Social Determinants of Mobile Health App Adoption - A Qualitative Study of Older Adults' Perceptions in Australia

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Abstract. Mobile health applications (mHealth apps) can provide effective self-management instruments for patients and offer advanced approaches to treatment. However, little is known about how the older population perceives the opportunity of using mHealth apps as a non-drug intervention. We aimed to identify the opinions and experiences of older people in Australia and gain new insights into their engagement with this modern approach to health treatment. We conducted a qualitative study with 21 Participants to explore users' perspectives on adopting and using mHealth apps and their awareness of the social factors influencing their uptake. The results show that a trusting doctor-patient relationship positively affects older adults' perceptions of mHealth apps. Consequently, the social influence of the General Practitioner (GP) plays a crucial role in the use of mHealth apps, while the social influence through family and friends seems to be less critical.

Keywords. mobile health apps, adoption behavior, social influence, trust

1. Introduction

Mobile health applications (mHealth apps) have gained importance during the COVID-19 pandemic as a means of improving the health of the population and have shown enormous potential in terms of medical care, self-management and health education for patients [1]. MHealth apps, the use of health-related software on mobile devices, also known as 'mHealth', is a highly dynamic area with fast innovation cycles. The Global mHealth Market is expected to grow at a compound annual growth rate of 10.8% from 2023 to 2030, with the mHealth app sector accounting for the largest revenue share (76.5%) [2]. The increasing focus on improving personal health and fitness through smart devices and wearables is the main factor accelerating market growth. The shift from

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conventional healthcare practices to patient-centric and preventive approaches is expected to further drive the mHealth market over the coming years [2].

Studies have already demonstrated the positive impact of mHealth technologies on users' physical health and health behavior [3-5]. According to the European Union, mHealth can lead the healthcare sector towards decentralized, patient-centered healthcare that promotes the right to self-determination [6]. In Germany, for example, it is already possible for physicians to prescribe mHealth apps the same way as medicine [7]. Although technology adoption research has advanced, there have been very few studies on the adoption of mHealth apps by older people [8].

Therefore, we aimed to analyze the opinions and experiences older people in Australia have with mHealth apps focusing on health prevention, medical treatment, and disease management. We wanted to gain deeper insights into their engagement with the new type of health prevention, education, monitoring and (partially) treatment. We intend to identify constructs associated with the adoption of mHealth apps and various self-efficacy expectations, social environment influences, and health of the older population.

2. Methods

The study design was semi-structured interviews that followed the reporting standards on qualitative research (SRQR) [9]. The study was undertaken in Sydney, the most populated state of Australia. A convenience sample of people aged 50 and older with a mixture of experience using mHealth apps were invited to participate. The use of mHealth apps was not a criterion for recruitment.

The study was advertised on social media, flyers and researcher networks to collect expressions of interest. People who expressed their interest received a Participant Information and Consent Form with the opportunity to have the form explained to them if needed. Between July and September 2022, we interviewed 21 people, including 13 women and 8 men aged 51 to 82. The semi-structured interviews were conducted by an interview guideline, allowing the interviewees to expand on their experiences and views broadly. The topics covered in the interview included demographic data and general knowledge of information technology, attitudes toward mHealth apps, and technology expectations and concerns. Each interview lasted 25–50 minutes. One researcher (TS), experienced in conducting qualitative interviews, conducted the interviews. Each interview was recorded and transcribed [10].

Our study adopted a classical conceptualist approach to gain theoretical insights [11]. For the coding process, we used the software NVivo10. The data analysis explored the relationships and concepts between potential user benefits and barriers to adopting mHealth applications. Iterative coding and constant comparison techniques were used to establish open, selective, and theoretical coding guidelines through many iterations of data analysis [12]. We discussed the coding results regularly within the research team (TS, KS, AG) [12]. In another round of analysis, the codes from the individual interviews were related to each other [13]. The aim was to understand the specific characteristics of the influence of the established factors in the context of mHealth app adoption.

The Macquarie University Human Research Ethics Committee approved this study (Reference No: 520221156038298).

3. Results

Our analysis identified two themes related to the perspectives on the social environment of older respondents (Table 1). The treating physician turned out to play a crucial role for this research group. The trust our informants placed in the GP and the (corresponding) social influence of the GP were key factors for the adoption decision. Social influence through family and friends seems to be of lesser importance.

Table 1. Participant statements for the factors social influence and trust.

