

Utilising Mobile Health Apps – A Comparison of GP Perceptions Across Australia and Germany

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Abstract. Germany became the first country to accept certain mobile health (mHealth) apps for prescription with costs covered by statutory health insurance. Yet, this option has only been used to a limited extent. To develop an international comparison, this study investigates GPs' perceptions of mHealth apps with a medical purpose in Germany and Australia. We conducted semi-structured interviews to examine their perspective on introducing and using mHealth apps and their awareness of their impact on patient adherence, empowerment, and health literacy. The results show that prescribing mHealth apps in general practice seems feasible in Australia and doctors are highly receptive to it.

Keywords. Mobile health apps, patient empowerment, GP perception

1. Introduction

Health systems worldwide are struggling with rising costs. To reduce determining factors of these burdens, high hopes are placed on digital health, e.g., mobile health apps [1]. Various types of research have investigated mHealth apps and consider their potential high for improving health outcomes [1], such as increased digital health literacy [2], better symptom monitoring [3] and improved adherence to chronic disease management [4].

While German and Australian health systems have similar characteristics in the "offline" area (e.g. insurance and financial administration), there are major differences in the implementation and objectives of eHealth solutions at national level. Germany became the first country in the world to grant legally insured people an entitlement to use certain mHealth apps at the expense of health insurers [5]. These apps are called DiGA (digital health apps). DiGAs are medical devices based primarily on digital

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technologies that support detecting, monitoring, treating, mitigating or compensating disease, injury or disability. They must successfully pass an assessment of positive care effects and product characteristics, especially safety and usability, data protection and security, and interoperability [6].

Significant research has explored the technological, structural and human factors that may influence technology adoption by health professionals [7], most notably through the technology acceptance model [8] and the theory of uniform technology acceptance and use [9]. Nevertheless, very few studies are available regarding the use of mHealth apps by physicians in outpatient care, in the context of state-certified prescription apps, and international comparisons have not been conducted. Given the high degree of comparability between German and Australian health standards, we aim to compare and provide further evidence on doctors' attitudes and intentions to prescribe DiGAs or recommend mHealth apps, and identify barriers to adopt mHealth apps.

2. Methods

Our study design focused on understanding the impact of mHealth apps on doctors' treatment management in both German and Australian environments; identifying doctors' attitudes in prescribing or recommending mHealth apps; and developing a new perspective on mHealth app prescribing. The study adhered to the reporting standards on qualitative research (SRQR) [10]. The study was undertaken in North Rhine-Westphalia, Germany, and New South Wales as well as Victoria, Australia as part of a cooperative PhD program. Both areas are within densely populated regions of their country, providing a convenient sample of doctors with mixed experience using mHealth apps to participate. Doctors' IT expertise and previous experience with mHealth apps varied.

We recruited doctors by telephone from a municipal network of doctors in Germany between August–November 2021. Between August–November 2022, we recruited using social media through the network connected to the Australian Institute of Health Innovation in New South Wales. We investigated doctors' perspectives on the introduction and use of mHealth apps, as well as their perception of the impact of the apps on patient adherence, empowerment and health literacy. Fourteen doctors (eight from Germany and six from Australia) agreed to participate in an interview either face-face, via telephone, or video call. The semi-structured interviews followed an interview guideline which allowed the interviewees to expand on their experiences and views broadly. The questions were adjusted as necessary to gain more profound insights. Each interview lasted 25–60 minutes. The interviews were conducted in German and/or English by one researcher (TS). Each interview was recorded and transcribed [11]. The interviews have been translated into English for further analysis.

Our study adopted a classical conceptualist approach [12] to gain theoretical insights. For the coding process, we used the software NVivo10. The data analysis aimed to explore the relationships and concepts between doctors' risk perceptions and benefit expectations regarding mHealth applications. Iterative coding and constant comparison techniques [13] were used to establish open, selective coding guidelines through many iterations of data analysis. We discussed the coding results within the research team (TS and AG) [13]. In the second round of analysis, the codes from the individual interviews were compared to each other [14]. The aim was to understand the specific characteristics of these areas and the influence of these factors in the context of mHealth app adoption.

According to the guideline of the applicable Ethics Committee of Bavarian Universities [15], the German study did not require ethical approval, as no risks or harm to the participants were expected and the basic ethical principles were not violated. Ethical requirements in Australia have been approved by the Macquarie University Human Research Ethics Committee (Reference No: 520221156038298). All participants received a participant information and consent form explaining the requirements for participation, with the option to give their verbal consent as a sign of informed consent if they were willing to participate at the time of the interview.

3. Results

Our analysis identified four mostly referred topics which reflect the doctors' perceptions of prescribing or recommending mHealth apps.

Table 1. Hierarchy chart of codes and quotes.

