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Do definitions of digital health interventions reflect their value?

Digital Health Special Interest Group

Zsombor Zrubka MD, MBA, PhD
HECON - Health Economics Research Center
Óbuda University, Budapest, Hungary
How digital health is defined in systematic reviews?

A collaborative research project by the ISPOR Digital Health SIG members

Search in Pubmed, EMBASE, Cochrane and EconLit
MeSH terms of digital health AND systematic review AND synonyms of "definition"

2610 records
545 papers
214 eligible

1st report:
142 definitions of four umbrella terms in 134 papers
Why are there so many definitions?

A)

B)

Adpt: adapted or adopted; Orig: original
Basic text analytics

bag of words model,
merging all definitions by term,
counting word frequencies,
observing wordclouds

Authors are trying to make a few main concepts more specific

What is unique about these terms?
Still text analytics
merging all definitions by term,
TF/ICF (term frequency inverse
corpus frequency) for each word,
20 words that most set terms apart,
constructing "distilled" definitions

A hierarchy
appears but terms
are still too broad

Digital Health
the tools, science and medical practice of using technology
to enable personalised care and healthy living in the society

eHealth
using the internet and information and communications
technology systems or services to support or deliver health care

Telehealth / Telemedicine
remote delivery of health care services, education or
information exchange at a distance between health
professionals or patients

mHealth
using wireless technology, mobile
devices and applications to
support or deliver public health
services or personal care
Common sense
...an interpretative technique

A hierarchy appears, but terms are still too broad and overlapping.
Digital health interventions need to be specified in more detail.

Digital Health SIG Project 2
analysing definitions of digital health related subterms
What do Unique Device Identifiers (UDIs) of medical devices and softwares tell us?

Elements of a GS1 DataMatrix UDI Label

- Brand Name
- GMDN Description
- Device Identifier GTIN
- Production Identifier Lot Number
- For Single Use
- Labeler Name and Labeler Physical Address
- Support Contact Information
- Production Identifier: Expiration Date
- Storage and Handling
- Unique Device Identifier (DI & PI)

Digital health intervention

Information to identify the exact product item sold / applied in a patient
To reflect their value, we miss an important level of detail from definitions of digital health interventions.

Informing PICOTS unanimously

**Active Digital Ingredient (ADI):** sufficient technical detail and evidence that a digital technology has a specific health effect in a given population, which separates it from its alternatives with a similar effect on the same population.
The example of teledermatology

The studies were very different from each other in terms of the
• types of suspicious skin cancer lesions and
• the type of teledermatology.

A single reliable estimate of the accuracy of teledermatology could not be made.

Study results were too variable to tell us how many people would be referred unnecessarily for a specialist dermatology appointment following a teledermatology consultation.

Teledermatology for diagnosing skin cancer in adults (Review)

The example of digital biomarkers

A scoping review of systematic reviews involving digital biomarkers

Using WHO’s classification systems to categorise digital biomarkers

Number of elements specified: Patients, Intervention, Outcome

Any use of digital biomarkers (N=66)

- Zero: 2
- One: 3
- Two: 21
- Three: 74

Digital biomarkers as interventions (N=43)

- Two: 21
- Three: 79

Any use of digital biomarkers (N=66) and digital biomarkers as interventions (N=43)
Evaluating patient pathways

Digital health ecosystems

Health data ecosystems

A vs B
Thank you!

Contact details

e-mail: zrubka.zsombor@uni-obuda.hu

web:http://uni-obuda.hu/en/hecon-health-economics-research-center
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