



Human factors influencing the experience of healthcare professionals using digital tools



Qualitative analysis of published studies to examine the experience of clinicians using digital tools

Background

Digitalization is transforming healthcare and could benefit healthcare professionals (HCPs), patients, and other stakeholders. Nevertheless, it has potential risks and challenges [1]. Clinicians may encounter frustrating experiences when digital solutions are not designed to meet their needs or workflow requirements [2] which has led to increasing rates of clinician burnout and other work-related stress [3].

Method: Systematic literature review in accordance with the PRISMA guidelines

- 1

Database search including PubMed, Scopus, and Web of Science
- 2

Keywords: “digital tools”, “experience”, “healthcare professional”, “qualitative analysis”
- 3

Inclusion: Studies published from 2018 with clinical settings
- 4

Title, abstract and full text screening, and data extraction with COVidence
- 5

CASP qualitative assessment checklist for study quality and validity evaluation
- 6

Thematic analysis with Atlas.ti

Results

The experience of HCPs using digital tools is influenced by several factors, with one defined as “**human factors**”, including **physical, sensory, emotional, and intellectual capabilities and limitations**:

Identification

Screening

Included

Unique studies from databases:
n= 1175

Studies assessed for eligibility:
n= 32

Studies included in review:
n= 17

Digital tools cited in studies:

- Clinical Decision Support tools (59%)

- Electronic health records (35%)

- Remote patient monitoring tools (6%)

Positive

Negative

Trust and understanding of tool

- Explanation of the tool's decision

- Fundamental tool understanding

- Reliability of the tool

- Lack of understanding

- Distrust

- Data privacy and protection concerns

Personal perceptions

- Perception of cooperation/advisor/support

- Positive attitude toward innovation

- Positive gut feeling

- Personal interest in technology

- Fear of negative consequences

- Previous experience/familiarity

- Fear of unknown

- Previous negative experience

- Lack of previous experience

- Negative attitude toward change

- Negative attitude toward technology

- Provider bias

Collaboration and social influences

- Favorable organizational structure/pressure

- Supports professional autonomy

- Cultural embeddedness

- Recommendations from colleagues

- Internal advertisement

- External validation

- Unfavorable social structure and pressure

- Insufficient interprofessional collaboration

- Lack of cultural embeddedness

- Negative social perceptions

Conclusion

This systematic review sheds light on the **impact of human factors on HCPs’ experience** with using digital tools. The study revealed that a lack of consideration of these factors has resulted in suboptimal experiences and emphasized the importance of interacting human factors in the design and development of health technologies.

References:

[1] Mitchell M, Kan L. Digital Technology and the Future of Health Systems. Health Syst Reform. 2019;5(2):113-120. doi: 10.1080/23288604.2019.1583040. Epub 2019 Mar 25. PMID: 30908111.

[2] Tawfik DS, Sinha A, Bayati M, Adair KC, Shanafelt TD, Sexton JB, Profit J. Frustration With Technology and its Relation to Emotional Exhaustion Among Health Care Workers: Cross-sectional Observational Study. J Med Internet Res. 2021 Jul 6;23(7):e26817. doi: 10.2196/26817. PMID: 34255674

[3] Kroth PJ, Morioka-Douglas N, Veres S, Babbott S, Poplau S, Qeadan F, Parshall C, Corrigan K, Linzer M. Association of Electronic Health Record Design and Use Factors With Clinician Stress and Burnout. JAMA NetwOpen.2019Aug2;2(8):e199609.doi:10.1001/jamanetworkopen.2019.9609.PMID: 31418810