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Supporting medication intake of the elderly with robot technology

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AIM OF THE STUDY

• To develop a robot interface to assist the elderly with their medication intake.
• To investigate whether the target group is willing to accept medication intake assistance from a robot.

MEDICATION INTAKE INTERFACE

BACKGROUND

• Medication intake can prove to be a complicated task for the elderly.
• Roughly 50% of all prescribed medication is taken incorrectly (McLaughlin, et al, 2005).
• Simplification of this task might have beneficial effects on this group’s general health and society’s healthcare costs.
• Together with Enacer Company we developed an assistive robot for the elderly called RITA (the Reliable Interactive Table Assistant).

DESIGN PROCESS

Interviews with caregivers

Main result:
• It is especially important to check whether the elderly actually take their medication.

Focus group of elderly

• Feedback on the clarity of the design.
• Requirements analysis.

Main result:
• Font size should be increased for optimal utility.

Interface development

• The interface was developed in HTML5.

User study

• Usability test of the interface on the touch screen.
• Subjects were asked to perform a number of tasks related to the intake of medication.
• Basic task: supervision of medication intake.
• More advanced functions: change settings.
• Acceptance questionnaire.

SHORTEST SUMMARY

• RITA is a robot to assist the elderly in daily activities.
• We developed and evaluated an interface for RITA.
  • To remind elderly about medication intake.
  • On a touch screen.
• The main findings were:
  • Users understood the interface.
  • Users were able to take medication with the touch screen support.
  • Many were unable to perform slightly more advanced functions.
• The main conclusions / recommendations were:
  • Interfaces should be as simple as possible.
  • Usability tests should be routine in developing health technology for the elderly.

AIM MAIN RESULTS OF USER STUDY

Usability test

• The majority of participants in this study (17 out of 19) were able to take their medication with assistance of the interface.
• Participants found it difficult to work with more advanced interface settings.
• Setting notifications interval.
• Changing pharmacy’s contact details.
• Post-Study Usability Questionnaire (Likert 5-point scale).
• Users rated usability positively.
  • Mean score of 3.9 (between ‘Neutral’ and ‘Agree’).

Robot Acceptance

• Robot Acceptance Questionnaire (Likert 5-point scale).
• User accepted help from the robot.
  • Mean score of 3.5 (‘Neutral’).

CONCLUSIONS & RECOMMENDATIONS

Conclusion

• The basic functionality of the interface was easy to use for the elderly for assistance with the medication intake task.
• Elderly are willing to accept assistance of a robot with this task.

Recommendations

• Interfaces for the elderly should really be as simple as possible.
• Testing of usability aspects during the design process is vital for a well-designed robot.

REFERENCES