Code	Quote Germany	Quote Australia
Patient tech-savviness	<p>"Old people are often no longer as discerning. You can see that in young people too, depending on their education level and intellect."</p> <p>"Potential mHealth app user appears to be a young and tech-savvy patient."</p> <p>"I would prefer not to consider older patients."</p> <p>"They already have the technical issues".</p> <p>"Especially older patients, who want to take a pill, don't want to talk about the associated education lifestyle."</p>	<p>"Most of my clientele are relatively tech-savvy."</p> <p>"Some of them don't even have a phone."</p> <p>"They're much tech-savvier than you think."</p> <p>"They need sufficient education, cognitive capacity, and skill set to handle an app. The other side is that they have to understand the disease or whichever aspect it is that they will be able to handle the information that the app provides."</p>
Information support	<p>"Further information, reminders and education are a problem. Technical support can make a good contribution here."</p> <p>"What an app can do, more than provide information, is motivate or put that in an interesting package."</p> <p>"The information situation is insufficient. I don't know the lists of mHealth apps that can be prescribed and have little information."</p>	<p>"No, I don't feel as well-informed as I should be."</p> <p>"A variety of paths recommended by colleagues, and some I find through my searches."</p> <p>"It's a private market sort of driven situation."</p> <p>"There is a lack of support for GPs to understand the safe apps, how we would use them, play with them ourselves, understand them."</p>
Apps recommendation reasons	<p>"Either you find it good as a physician, have dealt with it once, and recommend it to your patients. Or you ignore it at first."</p> <p>"The DiGA can theoretically ensure that the patient goes to the physician less."</p>	<p>"That depends on the patient factors, for instance, the age, whether they are tech savvy or not; the health and wellbeing goals as well, particularly from a lifestyle point of view."</p> <p>"Patient empowerment and engagement is huge, in terms of better outcomes to the patient."</p>
Privacy and Security	<p>"My main concern is that people's personal health information could be compromised or their data could be shared without myself or them being fully aware."</p> <p>"Everybody is going to be a glazed person."</p>	<p>"If the right authorities approve them, and they comply with the Australian Medical level standards, I would be particularly worried about as worried about those data."</p> <p>"Privacy is always going to be an issue, but it's just one of those things that people are conscious of, and people are highly unknown."</p> <p>"No. No one worries about that."</p>

All doctors interviewed expressed interest in the possibility of prescribing mHealth apps. The Australian doctors, in particular, said they would like to see more evidence-based apps in their repertoire and could well imagine a prescribing option like the existing DiGAs in Germany. On the other hand, German doctors felt unsure about the new opportunity and did not have much confidence in it yet. German and Australian

doctors felt insufficiently informed about the quality of mHealth apps and relied more on recommendations from colleagues or their knowledge of existing mHealth apps. In Germany and Australia, the typical mHealth app patient was described as ‘very tech-savvy,’ with Australian doctors believing their older patients to be much more digitally-literate. Generally, younger doctors assumed that older patients tended to have difficulty using apps. In comparison, older doctors considered it less challenging for older patients and described that older people are often underestimated in their technology affinity. Regarding the issue of privacy and security, the doctors were very divided: While German doctors were very concerned about data security, Australian doctors were relatively unconcerned and expressed great trust in the whole health system.

4. Discussion

Despite the high potential of mHealth technology to improve medical care at lower costs [16], broad adoption has been challenging, and mHealth app adoption has been relatively slow. The findings from this study show that Australian doctors especially value mHealth apps as supportive of patient empowerment, patient education, digital literacy, disease management and direct health benefits. All participants had a positive attitude towards the adoption of mHealth apps. Nevertheless, German doctors’ expectations of mHealth apps are high, and their sentiments are influenced by concerns about data security [17]. Many studies have found the expectation of benefits, positive attitudes, or perceived usefulness of mHealth technologies to be core predictors of adoption [8, 18].

Several studies consider gender and age as socio-demographic factors, influencing technology acceptance [18], while others find that this effect is limited to attitude, not prescription and recommendation intention [19]. Our study shows that the digital affinity of doctors significantly and positively affected attitude and intention to prescribe, whereby Australian doctors show a higher digital affinity than German doctors. This might be due to the fact that health professionals with higher digital affinity and experience with mHealth technologies expect better usability when integrating mHealth apps into their work [20]. We also found some barriers on the German side to prescribe and percept DiGAs. This included a lack of information about DiGAs and medical evidence, inadequate reimbursement for medical services, concerns about legal issues such as liability and privacy risks, and training needs, among others. These barriers are consistent with other studies about social, organisational, financial and technological factors impacting doctors’ adoption of mHealth tools from different countries and settings [19, 21].

Based on the importance of better information about mHealth apps and DiGAs for medical professionals, future studies may investigate which channels and types of content are most appropriate. In addition, further research should consider whether doctors are unwilling to prescribe DiGA to some patient groups (e.g., those lacking verbal or digital skills), and how such possible digital divides can be addressed to benefit mHealth’s full potential for patients in Germany and Australia overall.

5. Conclusions

In conclusion, this study demonstrates a comparable perception of mHealth app recommendation and prescription between Australia and Germany, despite the

differences in health systems. Evidence-based mHealth app prescriptions in Australia appears to be feasible in general practice, while the existing German DiGA prescription systems require more information and training support for professional healthcare.

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