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MC Medical Center

UNCZ University Network
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South-Netherlands

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

How do we design a robot that people are willing to accept in care?

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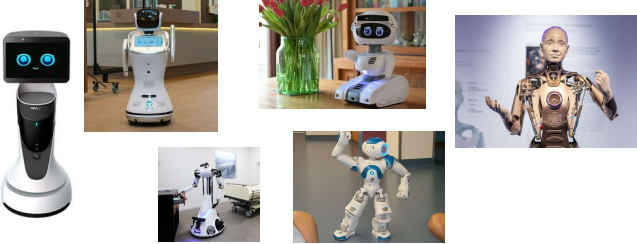
A changing reality in care

"It is not a choice between a care worker or a robot. No, it's a robot or nothing. The alternative is that nothing happens" – Family Caregiver in Dementia setting

Harmsen, M. et al. User requirements for an emotion-intelligent autonomous care robot in long-term care. Eur Geriatr Med (2026). <https://doi.org/10.1007/s41999-026-01532-9>

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Care robots already exist in many forms

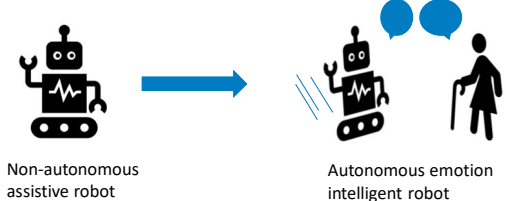


But which types would people accept when robots become more autonomous?

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The next step: autonomous & emotion-intelligence



Non-autonomous assistive robot

Autonomous emotion intelligent robot

Why important?: Enhances robot's ability to truly support and engage with users

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How did we explore this?

Objective: To identify and prioritize user requirements and perceptions for an autonomous emotion-intelligent (EI) care robot in long-term care

Interview

- People with dementia (n=4)
- People with intellectual disabilities (n=7)
- Family caregivers (n=14)
- Healthcare professionals (n=32)

Focus groups

Conversation topics

- Perceptions of an autonomous EI robot
- Functions
- Design: interface, fabric
- Customization
- User-friendliness

Data was analyzed using reflexive thematic analysis.

2 rounds within a six month period

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What do users need from care robots?

Prerequisites	Functional Requirements	Physical Appearance
- Robustness - Safety - Easy to operate	- Care-related functions - Social and emotional capabilities - Technical requirements	- Exterior - Interface - Customizability

"Color is important because of attractiveness and whether something feels threatening. Colors evoke emotions and can help establish contact – Family caregiver in ID setting

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ID: Intellectual Disabilities

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Where do robots add value?

Care recipients	- Provide entertainment - Provide comfort - Provide companionship	<i>"You can just share your story without judgements. The support worker will always have some sort of judgement, the robot is neutral" – Person with ID</i> <i>"The robot is an addition, not a replacement. Just an extra tool, an extra pair of eyes and ears of the healthcare professionals" – Family caregiver in dementia setting</i> Harmsen, M. et al. User requirements for an emotion-intelligent autonomous care robot in long-term care. Eur Geriatr Med (2026). https://doi.org/10.1007/s41999-026-01532-9
Family Caregivers	Conversate on same cognitive level	
Healthcare professionals	- Offer assistance in administrative tasks - Monitor care recipients - Provide adjustable interventions	

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Where do we draw the line?

Care recipients	No intimate activities	<i>"I don't want a robot touching me. I have lovely ladies who help me wash and shower. What more do I need?" – Person with dementia</i> <i>"The robot remains a machine. It doesn't look, smell, or feel like a human. It can't offer the warmth we provide" – Family caregiver in dementia setting</i> Harmsen, M. et al. User requirements for an emotion-intelligent autonomous care robot in long-term care. Eur Geriatr Med (2026). https://doi.org/10.1007/s41999-026-01532-9
Family Caregivers	- Increased dependency on technical developments - Privacy issues	
Healthcare professionals	- Technical issues - Verification of healthcare professional still needed - Dehumanization of care - Incorrect interpretation	

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A central tension in care robotics

✓ Support independence ✓ Provide structure ✓ Reduce workload	✗ Loss of human connection ✗ Trust & reliability concerns ✗ Ethical boundaries
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Acceptance depends on balancing autonomy with human-centered care

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Designing for acceptance

- Robots should **support** – not replace – care
- Focus on non-intimate tasks
- Emotion intelligence = supportive, not decisive
- Need for gradual implementation and education

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Acceptance depends on context

Acceptance depends less on what robots can do – and more on how they fit into care relationships.

One robot does not fit all: design must match the care context

Dementia setting - Structure & routines - Predictability - Simple support	Intellectual Disabilities setting - Social interaction - Companionship - Non-judgmental support
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