Code	Quote
Social influence of family and friends	– No, not influenced. If there is a necessity, I adopt it straight away. – No. If I was reading a scientific study on it that said some type of research into the app, that type of thing would influence me, not something that a friend or another influencer would say. – If someone recommends a better one, I'll look at it. So, you've got to be open-minded. – Yeah. If someone I respect tells me about an app, that would be good, and I would probably try it. – No, I've never really discussed that with anybody. That's not something we talk about at the pub, and it's very personal. – I would decide myself; I do some research myself.
Social influence of the GP	– He says this app is going to help you in your healthcare; I will definitely look at it and consider it, but still be wary about how much information I would be willing to put into it. – But in, in general, you don't make any difference between your family friend or your GP recommendation. – The GP recommendation is much higher than a friend's recommendation. – I realize that medical professionals are not infallible. And many things are trial and error, but nevertheless, they are capable, and I am making decisions regarding my health. – Oh, absolutely. Yes. If it came from a doctor, it was a recommendation to do it? Absolutely. He knows better than I do. – It depends on the health issue. If she recommended that I use an app to achieve a health goal. I would say I would look at I would make a judgment, then I would look at it. See what its demands? Were the extent of my need. Yeah, I wouldn't just use it just because she recommended it.
Trust in the GP	– Trust him 100%. If I didn't trust him, I wouldn't go to him. – I have got a strong relationship to my GP. – We have a lot of faith in the doctors. – The level of trust is just simply the fact that he's part of the medical system with a high degree of ethics and sensor responsibilities that are essentially the centre of responsibility and an ethical approach that'd be the extent until I get to know him, I guess.

Social influence reflects the effect of environmental factors such as the opinions of friends and family [14]. The interviewees expressed little importance of social influence through family and friends. Some said there is no communication about health issues, especially with friends, and they do not feel influenced by friends and family to use a mHealth app. Others mentioned being more open to recommendations and interested in what reliable acquaintances would use. However, it became clear that the influence of a GP was more likely to be influential. If a GP recommended an app, they would be much more willing to try it out and see if it was useful. On the subject of trust in the doctor, the majority of respondents indicated that they would definitely trust their doctor. Two respondents noted that trust in the GP is not important, as they change their GPs

frequently. Nevertheless, they would trust the health system, again conveying a sense of security for any doctor.

4. Discussion and Conclusions

This study has shown that healthcare providers and GPs have a crucial role in the adoption of mHealth apps. Their social influence and trust in them are relevant, while the social influence of family and friends does not have a decisive impact on the adoption of mHealth. The more positively users are influenced by their relatives and friends, the more willing they are to consider and use mHealth apps in addition to traditional medical options. Nevertheless, there is equally often a communication deficit, and people were less likely to exchange information or share their experiences. These results are related to existing studies, which describe that social influence is one of the key factors in individuals' use and rejection of mHealth apps [15-18]. Most people are not entirely familiar with mHealth apps and are mainly influenced by the opinions and attitudes of others [19].

Concurrently, we asked participants if they received recommendations for mHealth apps from their GPs and if they used them. We discovered that GP recommendations have an extremely positive effect on the use of mHealth apps by older patients. This influence relates to an intense relationship of trust and a good professional explanation of the treatment approach. This is in line with the social cognitive theory, which states that behavioral decision results from the interaction of internal and external environmental factors [20]. The concept of trust is an essential factor here. Due to an intense trust in the medical health network and the medical staff working in it, social influence can have a positive effect. These findings are linked to a study on telemedicine adoption, which confirmed a positive link between social influence and trust [19].

Our results provide valuable empirical results for health policymakers. With the increasing progress of mHealth apps and their prescription or recommendation by medical professionals, new challenges arise that have not been considered in existing health technology adoption research. In Europe particularly, mHealth apps can already be prescribed by doctors and reimbursed by health insurers, enabling a more comprehensive approach to treatment for patients with statutory health insurance and reducing the workload of doctors. Hence, mHealth apps adoption and their use by various age groups in different regions needs to be considered in future research.

Consequently, our study presents findings that point towards extending existing theoretical models and have practical implications for physicians, patients and health policymakers. By considering factors such as trust and social influence, which highlight different degrees of influence through different connections to people, the adoption of mHealth can be improved and the use of mHealth apps by older people can be increased.

In conclusion, this study presents the perceptions of older people regarding the adoption of mHealth apps in Australia. By understanding the importance of a trusting doctor-patient relationship and the social influence of relatives for the adoption of mHealth apps, it is possible to enhance the uptake of mHealth apps by providing support (e.g., more information, more support, a good introduction, necessity) to recommend mHealth apps to specific patient groups (e.g., those who lack verbal or digital skills). By doing so, it is possible to address existing digital divides and contribute to realizing the full potential of mHealth apps.

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