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Dementia Ambient Care: A holistic approach to the management of dementia in multiple care settings



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BACKGROUND

- Assistive Technologies facilitate a more objective way of monitoring and supporting a person with dementia's behavioural, cognitive, and emotional states, than that provided by traditional questionnaires.
- The Dementia Ambient Care toolbox uses a variety of ambient and wearable sensors to provide individualised, person-centred support in five domains (physical activity, sleep, activities of daily living, social interaction, and mood) in multiple care settings¹.
 - Dem@Home** is a home-based system that enables independence and facilitates "ageing in place" by supporting the health lifestyle and safety of people with dementia.
 - Dem@NH** focuses on the clinical assessment and management of Behavioural and Psychological Symptoms of Dementia (BPSD) in nursing home settings.

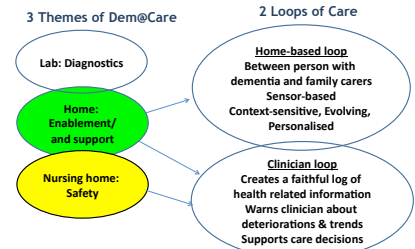


Figure 1. Dem@Care system and sensors

METHOD: Dem@Home

- Multiple case study with purposive sampling
 - Lead Users (n=2 Dublin; n=3 Thessaloniki; 7-20 months in duration)
 - Resilience Intervention participants (n=5 Dublin; 3-4 months in duration)
- Clinical needs assessment to select sensors

METHOD: Dem@NH

- BPSD evaluation with n=10 nursing home residents in Sweden
- NPI-NH psychometric assessment and Dem@NH sleep and stress sensors (previously validated strong correlation with structured staff observations of BPSD)

RESULTS: Dem@Home

Improvements were found as a result of Dem@Home system monitoring and feedback

- Clear periodicity in sleep disruptions (duration and interruptions) were found and could be addressed



- Combination of sleep and physical activity: less TV watching lead to more and better quality sleep



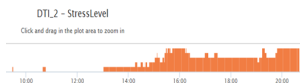
- ADL Intervention: increased levels of moving intensity found when monitoring scheduled daily activities
- Daily activities were assessed to identify points where appropriate scaffolding could help preserve the activity



Figure 2. Example of Dem@Care sensor use at home

RESULTS: Dem@NH

- Sensors provided specific and objective information on patterns of sleep and stress



- Enabled the development of highly personalised interventions to prevent sequences of stress and interrupted sleep
- Sensor information was also used to evaluate and monitor care interventions

CONCLUSIONS

- Clear value of objective ongoing assessment that better supports the person with dementia and helps identify improvement, stasis, or decline over time.
 - Objective measurement enhances clinical assessment of a person's cognitive, functional, and emotional status in a familiar environment
 - Ability to triangulate data from various sensors measuring various domains
 - Individualisation of interventions and treatment plans (@Home and @NH)
- Ability to support the person with dementia (@Home) with online reminders, checklists, prompts, and directed practise.
- Importance of recognising and addressing challenges that arise with the use of assistive technology with people with dementia:
 - Initial needs assessment is essential to determine appropriate sensors to use
 - Ongoing management of ethical concerns such as privacy and surveillance²

REFERENCES

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ACKNOWLEDGEMENTS

This research has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement 288199 – Dem@Care

