportunities in providing quality healthcare by identifying needs and limitations of Dementia patients by incorporating them in a human-centred design process.

2. Study Background

A. What is Dementia?

Dementia is a syndrome for a number of diseases by which there is deterioration in memory, thinking, and the ability to perform everyday activities, the most common disease derived by Dementia’s symptoms is Alzheimer’s disease.

Approximately 35.6 million people have been diagnosed by dementia, and about 7.7 million new cases every year.

As of 2013, there were an estimated 44.4 million people living with dementia worldwide. This number will increase to an estimated 75.6 million in 2030, and 135.5 million in 2050. (resource: WHO)

B. Main characteristics of Mild Dementia

This paper shall focus mainly on characteristics of people suffering from Mild Dementia and how to design basic functionalities for remote telecare system.

Due to the impairment that are associated with old age and dementia combined, Dementia patients have a declined memory, distorted orientation, poor judgement and problem-solving, inability to function independently, mild but definite hobbies-activities execution, ad needs prompting for personal care.
It is important to note that people with Dementia have difficulty with violet-blue color range, instead Red is more identifiable since the brain has more receptors for color red than blue. In addition to color perception, they also have problems with depth, therefore, high contrast of icons is needed. And since they cannot distinguish a 3D model, it is advisable to design Flat-UI components rather than 3D. This visual hindrances ought to be highly considered during UI components design phase.

Figure 2.1. Clinical relationship between cognitive functionalities and dementia’s impairment. Res: http://rgp.toronto.on.ca/dmcourse/toolkit/app5.htm
3. Human-Centred Design Analysis

Relational Map Framework

A framework helps us to build a system that can be used in analysing key insights about the application. Below is a relational map on how the key features to be incorporated for Dementia Telecare are associated with each other. It is important to take note that this paper shall not cover the complete human-centred design process, although it shall be the stepping stone towards such methodology.

Figure 3.1. Relational Map between Dementia’s impairment combined with generic old-age hindrance and the most basic cognitive functionality of what, where and how.

Branching the components of cognitive functionality into three sub-categories will aid in the design of a more intuitive, easy-to-use and usable remote telecare systems for conditions similar to that of Dementia in general. The “Knowing What?” signifies identification, relation, and interpretation of user interface components of the application. “Knowing Where?” signifies the user’s interaction with the components in the UI and their decision-making process. It could also be the literal interpretation of the physical orientation and location of the remote device, especially for elderly people with dementia. “Knowing How?” concentrates upon the task execution process that the user of the application will undertake to achieve their target need. Here, we are to expand upon alternative design patterns for an application that will achieve the objective of aiding them with cognitive decisions and processes with minimal supervision.
Knowing What?

1. Retro-icons for easy identification.

   Dementia causes short term memory loss that hinders the person from learning new things and recalling them when needed. It is much easier for them to identify the functionality of the icon to that of a previous device they utilized prior dementia.

2. Video telephony

   Video telephony is highly recommended for people with Dementia in general due to it being the best Assistive communication tool. It can supplement auditory and/or visual impairment for dynamic conversation with family and care providers. An intuitive, easy-to-use contact list is needed since they don’t have the ability to control normal physical videophone controls.(e.g Start call, End Call, Hold)
Knowing Where?

1. Interactive notifications and reminders
   Since they experience difficulty to perform everyday tasks that used to be familiar dementia. Interactive reminders about their time (since they have orientation deficiency), daily meals, medication, hygiene rituals is necessary. By these notifications, it will help them stay engaged with the Application and remember it due to frequent use.

2. Auditory notifications
   This is supplementary to their audio-visual impairment. If the user doesn’t see well, this auditory notifier can help in reminding them of important daily tasks and incoming calls.

Knowing How?

1. Guidelines: visual tutorials
   Due to the memory loss and decreased judgements it is but necessary to develop a visual-tutorial of how to do simple tasks on the application so to make sure they are guided in using the features correctly.

2. Auditory guide
   This is supplementary to their audio-visual impairment. If the user doesn’t see well, this auditory guideline can help them execute the features accordingly.

REFERENCES