

Usability evaluation of a personalized health record for detecting medication discrepancies

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BACKGROUND

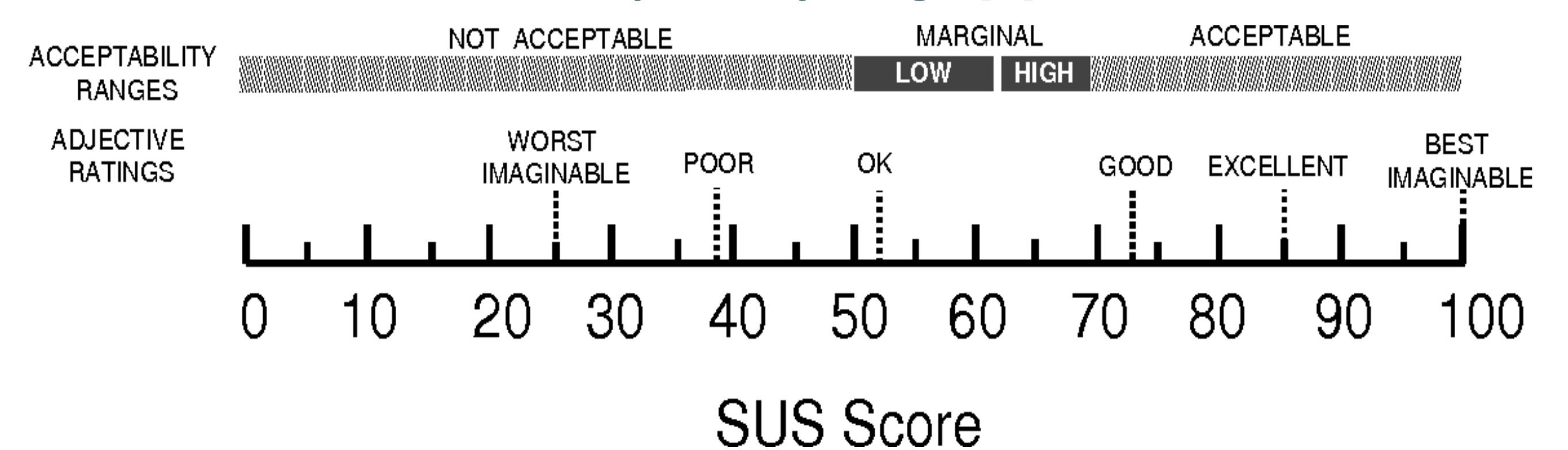
- An online personalized health record (PHR) is a valid tool to reduce medication discrepancies (MDs), defined as unexplained differences among medication regimens.[1]
- The acceptance and usage of a PHR depends on usability and patients' perceived usefulness of the PHR.[2]

The **aim** of this study was to assess usability and perceived usefulness of an online PHR for medication reconciliation and to describe the association between usability and patient-, setting-, and medication-related factors.

METHOD

- PHR-users with a rheumatologic outpatient visit or planned admission in the hospital (cardiology, neurology, internal medicine or pulmonary wards) were asked to rate usability (using the System Usability Scale (SUS)) and perceived usefulness on a 5-point Likert scale.
- The SUS-scores were classified according to the adjective rating scale and furthermore dichotomized in the categories: low (SUS between 0-51) or good (SUS 51-100) usability.
- Logistic regression was performed to analyse the effect of the patient-, setting-, and medication-related factors on usability.

Figure 1: The SUS-score in relation to the adjective rating scale and the acceptability range.[3]



RESULTS

- 177 inpatients (response rate 49%) and 78 outpatients (response rate 63%) were included.
- 34% of the invited PHR-users completed the questionnaire.

Table 1: Characteristics of the study sample

Patient characteristics	Inpatients (n = 177)	Outpatients (n = 78)
Age, median (IQR)	67 (57–71)	59 (50–65)
Male, N (%)	69%	26%
Digital experience of >7 out of 10	66%	68%
Number of drugs, median (IQR)	7 (3–10)	5 (3–7)

Usability

- At the outpatient clinic, **experience with digital devices** (adjusted odds ratio = 1.36; 95% confidence interval: 1.01–1.83) was significantly associated with a good usability.

Table 2: Adjective rate of the usability of the PHR

Adjective rate	Inpatients (n = 177)	Outpatients (n = 78)
Worst imaginable	2 (1)	0 (0)
Poor	6 (3)	3 (4)
Ok	32 (18)	11 (14)
Good	93 (53)	38 (49)
Excellent	37 (21)	23 (30)
Best imaginable	7 (4)	3 (4)

Perceived usefulness

- 76%** of the inpatients and **78%** of the outpatients agreed that the PHR yielded at least **one benefit** (out of seven) with regard to their visit to the physician.
- 48%** of the inpatients and **47%** of the outpatients **preferred** the PHR above traditional medication reconciliation.

CONCLUSION

- Our results highlight that usability and perceived usefulness of the PHR were **good**, but not fully acceptable.
- Further research should explore the barriers and facilitators of patients with a low rated usability and perceived usefulness.

REFERENCES AND ACKNOWLEDGEMENTS

- Van der Nat DJ, Taks M, Huiskes VJB, et al. A comparison between medication reconciliation by a pharmacy technician and the use of an online personal health record by patients for identifying medication discrepancies in patients' drug lists prior to elective admissions. *Int J Med Inform* 2021;104370.
- Davis FD. A Technology Acceptance Model for Empirically Testing New End-User Information Systems. 1985:1-291.
- Bangor A, Kortum P, Miller J. Determining What Individual SUS Scores Mean: Adding an Adjective Rating Scale. *J Usability Stud* 2009;4:114–23.

CONTACT DATA

Disclosure: None of the authors of this study have to disclose any possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this study. Correspondence to: Hein.vanOnzenoort@radboudumc.nl