Collaboration in the real world as foundation for health robotics research for aged care

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Abstract and Objective

In many countries longevity is the norm. Healthcare becomes more complex as people age [1], opening up an opportunity for assistive robotic technology. Developing a healthcare robot requires input from a broad range of disciplines and skills – medical, engineering, management, psychology, computer science and health informatics. Interviews, observation and photographs were used to gain insight into how medicines are managed by residents and care givers in an aged care facility. Multiple perspectives were used to produce a medicines management process and a description of its context. Several worldviews were 'bridged' in this research resulting in an alignment of the research project team's efforts in preparing a robot that supports medication management.

Keywords:

Robotics, ehealth, Self-help devices, Medication therapy management, Chronic disease, Geriatrics.

Aim

This poster reports on the alignment of assumptions, knowledge, perspectives and skills in a large multidisciplinary team that spans two countries (Korea and New Zealand), several academic disciplines in two research organizations, and Selwyn Village (an aged care facility in New Zealand). The aim of this research was to describe the process, activities and context associated with medication management so that a medication reminder can be developed and deployed on a robot.

Method

Data were collected by interviewing and observing residents at Selwyn Village, and their relatives. Care givers, managers, and the facility's doctor and pharmacist were also interviewed. The data were analyzed thematically [2], resulting in process diagrams for system design, and contextual descriptions to gain a shared understanding of the constraints, facilitating factors and perspectives of people managing medicine routines (self or with assistance from others). The easiest way to identify potential contributions of a robot reminder system is to describe and analyse existing processes. We examined how care givers remind residents living independently at Selwyn Village to take their medicines.

Results

People have different ideas and expectations of what happens and what should happen in medication management. This has implications for support tool design. The medicines process may appear obvious to clinicians – prescribe the medicines, person takes them, represcribe when medicines run out. However, without being able to observe residents all the time, we were unable to collect evidence to assist clinicians in reducing errors and increasing the likelihood of people taking medicines as prescribed. In contrast to clinicians, residents and care givers emphasise their social context – medicines are part of starting the day. Care givers are concerned about the overall health of the people they care for, interrupting medicines rounds in response to calls for help. In contrast, engineers in the team focus on the technology while relying on input from clinical, psychological and social analyses. The technical, clinical, social, geographical and organizational aspects of this project were at times at odds with one another, despite the sound practice of requirements gathering prior to building the robot prototype.

Conclusions

This research resulted in convergence to a shared understanding of the task at hand. Collaboration in the conceptualization, design and development of a healthcare robot became the foundation for a practical design that is focused on meeting a specific need, medicines reminding. Medicines management is complex. A robot can be more than a reminder – it can be used to help clinicians understand what people do when enacting a prescription. This research is still in its early phase. Please contact the authors for more information.

References

[1] Sebern, M., Shared care, elder and family member skills used to manage burden. Journal of Advanced Nursing, 2005. 52(2): p. 170-179.

[2] Miles, M.B. and A.M. Huberman, Qualitative Data Analysis: An Expanded Sourcebook. 1994, Thousand Oaks: Sage Publications.