

OPP: CRISES & PREPAREDNESS

Challenges with safety, security, and emergency preparedness among people aging with disabilities: Technology Implications

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Purpose Worldwide, people with disabilities acquired in early to mid-life are living longer, contributing to growing numbers of older adults aging with disability. Older adults with long-term sensory and mobility disabilities are likely to experience challenges performing everyday activities and have high support needs due to the combination of comorbid conditions, age-related declines, and long-term disabilities (Mitzner, et al., 2018). They may experience barriers that impact their safety and security in the home and community, which can ultimately inhibit their ability to age-in-place. Technology holds great potential to support people aging with disabilities in preventing and responding to emergency situations. However, effective gerontechnology solutions for this unique population must respond to real-world issues experienced by these individuals and engage target users in research and development. **Method** The Aging Concerns, Challenges and Everyday Solution Strategies (ACCESS) study is a mixed-method investigation of everyday challenges among people aging with disabilities that explores user support needs to guide technology innovation (Koon et al, 2020; Remillard et al., In Press). We conducted an archival analysis of the ACCESS interview data regarding reported challenges related to safety and security (e.g., getting help in case of an emergency). Participants were 180 older adults (ages 60-80) with long-term disabilities (i.e., at least 10 years) representing 3 subsamples (n=60 in each group) including: vision impairment (due to macular degeneration or glaucoma), multiple sclerosis (MS), and late-deafened. We conducted a thematic analysis to assess types of concerns (e.g., crime, fire, health episode), challenges, and response strategies, which were further categorized using the Selection, Optimization, and Compensation model of aging to understand adaptation to losses. **Results and Discussion** For the vision impairment group, key concerns included navigating unfamiliar places (i.e., unsafe part of town, getting lost) and having to trust others without being able to see what they are doing (e.g., ride share driver not going to intended location, potential theft among home service providers). Participants with MS reported concerns about falling as well as mobility challenges that could hinder their ability to respond to an emergency (e.g., evacuating in a wheelchair, inability to move quickly, poor reflexes). For late-deafened participants, concerns were primarily related to missing important sound-based alerts or alarms (e.g., fire alarm) or not having access to essential information in the event of an emergency. Across groups, challenges were primarily related to their disabilities, but were also attributed to other factors such as memory issues, falls, and other health conditions. Participants reported various solutions including technologies (e.g., emergency response devices, smart watches, phone apps); getting assistance from others; personal strategies (i.e., advanced planning and communication); as well as avoiding certain situations. Some participants shared they simply would not know what to do in an emergency. We identified critical unmet needs for safety and security among people aging with long-term disabilities that illuminate opportunities for technology and design innovation at the intersection of aging and disability. Results identify opportunities for both existing technologies (e.g., ride sharing apps, alarm systems) and future technologies to enhance the safety and confidence of older adult users with a range of sensory and mobility abilities. Findings reinforce the need for accessible technologies that provide environmental and situational information in multiple formats (i.e., text, audio, graphics) with multi-modal alerts (i.e., sound, vibration, lights) that can be customized to users' needs and preferences. In designing environments for older adults, it is essential to consider how individuals with disabilities can effectively respond to emergency situations (e.g., evacuations) and develop inclusive response plans that accommodate their support needs and use of aids. Collectively, results provide insights to enhance the safety and security of people aging with long-term disabilities with interdisciplinary implications for technology design, architecture and community planning, emergency response management, and policy.

References

- Mitzner, T. L., Sanford, J. A., & Rogers, W. A. (2018). Closing the capacity-ability gap: Using technology to support aging with disability. *Innovation in Aging*, 2(1), 1–8. <https://doi.org/10.1093/geroni/igy008>
- Koon, L.M., Remillard, E T., Mitzner, T.L., & Rogers, W.A. (2020). Aging Concerns, Challenges, and Everyday Solution Strategies (ACCESS) for adults aging with a long-term mobility disability. *Disability & Health Journal*, 13. <https://doi.org/10.1016/j.dhjo.2020.100936>
- Remillard, E.T., Koon, L.M., Mitzner, T.L., & Rogers, W.A. (in press) Everyday challenges for individuals aging with vision impairment: Technology implications. *The Gerontologist*.

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