Prioritizing older adults: Ethics and equitability reflections in implementing and deploying active assisted living systems

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Purpose Despite advances in modern medicine allowing older adults to live longer with increasingly complex needs, care provision has not kept up with the growing needs of this group (Hoffman et al., 2021). Active Assisted Living (AAL) systems—comprised of IoT devices designed to improve quality of life, aid in independence, and promote healthier lifestyles—have great potential to facilitate personalized, efficient care (Kushniruk et al., 2021). Still, little guidance exists for their practically ethical implementation (Fadrique et al., 2020). This project aims to explore how AAL may be feasibly integrated into the continuum of care and provide actionable steps for deployment while considering users' perspectives. **Method** Phase 1: Using a web-based collaboration software platform (Covidence), we synthesized the literature and assessed (1) what impacts a user's autonomy, (2) what concerns arise regarding equitability, and (3) the unintended impacts of introducing AAL technologies. Phase 2: A grey literature scan on existing standards and guidelines on the ethical implementation and deployment of IoT devices in AAL systems can identify gaps and inconsistencies in the current standards. Based on the grey literature scan results, we will provide recommendations on how to update the guidelines for the ethical implementation and deployment of AAL technologies. Phase 3: The study will apply a Public Health and Ethics (PHE) lens, which incorporates the moral implications of public health actions, interventions, and policies, focusing on promoting the common good, protecting population health, and respecting individual rights and autonomy using systematic frameworks (Marckmann et al., 2015). **Results and Discussion** Phase 1: AAL technology users presented themes affecting their autonomy and effective usage of technology in AAL systems, including data inaccuracy, (in)accessibility, privacy, safety and security, and stigmatization and alienation. The barriers and opportunities to equitable deployment and implementation of AAL technologies as identified by the users can be summarized at the micro (household/individual), meso (institutional), and macro levels, as shown by the World Commission on the Ethics of Scientific Knowledge and Technology (2023). At the micro level, users in the home reported varying degrees of ease in accessibility to control devices and privacy issues arising from unwanted intrusions from smart sensors recording them on video and when in the company of others at home or in their social circles. At the meso level, users expressed their desire to be included in the design process as co-designers of the technology. In contrast, at the macro level, regulators and standards associations would have to consider the users' perceptions of the benefits of self-determination versus external determination, the impact of receiving personalized instructions directly from AI, who could automatically access the data generated from sensors, how much of it and how frequently. Overall, this study will provide actionable insights for stakeholders in implementing, deploying, and regulating AAL systems to maximize benefits while minimizing risks for older adults and promoting equitable access to care. Further research is needed to address gaps in the literature and inform practical strategies for effectively integrating AAL technologies into the continuum of care at the macro level.

References

Covidence systematic review software, Veritas Health Innovation, Melbourne, Australia. Available at www.covidence.org.e15923.

Fadrique, L. X., Rahman, D., Vaillancourt, H., Boissonneault, P., Donovska, T., & Morita, P. P. (2020). Overview of policies, guidelines, and standards for active assisted living data exchange: thematic analysis. *JMIR mHealth and uHealth*, *8*(6).

Hoffman, G. J., Webster, N. J., & Bynum, J. P. (2021). A framework for aging-friendly services and supports in the age of COVID-19. In Older Adults and COVID-19 (pp. 171-180). Routledge.

Marckmann, G., Schmidt, H., Sofaer, N., & Strech, D. (2015). Putting public health ethics into practice: a systematic framework. Frontiers in public health, 3, 125749.

Novitzky, P., Smeaton, A. F., Chen, C., Irving, K., Jacquemard, T., O'Brolcháin, F., ... & Gordijn, B. (2015). A review of contemporary work on the ethics of ambient assisted living technologies for people with dementia. *Science and engineering ethics*, *21*, 707-765.

Vimarlund, V., Borycki, E. M., Kushniruk, A. W., & Avenberg, K. (2021). Ambient assisted living: Identifying new challenges and needs for digital technologies and service innovation. *Yearbook of medical informatics*, *30*(01), 141-149.

World Commission on the Ethics of Scientific Knowledge and Technology. (2023) *The ethical implications of the Internet of Things (IoT)*. Paris: United Nations Educational, Scientific and Cultural Organization.

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