OUTCOMES AND ECONOMIC EFFECTS OF DIGITAL HEALTH SERVICES

CO130

An umbrella review

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INTRODUCTION

Use of digital health services (DHS) has been rapidly growing in healthcare during and after the COVID-19 pandemic [1]. These services can include mobile applications, telehealth solutions, electronic monitoring and analysis of health data, and the use of digital decision support systems [2].

Our aim is to recognize the most potential areas for DHS in healthcare by analyzing the current literature focusing on the outcomes, costs, cost-effectiveness, and outcome mechanisms.

METHODS

The umbrella review was performed using the Centre for Reviews and Dissemination, Cochrane, Ovid Medline, Scopus, and Web of Science in June 2024. The review covers the period from January 1, 2012 to May 19th, 2024.

We included only studies considering costs and/or resource use. The quality and validity were assessed.

RESULTS

- A total of 17 reviews included.
- Majority of the studies (61%) indicated that DHS are cost-effective, particularly in various chronic disease treatments, mental health services and palliative care.
- More than half of the studies found that DHS reduced the required resources, such as working hours and care contacts.
- Costs decreased especially in mHealth, internet interventions, and telepalliative care.
- None of the studies reported an increase in costs without health benefits, but in some patient groups, the need for resources increased.

Condition/Population (number of studies)	Effect		
	Resources	Cost	Cost-effectiveness
Primary care (113)	↔	↔	-
Various diseases (72)	↓	↓	↑
Dermatology (12)	-	↓	↑
Fetal monitoring (8)	↔	↓	↑
Coronary heart disease (3)	↑	-	↑
Depression/Anxiety (3)	-	-	↑
Hospice care (3)	↓	↓	↑
Stroke (2)	-	↔	-
Cystic fibrosis (2)	↑	-	-
Inflammatory bowel disease (2)	↓	↔	↑

n>10 strong evidence; n=3-10 weak evidence; N<3 no evidence

Intervention (number of studies)	Effect		
	Resources	Cost	Cost-effectiveness
Online consultation (95)	↔	↔	-
Virtual consultation (34)	↔	↔	-
mHealth (29)	-	↓	↑
Digital therapeutics (26)	↓	↓	↑
Online intervention (17)	↑	↓	↑
Telehealth (3)	↓	-	↑
E-health intervention (3)	-	-	↑
Telehospice (3)	↓	↓	↑

n>10 strong evidence; n=3-10, weak evidence; N<3 no evidence

CONCLUSIONS

- DHS are rapidly increasing, but still the studies focusing on cost-effectiveness are scarce.
- DHS often reduce costs and enhance cost-effectiveness.
- However, current studies lack standardized methods for evaluating these costs.
- Developing a unified model for assessing the costs of digital health services would be highly beneficial.

[1] Verhoef PC, Broekhuizen T, Bart Y, Bhattacharya A, Qi Dong J, Fabian N, Haenlein M. Digital transformation: A multidisciplinary reflection and research agenda. J Bus Res 2021 Jan;122:889–901. doi: 10.1016/j.jbusres.2019.09.022

[2] Golinelli D, Boetto E, Carullo G, Nuzzolese AG, Landini MP, Fantini MP. Adoption of Digital Technologies in Health Care During the COVID-19 Pandemic: Systematic Review of Early Scientific Literature. J Med Internet Res 2020 Nov 6;22(11):e22280. doi: 10.2196/22280