



End Users' Perceived Engagement with Clinical Dashboards: A Rapid Review

Christie Martin, PhD, MPH, RN-BC, LHIT-HP

Assistant Professor, *University of Minnesota School of Nursing*



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Background

- Designing effective clinical dashboards is challenging
- Involving clinical end users in the co-design process is key
- Understanding end users' perceived engagement can:
 - inform the creation of dashboards
 - increase adoption of dashboards









Rapid Review: Purpose & Aims

• Purpose:

• To explore clinical end users' engagement with dashboards designed to support workflow

• Aims:

1) To determine how perceived engagement is **measured** and evaluated

2) To explore potential barriers or facilitators to perceived engagement







Zhuang et al.'s Framework for Evaluating Dashboards in Healthcare



User Experience

Perceived Engagement

Usability Acceptance Intention Satisfaction



Methods

- Databases
 - PubMed
 - CINAHL
- Search Strategy
 - "dashboard" AND "workflow"

• Inclusion Criteria

- English language publications
- Inclusion Dates: 2012-2022
- Peer-reviewed research & reports

• Exclusion Criteria

- Editorials
- Protocols
- No evaluation component





PRISMA Flow Diagram



Eligible 4 articles





Results: Evaluation Methods & Tools

• Evaluation Methods

- All 4 articles evaluated engagement via usability and/or satisfaction
- 1 article evaluated engagement via usability and acceptance

• Evaluation Tools

- All 4 articles evaluated engagement using qualitative methods
 - Examples: think-aloud & semi-structured interviews; open-ended surveys
- 3 articles used mixed methods; and quantitative measures varied
 - Examples: System Usability Scale (SUS); Post-Study eHealth Usability Questionnaire (PSHUQ)





Results: Evaluation Measures

- 2 articles measured **ease of use**
- All 4 articles measured **usability** (or usage) using **various** terms
 - interface aesthetics, perceived difficulty, perceived usefulness, satisfaction
- 2 articles measured **satisfaction** using **similar** terms
 - system usefulness, system/information quality
- All 4 articles measured facilitators and barriers to perceived engagement in various ways





Discussion

- There are many publications related to the deployment of dashboards
- There are limited publications describing dashboard integration to workflow, suggesting a need for further research and reporting
- There is a lack of literature analyzing dashboard utilization and uptake, demonstrating a need to leverage usability assessments
- Researchers are using different metrics to measure end-user engagement
- Mixed methods appear to be the most robust type of evaluation
 - Quantitative metrics help quantify usability
 - Qualitative methods help identify specific perspectives of end users

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Limitations

- The review did not include patient-facing dashboards
- Executing a sensitive query or searching additional databases may yield more results and strengthen the findings





Conclusion

- Usability and acceptability testing is key to understanding clinical end users' perceived engagement with dashboards
- End users' feedback is essential to the co-design process
- Standardized frameworks and vocabulary would facilitate a common understanding of end users' engagement with clinical dashboards





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Christie Martin mart1026@umn.edu

Grace Gao <u>grace.gao@va.gov</u>

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