

Application Fields and Innovative Technologies

Understanding the challenges, barriers, and opportunities of telehealth applications to support older adults' access to health services G. Mois, A. M. Kiselica, H. Hubbard, E. Tuggey, J. M. Beer.
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Purpose The evolution of information and communication technology has helped enhance access to healthcare information, resources, and services for older adults. Amongst these technologies, telehealth appears to have a promising potential to meet the health needs of older adults by improving access to medical services [1]. Indeed, telehealth approaches may overcome limitations related to physical distance, access to transportation, and local availability of medical care [2]. However, telehealth applications with limited user support, unintuitive interface design, limited compliance with federal regulations (e.g., HIPAA), and lack of customizability (e.g., adjusting font size) can pose significant challenges for older adult users who are often not involved in the design process [3]. The goal of our research was to identify the key challenges, barriers, and opportunities of existing market-ready telehealth through a heuristic evaluation.

Methods We began our evaluation process by identifying the most commonly used telehealth applications on the mHealth market via web searches, a literature review, and application store searches. Our search resulted in the identification of 20 telehealth platforms, which were then reviewed by our team and assessed for inclusion in our evaluation. The criteria for inclusion included a business-to-consumer model, HIPAA compliance, availability of general medical care (i.e., not a specialty app), and being free to download. Three applications met these criteria: Doctor on Demand, Teledoc, and MDLive. Most applications were excluded due to a lack of a general medical care focus and business model. Our evaluation process consisted of heuristic evaluations of each platform along with quantitative ratings of the application using the Mobile Application Rating Scale (MARS) [4]. The heuristic evaluations and ratings were conducted by 5 raters trained in gerontechnology user design and geriatric clinical care. Each rater assigned a score for each of the 10 Nielsen Heuristics [5]. Scores ranged from 0 (no usability problem) to 4 (usability catastrophe). Raters also scored each of the applications using MARS, providing subscale scores for the following areas: engagement, functionality, aesthetics, and information. Scores for each of the subscales ranged from 1 (very poor quality) to 5 (excellent quality). Any inter-rater discrepancies were discussed during team meetings until a consensus was reached. **Results and Discussion** Our findings indicate that each of the three selected applications violated at a minimum 9 of the 10 Nielsen Heuristics, with scores ranging from 1 (cosmetic issues) to 3 (major usability problems). The most violated heuristics across applications are related to poor ability to diagnose and recover from errors, lack of user control and freedom, and poor visibility of system status. MARS scores indicated the applications selected ranged from very poor (1.0) to acceptable to moderate quality (3.5) for each of the subscales, with the poorest scores on engagement (average scores ranged from 1.8 - 2.7) and the highest scores on information (average scores ranged from 3.2 - 3.4). Overall, each of the applications evaluated raised critical concerns regarding usability and ease of use, posing significant threats for long-term adoption among older adults. It is important to note that the generalizability of our results may be limited due to the low number of apps that met the inclusion criteria of our review. However, these findings inform the need to better design existing and new mHealth telehealth platforms by providing guidance on which heuristic violations need to be addressed to achieve a user-centered design approach.

References

1. Bakas T, Sampsel D, Israel J, Chamnikar A, Bodnarik B, Clark JG, et al. Using telehealth to optimize healthy independent living for older adults: A feasibility study. *Geriatr Nur (Lond)* 2018;39:566–73. <https://doi.org/10.1016/j.gerinurse.2018.04.002>.
2. Wardlow L, Roberts C, Archbald-Pannone L, on behalf of The Collaborative for Telehealth and Aging. Perceptions and Uses of Telehealth in the Care of Older Adults. *Telemed E-Health* 2023;29:1143–51. <https://doi.org/10.1089/tmj.2022.0378>.
3. Leff B, Ritchie CS, Rising KL, Cannon K, Wardlow L. Addressing barriers to equitable telehealth for older adults. *Front Med* 2025;12. <https://doi.org/10.3389/fmed.2025.1483366>.
4. [Stoyanov SR, Hides L, Kavanagh DJ, Zelenko O, Tjondronegoro D, Mani M. Mobile App Rating Scale: A New Tool for Assessing the Quality of Health Mobile Apps. *JMIR MHealth UHealth* 2015;3:e27. <https://doi.org/10.2196/mhealth.3422>.
5. Nielsen J, Molich R. Heuristic evaluation of user interfaces. *Proc. SIGCHI Conf. Hum. Factors Comput. Syst. Empower. People - CHI 90*, Seattle, Washington, United States: ACM Press; 1990, p. 249–56. <https://doi.org/10.1145/97243.97281>.

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