News and Perspectives

One Patient, Five Apps: Is This Really Better Care?

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Abstract

Mobile health apps can facilitate monitoring, communication, and administration in health care settings, but their accumulation may also create app overload for both patients and professionals. In this *News and Perspectives* article, JMIR Correspondent and health care digitalization researcher Vincent Peters reports on the increasing complexity of navigating digital health care.

Key Takeaways:

- More apps result in a fragmented digital landscape.
- Not every digital functionality needs its own app.
- The goal may be one front door, not one app, that hides technical complexity.

Vincent Peters, PhD, is an assistant professor at the Department of Information Systems and Operations Management at Tilburg University. His research is focused on the organization/delivery of (digital) health care. In this op-ed, he draws on a series of unstructured interviews he conducted with a range of relevant stakeholders across the hospital ecosystem, including physicians, patients, health care managers, and innovators, from three hospitals and one clinic in the Netherlands.

There seems to be an app for almost every aspect of our health. Apps can help us monitor symptoms, recover from injuries, communicate with health care professionals, schedule appointments, and manage chronic conditions, among other things. Each app promises to make health care a little bit better. Taken together, however, they may be doing the opposite.

Take the following example. A patient leaves the health care organization after treatment. They already have access to the organization's patient portal containing their appointments, medical correspondence, and test results. Before going home, the patient is asked to download a separate app to guide their recovery. Yet another app is needed for questionnaires and for monitoring health status. Each app in itself may work perfectly fine, but each app also introduces another interface, another account, another source of information, and potentially another workflow for the health care professionals taking care of that patient.

For patients recovering from a single injury, one additional app might not seem burdensome. As a patient in episodic care noted, "What is wrong with downloading an app? I also do this when a new mobile game releases, so I do not see an issue here." But the situation looks different from the perspective of someone living with chronic diseases who receives care from several departments or health care organizations that each have their own app. As one chronic care patient said, "By now I have four apps on my phone which are not linked and require action at various moments in time. I am starting to lose track of it all." In this context, the burden of managing and scheduling remote monitoring activities across apps compounds for patients.

Health care professionals experience similar issues on the other side. Digital tools require them to monitor various dashboards, move between apps, and document information in more than one place. This introduces a paradox: while each distinct app can simplify individual parts of care, they make the overall care trajectory more complex.

We Have Been Here Before

The proliferation of apps is hardly new. Loohuis and Chavannes described the rapid growth of apps; by 2016, more than 250,000 health-related apps were already available across the three largest app platforms at the time: iOS, Android, and Windows. Their concerns focused mainly on whether these rapidly emerging apps were effective, reliable, and sufficiently user centric.

But the number of available apps continued to grow. In 2019, Dutch public broadcaster NOS reported more than 350,00 health-related apps in the App Store and Google Play Store. This fragmented landscape of apps that often fail to connect with one another—what one innovation manager at the Sint Maartens Clinic calls "the Wild Wild West of apps"—may be holding back digital care in the Netherlands.

The concern now is different from the one raised almost a decade ago. Even if every individual app works as intended, how do patients and professionals deal with their accumulation?

Accumulating Apps

For an individual app to work in daily life, using it must become part of someone's routine. Patients need to know when and how to use the app. Professionals need to know

where information enters, when it needs to be checked, and what action is expected. This is already complicated in itself —even more so when you start adding apps up.

> *This introduces a paradox: while each distinct app can simplify individual parts of care, they make the overall care trajectory more complex.*

In conversations with health care professionals, a recurring concern was not necessarily that individual apps were difficult to work with. Rather, they described the issue of having to look in different places and work across different systems: when, in their already busy workdays, are they to navigate multiple systems?

"These apps are great when they work," said one gastroenterologist at the Franciscus Hospital Rotterdam. "But they also put a burden on me as a professional in order to figure out where to find the required data in the short amount of time I have for a patient." This relates to the growing discussion on digital fatigue, where the accumulation of digital demands can create an additional and sometimes invisible layer of work for health care professionals.

What if the App Did Not Need to Be an App?

Before wondering which app to use or suggest, we should first check if the specific functionality needs to exist in a separate app at all and weigh potential trade-offs.

Stand-alone apps can be valuable. They can focus on a specific clinical problem, provide a specialized functionality, and sometimes offer a more tailored user experience. As one patient noted, there's often an element of simplicity: "I just download the app and remove it when I don't need it anymore. It is just like using a non-health app like my bank account."

One trauma surgeon described a stand-alone app for fracture aftercare as "super clear and very user friendly." Moving the same functionality into a patient portal, as they did at Elisabeth-TweeSteden Hospital, can result in integration gains. As a senior health care technology advisor at the hospital remarked, "I think that having everything in one place makes it much easier and more accessible in terms of patient and consumer experience." However, it could also introduce additional barriers, like two-factor authentication, which is considered frustrating by some patients. As one patient noted, "Two-factor authentication is so annoying; as a result, I sometimes simply refuse to look into the patient portal."

Both can be true: a stand-alone app can provide an excellent user experience in isolation, but the fifth excellent app is still a *fifth* app. To avoid adding burden, what matters is how the app fits into everything that patients and professionals are already expected to use.

One Front Door

The alternative to this fragmentation is not one app that does everything. A more realistic ambition may be one digital front door.

This ambition is beginning to take shape in the Netherlands. Initiatives around personal health environments aim to give patients a central place to access information and care tasks from different health care providers and organizations. Other integration efforts allow health care professionals to review and manage patient information without switching between multiple apps. For example, at OLVG, a hospital in Amsterdam, one initiative aims to centralize relevant information from different digital apps, including the Patient Journey App, into a single remote patient monitoring platform. These are examples of progress toward a front door, suggesting that such a thing can be built.

As one software developer put it, digital care should provide "one front door" for the patient and one for the health care professional and, as such, "take 'care' [of] both the patient AND the professional." This front door would allow apps to continue to run behind the scenes, allowing the technical ecosystem to remain diverse while the user experience becomes less fragmented.

Rather than a discussion of "which app to use," the fundamental challenge now is interoperability, that is, integrating across different apps for a more cohesive experience in which the future question may be "does the user have to know how many apps are involved at all?"

Keywords: digital health; apps; fragmentation; interoperability; patient perspective; professional perspective

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