

Acceptance of EEG home-monitoring using a patient-controlled mobile device: results of the HOME study

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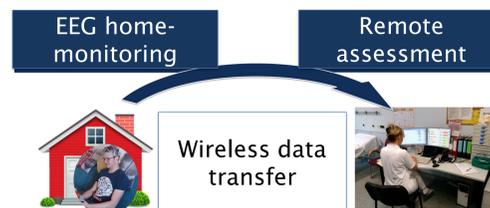
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Motivation

HOME project's goal : Development of an EEG-based home-monitoring concept for patients with neurological disorders.

We already proved

- Technical usability and efficacy of a mobile patient-controlled EEG system (Neumann et al. 2019)
- Feasibility + diagnostic and therapeutic yield of EEG home-monitoring (Baum et al. 2022)



Objective of our current analysis

- Investigation of patients' acceptance (crucial for concept's design and implementation) through the analysis of factors that influence the behavioral intention to use (BI) EEG home-monitoring.

Results



Home-monitoring: patient-controlled EEG monitoring

Inpatient monitoring: standard monitoring at the hospital

Relative preference of home-monitoring over inpatient monitoring was assessed (mean 5.15, SD = 2.01, p < 0.001)[#] and depended on

- Behavioral intention to use home-monitoring (b = 1.009, p < 0.001)
- Watching an introductory video of the home-monitoring system (b = 0.476, p = 0.006)

[#] Preference scale: 1-hospital, 4-indifferent, 7-home

Predictors of BI

Direct predictors	Meaning of predictors	b	p
Performance Expectancy (PE)	„Home-monitoring improves my health“	0.348	< 0.001
Effort Expectancy (EE)	„Home-monitoring is easy to use“	0.312	< 0.001
Facilitating Conditions (FC)	„I will get technical assistance during the implementation if needed“	0.184	< 0.001
Social Influence (SI)	„Peers, friends and family approve my decision to use home-monitoring“	0.057	0.260
Indirect Predictors	Meaning of predictors	b	p
Computer Anxiety (CA) via EE	„I am not afraid of using the home-monitoring system“	0.397	< 0.001
Perceived Security (PS) via PE	„My health data are safe“	0.066	< 0.001
Doctor's Opinion (DOC) via PE	„I trust my doctor's expertise“	0.065	< 0.001

Methods

Online survey

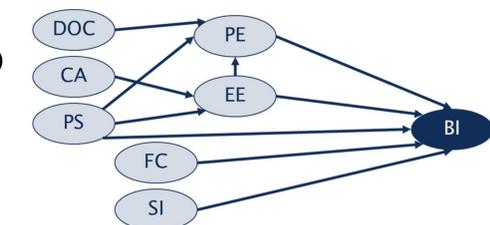
- Questions based on an extended version of the **UTAUT model** („Unified Theory of Acceptance and Use of Technology“, Venkatesh et al., 2003)
- Preference-based questions, SF-36 health survey, socio-demographic data

Participants

- n₁=381 online panel participants (potential patients)
- n₂=40 neurological patients, familiar with home-monitoring system

Investigation of

- Factors influencing BI (UTAUT model, PLS-SEM)
- Factors influencing the preference of home vs. inpatient monitoring (Likert scale, regression analysis)



Extended UTAUT model (Cimperman et al., 2016)

Interpretation and Conclusion

Interpretation

- Relative preference of home-monitoring over inpatient monitoring was assessed.
- Watching an introductory video of the home-monitoring system and the behavioral intention to use the home-monitoring system increase the preference of EEG home-monitoring over inpatient monitoring.
- The belief that home monitoring improves health has a direct positive impact on the behavioral intention to use the home monitoring system. The same applies for the trust in ease of use and availability of technical assistance if needed.
- Decreasing computer anxiety, trust in safety of personal health data and in doctor's expertise have an indirect positive impact on the behavioral intention to use the home-monitoring system, which is mediated through effort expectancy or performance expectancy.
- The opinion of peers, friends and family does not have an impact on the behavioral intention to use the home-monitoring system

Conclusion

Patients acceptance of EEG home-monitoring can be enhanced by integrating user-friendliness, patients' training and provision of comprehensive information into the home-monitoring concept.