

Exploring implementation opportunities for a garment-integrated sensor system for early detection of stress in people living with dementia in long-term care

Introduction

Persons with dementia are vulnerable to stress (1). Stress can lead to challenging behavior, which negatively impacts quality of life of persons with dementia and their caregivers (2).

Objective: to explore the implementation opportunities for a garment-integrated sensor system that enables caregivers to identify early signs of stress in people with dementia.



Methods

- Qualitative design with online focus groups (n=9) and interviews (n=21).
- Online focus groups were not feasible for people with dementia.
- Thematic analysis using Atlas.ti.

Table 1: Participant characteristics

	People with dementia	Family caregivers	Healthcare professionals
N per group	4	10	9
M age in years [SD, range]	66.3 [9.8, 55-75]	64.3 [7.1, 54-72]	49.0 [13.4, 27-65]
Female (%)	2 (50%)	7 (70%)	9 (100%)

Conclusions

Participants were positive about the idea of a garment-integrated sensor system for people with dementia in long-term care as the system could serve several purposes (e.g. stress identification, diagnostic purposes, evaluation, self-regulation).

To increase implementation success, it is important to create an **easy-to-use, tailor-made system, educate stakeholders, and establish clear guidelines** for use.

The next step is to validate and implement the system in long-term care. *(scheduled to take place in 2024)*

Results

Implementation opportunities



Participants were positive about implementing a garment-integrated sensor system in both **intramural and extramural care settings**, as it could be used to identify stress, diagnostic purposes, evaluate (the effect of) interventions targeting challenging behavior and increase self-regulation.

Implementation requirements



1. Guidelines and agreements
Implementation in long-term care requires an initiator as well as clear guidelines, protocols and agreements for use.



2. Education
Training programs regarding the use of the sensor system should be provided to staff, family caregivers, and (in some cases) the care recipient. Furthermore, a trial period is desirable.



3. Sensor system requirements
The garment-integrated sensor system needs to be customizable to fit the needs and wishes of its user and user-friendly to increase user acceptance and thereby implementation success.

References

1. Sharp BK. Stress as experienced by people with dementia: An interpretative phenomenological analysis. *Dementia*. 2019;18(4):1427-1445.
2. Sefcik JS, Ersek M, Libonati JR, Hartnett SC, Hodgson NA, Cacchione PZ. Heart rate of nursing home residents with advanced dementia and persistent vocalizations. *Health and technology*. 2020;10(3):827-831.



Contact: Esmee Adam, MSc
e.adam@lumc.nl
masquestudie@lumc.nl