# Benefit Assessment of Digital Health Interventions: A Rapid Review

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## Background

Even before the COVID-19 pandemic, the potential of digital health applications and technologies was recognized. Digitization and its technologies, including electronic health records, mobile health applications (Apps), robots, and telemedicine, are viewed as opportunities to increase effectiveness and efficiency. Digital health applications can help to optimize care processes and can improve patient orientation through new forms of communication, diagnostics, therapy, and care. Together, these applications can lead to better quality of care for patients, less work for specialists, and more efficient use of resources. In recent years, the range of health applications has greatly expanded. At present, there are currently more than 300,000 health applications, with more than 200 added daily. Apps are easily accessible via smartphones and offer the ability to instantly access health data, schedule virtual doctor visits, integrate devices to measure vital signs, manage medication intake and dosage, and perform many other health-related activities. The wide range of digital health applications can be overwhelming because the evidence base on efficacy and cost-effectiveness is sparse; in addition, potential risks of harm may be poorly documented. Given this, it is important to build an evidence base, validate functionality, and establish standards for benefit assessment.

## Objective

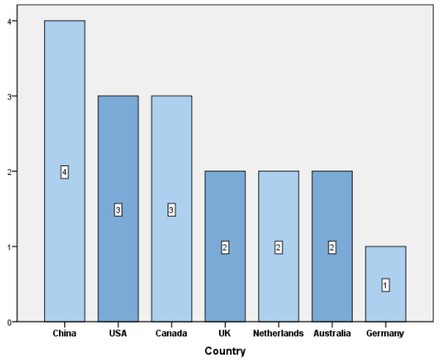
The objective was to assess the current evidence base, gathered from published systematic reviews, on the effectiveness and cost-effectiveness of digital health interventions.

## Methods

To identify systematic reviews on the effectiveness of digital health technologies used for different health interventions, a literature search was conducted in the electronic database PubMed and in the literature search engine Google Scholar. Systematic reviews published in English between 2015 and 2020 and available as full text were included. Studies that did not meet the inclusion criteria were excluded. Of the included studies, the study reference, study characteristics, indication for which the digital health application is intended, study objective, intervention type, control condition/group, assessment tool, and the outcome of each systematic review were extracted. Subsequently, the extracted data were summarized qualitatively.

## Results

A total of 17 systematic reviews [12-28] were deemed appropriate and included in the rapid review. The included systematic reviews provided an overview of the published studies on efficacy and cost-effectiveness, the study designs used, the intervention and control groups, the study results, and the assessment tools used. Four of the systematic reviews were from China, three from the United States, three from Canada, two from the United Kingdom, two from the Netherlands, two from Australia, and one from Germany. Eight systematic reviews examined eHealth interventions, six examined mHealth interventions, two examined digital health interventions, and one addressed stand-alone smartphone applications. Heterogeneity among studies was found in some of the included systematic reviews, which in some cases led to the inability to draw firm conclusions about the effectiveness of digital interventions. In this context, the different results can be attributed to several factors, including differences in study design, study conduct, study duration, and intervention/ treatment. In addition, due to the heterogeneity of the interventions and the lack of detail in the studies, it was often not possible to conduct meta-analyses and it was difficult to draw conclusions about the effectiveness of digital health interventions. Many studies also did not quantify how long patients engaged with the digital intervention, so it was not possible to say whether patients who engaged with the intervention for longer performed better or worse.




## Conclusion

The aim of this rapid review was to obtain an overview of the current evidence on the effectiveness and cost-effectiveness of digital health technologies. From the results of the systematic literature review, it can be concluded that the evidence base is weak and currently lacks robust evidence on the effectiveness and cost-effectiveness of digital health technologies. While there is evidence in some studies that digital health interventions can be effective and cost-effective, no clear conclusions can be drawn due to less rigorous study designs, sample sizes that are too small, different assessment tools, and widely varying intervention durations. However, for digital health technologies to be widely established, accepted by patients and providers, and subsequently incorporated into mainstream care, regulators need robust evidence of safety and efficacy, and payers need evidence of benefits and cost-effectiveness. Therefore, established guidelines for the evaluation of digital health interventions are needed to strengthen the evidence base.

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