Remote Healthcare Technology Use Cases and the Contextual Integrity of Older Adult User Privacy

Daniela Napoli
Carleton University
Ottawa, Canada
daniela.napoli@carleton.ca

Sonia Chiasson
Carleton University
Ottawa, Canada
chiasson@scs.carleton.ca

ABSTRACT

Remote healthcare technology can be particularly helpful to older adults, or people aged 65+. We outline use case scenarios that have helped us facilitate discussion surrounding the contextual integrity of privacy while leveraging this technology.

1 INTRODUCTION

Digital care options have been expanded to address patients' needs outside of typical healthcare settings. These solutions originally helped to reduce the transmission of COVID-19 but have subsequently addressed longstanding challenges like access inequities and low healthcare human resources [2]. These solutions may become critical while elderly populations continue to grow and pressures for specialized health and home care services increase [1, 7].

Research has explored a number of directions to support remote healthcare services for older adults including sensing and monitoring systems, patient portals, disease management tools, and video games [4]. However, users in this demographic often have low adoption rates [5], suggesting that these services are not adequately addressing the diverse needs of this population. Factors influencing adoption among this heterogeneous group include cultural expectations and priorities [6] and the networked and evolving nature of their support systems (e.g., inclusion of family members, care teams) [3]. Privacy concerns have also been expressed as a barrier to adoption [5] which vary considerably depending on context.

2 HEALTHCARE SCENARIOS

In our work with older adults in Canada, we devised several scenarios where remote healthcare could be applicable. These scenarios can anchor discussions around how privacy decisions relating to remote healthcare can rely on contexts which may vary over time. When devising the scenarios, we considered two main axes: criticality of the health situation and duration of data sharing.

Symptoms Screening: *(Low criticality, short-term use)* Remote technology can help screen mild symptoms prior to seeking assistance from healthcare professionals. Data can be limited to one's appearance and answers to diagnostic questions. Users can send this data to a healthcare provider and others in their support system for further guidance. Remote healthcare technology for this purpose may be used for a limited time with little impact on privacy.

Health Emergency: *(High criticality, episodic sharing)* Remote technology can help manage emergencies by monitoring for support opportunities. Basic data like vital signs and more pervasive data like video and audio may be collected. This data may be sent to emergency response teams automatically and, depending on the scenario, response teams may share with healthcare providers.

Palliative Care: *(High criticality, long-term use)* To help someone in palliative care, remote technology may monitor users pervasively to detect dire situations. To provide emergency care, this data may be frequently shared with emergency response teams and healthcare providers so that they can adapt quickly. Users may choose to share with others in their support systems.

Chronic condition: *(Varying criticality, varying use)* Long-term health conditions can range in their critical nature and support needs may change over time. For example, diabetes conditions can vary in initial severity and worsen or improve after extended management. Data collection and sharing options provided by remote healthcare technology supporting chronic conditions may be flexible to changes that occur. In some instances, data may need to be continuously and automatically shared with healthcare providers for monitoring purposes. While, in other instances, users may choose to disclose data on an as-needs basis.

3 DISCUSSION

To-date, we have used scenarios to frame survey questions, and intend to use contextual integrity as a framework guiding upcoming interviews and design activities. Discussion can explore questions about the dynamic privacy expectations of older adult users and other actors within these scenarios, including:

- How do the norms of various healthcare contexts impact older adult users' privacy expectations?
- Which contextual parameters (e.g., data type, senders, recipients) most impact these uses' privacy expectations within healthcare contexts?
- How should remote technology which better accommodates various privacy expectations be designed?

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