

## Digital health apps: Little evidence for benefits of "symptom checkers"

**The Austrian Institute for Health Technology Assessment (AIHTA) evaluated a group of digital health applications (DiGAs), the so-called "symptom checkers". The aim of the analysis was to establish an evidence-based evaluation process under which conditions health insurances might cover the costs of using such apps. The main result of the study: Evidence of the benefit of these symptom checkers has not yet been sufficiently demonstrated.**

The market for digital health applications (DiGAs) is booming, with several 100,000 apps promising health benefits for their users. The trend has been intensified not least by the Corona pandemic and recurring lockdowns. The offerings range from low-threshold applications such as heart rate monitors and pedometers to digital reminders for taking medication and medical diagnostic tools. However, a study by the Austrian Institute for Health Technology Assessment (AIHTA) last year showed that there is little evidence of the actual medical benefits of most health apps.

Now, in a recent AIHTA study, the study author Reinhard Jeindl has evaluated the group of so-called "symptom checkers." His conclusion: "These apps should be used with caution." Those suffering from headaches, for example, enter their age and gender on an input screen and are then asked by a chat bot how long the headache has lasted, for example, or whether a fever has occurred at the same time. At the end of the questioning, the symptom checker presents several possible causes for the health complaints. The digital applications thus promise to support the diagnostic process and improve the management of patients. The principle behind the apps is reminiscent of the 1450 health hotline, except that it often provides not only recommendations for action, but also a list of possible diagnoses. "With the symptom 'headache,' these can range from tension to brain tumour. This sometimes leads to considerable uncertainty and anxiety," Jeindl emphasizes.

### **Flawed studies, biased results**

The selection of symptom checkers included in the study was based on a systematic search in four medical databases for research results. For the analysis of the evidence, 14 studies were considered in addition to a recent review paper that already included 27 studies.

As far as the "safety" of symptom checkers is concerned, no potential harms from using the apps have been identified so far, but the evidence on the accuracy of the diagnostic suggestions and the recommended actions derived from them did not provide satisfactory results. The studies on symptom checkers have methodological shortcomings; they are mostly tested on the basis of fictitious, clinical cases via role-playing by the subjects. Therefore, it cannot be ruled out that the algorithms of the symptom checkers were trained with the same case vignettes that were used to collect the data in the studies. "Accordingly, the results often cannot be applied to real conditions," Reinhard Jeindl stresses.

### **What users can do**

The study author recommends that users of symptom checkers pay attention to the sources on which the diagnostic suggestions are based. "Apps that do not disclose the sources used, are not very trustworthy," Jeindl points out. But quality is also crucial, "it makes a big difference whether reputable medical sources are used or the information comes from a homeopathy site or dietary supplement advertising platform," adds the expert.

According to the study's authors, health insurances should base their reimbursement for DiGAs on the relevance of the applications, their technology-specific requirements (e.g., compliance with data protection requirements, compatibility with ELGA), and especially on a proof of actual benefit. For symptom checker, however, this proof of a benefit "could not be sufficiently provided," the AIHTA report concludes.

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**Link to the study:** <https://eprints.aihta.at/1348/>

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