Evaluation of combining daytime structure, lifestyle-monitoring and social companionship in socially assistive robots for gerontechnology

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Purpose In recent years, robots have more frequently been implemented in care for older adults (Na et al., 2023). Care robots can serve different purposes, for example providing social, physical, or medical assistance (Bouwhuis, 2016). Socially assistive robots (SARs) support in activities of daily living and/or providing social companionship (Abdi et al., 2018). In practice many SARs also have a physical or medical assistive function. However, as noted by Vercelli et al. (2018), the majority of SARs aid users in maintaining daytime structure, such as reminding them to take medication or suggesting activities for a healthy lifestyle. Furthermore, the research of Casaccia et al. (2019) showed promising results for integrating SARs with lifestyle monitoring devices, resulting in better aligned advices by the robot and more accurate measurement of ADL of older adults. In addition, the review of Vercelli et al. (2018) showed that robot pets and dolls are, in healthcare, often used as psychotherapeutic tools to improve the emotional state of users, acting as a form of social companionship. Lifestyle-monitoring devices, robot pets and devices for daytime structure have their specific stage in the dementia process in which they can be best implemented (Ipakchian Askari et al., 2024). The earlier stages are suggested for daytime structure and lifestyle monitoring, while robot pets are suggested to be used in later stages. By integrating the three components, a SAR can be used for a longer progression of the disease. Furthermore, when SARs are used for a longer period of time end-users tend to build a social connection with them (Reeves and Nass, 1996). Hence, a SAR that integrates the three components can improve the potential of SARs. An example of such an integration is the Hyodol robot, developed in South Korea. In this study, we assess Hyodol's potential in Dutch care context. The results can be used in future development of SARs that integrate daytime structure, lifestyle monitoring and social companionship in one SAR. We introduce this new type of care robots as cuddly and socially assistive robots (CSARs). **Method** This study was an explorative study involving 22 healthcare professionals and 15 older adults with dementia, spread over three research activities. The first activity entailed mapping the care processes when delivering daytime structure, in which a comparison was drawn between the current care process and the expected care process when Hyodol is used. The subsequent two research activities comprised focus groups, one including healthcare professionals and one involving older adults with dementia. During these focus groups the potential effects of Hyodol were assessed and discussed. **Results and Discussion** We have explored the potential of integrating social companionship, lifestyle monitoring and daytime structure in CSARs for older adults. Results indicate that the use of a robot with these integrations can have potential benefits for both extramural and intramural care. Moreover, it was discussed that the target group that could benefit from the CSARs is not merely people with dementia. For clients in somatic or psychogeratric departments the device could also be promising. Additionally, healthcare workers expressed to see potential in using Hyodol for people with (cognitive) disabilities or for daytime activity centers. To conclude, the combination of daytime structure, lifestyle monitoring and social companionship in CSARs can have potential benefits in long-term care and is worth further research.

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