

residents cannot themselves indicate what is experienced as stressful or relaxing), hampering the psychosocial approach. Several studies have found that skin conductance and heart activity can be used as a proxy for stress. Measuring these physiological parameters using wearable sensors, might be helpful to identify (de)stressors and consequently, a psychosocial treatment approach. Therefore, wearables are promising as a supportive technology in the care of people with dementia and CB. However, stakeholders (i.e., (in)formal caregivers of people with dementia) indicate that current available (wearable) systems to measure stress are not fit for purpose within the everyday care of people with dementia. In addition, due to legislation, not all systems are allowed. The purpose of the current research is to develop a system prototype together with different stakeholders.

**Method:** A prototype of a system measuring stress suitable in the care for people with dementia will be developed during different iterations between September 2022-July 2024. A community of stakeholders will be built, in which the needs, requirements and evaluations of people with dementia, (in)formal caregivers, legal- and IT-experts, will be collected through literature studies, focus groups, interviews and co-design sessions. The system will be developed and adjusted appropriately, taking social, technical and legal requirements into account.

**Results and discussion:** Preliminary results will be presented regarding identified requirements for initial system prototypes as well as lessons learned from first iterations with conceptual and working prototypes. Implications for the care and self-management of people with dementia will be discussed.

### **Sensortechnology for monitoring challenging behavior in nursing home residents with dementia**

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**Background:** Neuropsychiatric symptoms (NPS) are common in affected individuals and can be challenging for (in)formal caregivers. Therefore, they are also referred to as challenging behaviors (CBs). Sensor technology measuring context and behavior can be assistive to effectively manage CBs in an objective fashion. Sensors can help support healthcare professionals, such as nurses, by enabling remote monitoring and alarming on early-stage behavioral changes associated with CBs. This might/ will improve the quality of life (QoL) for both caregivers and clients living in a nursing homes (NH).

In the project “MOonitoring Onbegrepen Gedrag bij Dementie met sensortechnologie” (MOOD-Sense), we aim to develop such a monitoring system. Our research focuses on two questions 1) How to develop and implement a monitoring system within the context of nursing homes with parameters on environment, physiology, and behavior, identify and process relevant precursors of challenging behavior with this monitoring system and 2) gain insight in which behaviors are challenging according to nurses and how they are described. This will be represented in an ontology such that sensor data can be translated into the same conceptual information.

**Methods:** The first research question will be examined with a set of experiments in the field (in NH) with an iterative approach. Insights from previous experiments on usability and added value of sensors will be used to improve successive experiments. During each experiment, multiple participants (clients with dementia and CBs) are monitored with both ambient and wearable sensors. For the second research question a qualitative approach is employed, using focus groups

(FG) and consensus methods. These FGs will be held amongst nursing staff who are involved in daily care tasks for people with dementia. Subsequently, consensus methods are used to align behavioral descriptors/labels.

**Results:** early findings will be presented at the symposium

**Discussion:** Within this project we expect to find precursors of challenging behavior in a personalized fashion based on nurse's expert knowledge and sensor data. In order to develop a monitoring system that can be embedded within NH's, real-time alarming, in-situ behavior recognition and trustworthiness are part of our technological requirements. Just-in-time interventions may then be deployed to prevent behavior escalation or the persistence of undesirable situations.

**Learning from trials: LIVE@Home.Path, a stepped-wedge cluster randomized controlled trial of care coordination and implementation for home-dwelling people with dementia.**

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**Background:** Dementia is not an unavoidable consequence of aging, but for most home-dwelling people with dementia (PwD) a result of complex chronic health conditions. About 95% of PwD have multimorbidity, which requires a multicomponent approach and interdisciplinary collaboration to support patients and relatives, and to implement welfare technology and smart solutions.

**Method:** The LIVE@Home.Path study is a 2-year, mixed-method, stepped-wedged, cluster randomized controlled trial, including home-dwelling PwD and their informal caregivers (N=320 dyads) in Norway (May 2019 – December 2021), to investigate the efficacy of the multicomponent LIVE intervention (LIVE is the acronym for Learning, Innovation, Volunteerism, and Empowerment) on resource utilization and use of welfare technology. The intervention was implemented by a skilled coordinator from the municipality with high focus on use, usefulness, and experiences in welfare technology, both at baseline and during the implementation period.

**Results:** At baseline, we found that most participants had traditional equipment such as stove guards (43.3%), social alarms (39.5%) or everyday technology (45.3%) (e.g., calendar, door locks). A social alarm was more often available for alone-living elderly women, while tracking devices (14.9%) were associated with lower age. Everyday technology was more often available for women at increased age, higher comorbidity, and poor instrumental activities of daily living (IADL). In people with severe dementia, welfare technology was associated with poor IADL function, children as the main caregiver (61.3%), and having caregivers who contributed 81–100% to their care (49.5%).

**Discussion:** We describe unmet potential for communication, tracking, and sensing technology and especially, for devices not offered by the municipalities. In our symposium, we will present early findings on the implementation effect of welfare technology and participants experiences related to usage and awareness.