

User requirements for an emotion-intelligent autonomous care robot in long-term dementia care

Introduction

- With the growing number of people living with dementia and ongoing staff shortages, delivering personalized care in long-term care is increasingly challenging.
- To maintain quality of care, there is a rising interest in social robots.
- These robots are **not** yet emotion intelligent and autonomous, limiting their full potential: operating without human guidance and interact in a meaningful manner.

Objective

To identify and prioritize user requirements and perceptions for an autonomous emotion-intelligent care robot in long-term dementia care.

Methods

- Multi-stakeholder qualitative design; two rounds.
- 6 focus groups and 3 duo interviews with healthcare professionals and family caregivers.
- 8 semi-structured interviews with persons with dementia.
- Thematic analysis with inductive approach.

Group	N	♀	Age range
Persons with dementia	4	2	80-86
Family caregivers	8	6	52-84
Staff	24	23	18-63

Results

User Requirements

THEMES

-  **Prerequisites**
-  **Physical Appearance:** exterior, interface, customizability
-  **Functional Requirements:** care-related functions, social and emotional capabilities, technical requirements

- Robustness
- Safety
- Easy to operate
- Customizable
- Hygienic
- Stimulate independency¹
- Companionship¹
- Soft material
- Warm colors
- Monitor and intervene¹
- Limited amount of buttons
- Provide activities

- No assistance in activities of daily living
- No overly mechanical design
- No immediate shut-off

¹ These requirements are specifically related to enabling emotion recognition, interpretation, and response, which are essential for the robot to become emotion-intelligent.

Perceptions

Expected advantages:
Increase in 1:1 contact
Provision of immediate comfort
Neutral judgement
Structured interaction
Assisting Staff

"The robot is an addition, not a replacement. Just an extra tool, and extra pair of eyes and ears" – Family caregiver

Expected disadvantages:
Technical issues
Incorrect interpretation
Robot is not accepted by everyone
Risk of dehumanization of care

"I don't want a robot touching me. I have lovely ladies who help me wash and shower. What more do I need?" – Care recipient

Conclusion

- **Understand needs and expectations:** Integrate identified user requirements in design of emotion intelligent robots.
- **Ensure acceptance and success:** Meeting these requirements is key for implementation.
- **Complement, don't replace:** Robots should support autonomy and person-centered care.
- **Protect dignity and trust:** Essential in long-term dementia care.

