

Better understanding and use of nutrition apps

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Nutrition apps are effective helpers when it comes to initiating and supporting dietary changes. They are therefore considered by many researchers in the field of digital health technologies to be a low-

threshold, easily available, and inexpensive option for individual nutrition management. Yet usage rates of these apps fall far short of their potential. The reasons for this are numerous, wide-ranging, and have been explored in the past using a variety of methods. What was not yet available was a systematic overview of the state of research.

Researchers at Chemnitz University of Technology, the University of Konstanz, the University of Bayreuth, and the University of Lübeck have addressed this issue. The basis for this was a systematic literature review on the reasons for the (non-)use of nutrition apps. The review article has now been published in the *Journal of Medical Internet Research—mHealth and uHealth*.

First authors and initiators of the study were Christiane Attig, Scientific Coordinator at the Collaborative Research Center Hybrid Societies and Research Associate at the Professorship of Applied Geropsychology and Cognition (Head: Prof. Dr. Georg Jahn) at Chemnitz University of Technology, and Jun.-Prof. Dr. Laura König, who started the project in the health psychologist Prof. Dr. Britta Renner's research group at the University of Konstanz and continued it as a junior professor at the University of Bayreuth. Also involved was engineering psychologist Prof. Dr. Thomas Franke from the University of Lübeck.

Over 2,600 articles evaluated

Through this literature search, the researchers identified 28 articles, based on which they mapped the current state of research on usage barriers and motivators regarding nutrition apps. In total, the team evaluated more than 2,600 articles. "We first reviewed the articles for content relevance. Then we successively assessed the relevant articles according to predefined inclusion criteria," explains Christiane Attig. The researcher and study co-initiator from Chemnitz University of Technology was responsible for deriving the so-called design guidelines. The aim is to derive findings from the data material on the use of the

apps, for example, for more accessible and effective use. This involves, among other things, advice on transparency, usability, or recourse to proven behavior change techniques. "Finally, 28 articles were identified that entered the analysis to map the current state of research on usage barriers and motivators regarding nutrition apps," said Jun.-Prof. Dr. Laura König (University of Konstanz/University of Bayreuth), who initiated the project together with Christiane Attig from Chemnitz University of Technology.

"Our findings suggest that many commercially available nutrition apps are poorly aligned with the needs of users, and therefore motivation can quickly be lost with regard to continued use. At the same time, our article shows that the factors that motivate initial or continued use are often mirror images of the weaknesses. That is, the implementation of a specific software feature such as a trusted food database is perceived as a motivator, while its absence is perceived as a barrier," says Laura König. The literature review was initiated during König's research stay at Chemnitz University of Technology.

Over 300 barriers and motivators identified

"We were able to extract over 300 individual barriers and motivators from the articles, which were summarized in a framework model," continues König.

This framework model shows that usage barriers and motivators can be divided into four broad areas. In the first area, factors were summarized that relate to the (potential) users of nutrition apps. These include, for example, interest in these apps or how well the use of such apps is compatible with the users' everyday lives. The second area comprises factors that relate directly to the technology. Here, the model shows, among other things, that the trustworthiness of the databases on which the apps are based is crucial for their use. Some databases are curated by

the app's creators; other databases allow all users to add more foods and recipes, which can lead to inaccurate nutritional information, for example.

The interaction between app and person is mapped in the third domain, insofar as the use of nutrition apps can have both positive and negative consequences for well-being and health. Thus, on the one hand, the use of a nutrition app can lead to a healthier diet as desired. However, the constant examination of one's own eating behavior can also trigger feelings of guilt if unhealthier food is eaten than desired. These consequences can in turn influence the motivation to continue using the app. Finally, the [social environment](#) also plays a role, since—as the fourth area shows—app users in the family or circle of friends or medical professionals, for example, can encourage the use of nutrition apps.

There is no one perfect nutrition app

In addition to summarizing the current state of research, the research team explains the significance of the findings for app manufacturers: "We have been able to derive eight design guidelines from the results that can contribute to greater user satisfaction, for example by increasing transparency with regard to the data sources for nutritional information," explains Christiane Attig.

"The literature research clearly shows how diverse the reasons are that speak for or against the use of nutrition apps for many people. It crystallizes again and again that there does not seem to be one perfect [nutrition](#) app—rather, there is a need for possibilities to individualize apps so that different needs can be addressed," says Britta Renner.

More information: Barriers to and facilitators for using nutrition apps: a systematic review and conceptual framework. *JMIR mHealth and*

uHealth, 9(6), e20037. [DOI: 10.2196/20037](https://doi.org/10.2196/20037)

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