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Examining User Engagement with a Decision Aid

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ABSTRACT

Objective: This research investigates user engagement with a digital Decision Aid (DA) designed for surrogate decision-makers at a neurologic Intensive Care Unit (neuro ICU). The study is grounded in the theoretical framework derived from the Information System Success Model.

Methods: Ten participants were recruited from the neuro ICU waiting room, encompassing adults with family members admitted to the neuro ICU. They participated in a comprehensive evaluation of the evolved DA design, employing a mixed-methods approach of eye-tracking, self-administered questionnaires, and interviews with retrospective "think aloud". Eye-tracking was utilized to capture participants' viewing behaviors and relate viewing behaviors to user engagement. Concurrently, interviews with retrospective think-aloud protocols were employed to gather in-depth qualitative feedback. Additionally, questionnaires were administered to assess health literacy, numeracy skills, acceptability, and usability. Data analysis encompassed thematic analysis of qualitative feedback, examination of fixation, saccade, and visit metrics for eye-tracking data, and application of descriptive statistics to questionnaire responses.

Results: Participants rated the DA highly with excellent acceptability and usability. The eye-tracking analysis unveiled distinct patterns of visual engagement across different pages of the DA, underscoring the pivotal role of page design, media richness, information relevance, and conciseness in shaping user engagement. Furthermore, the interviews and retrospective think-aloud analyses illuminated participants' perspectives on the DA's usefulness, ease of use, media richness, learnability, perceived social presence, trust, information quality, and satisfaction. The findings highlight the significance of user-centered design, visual aesthetics, and well-explained information in fostering trust, patient-centered decision-making, and user engagement with the DA. Areas for improvement suggested by participants included refining video design and reducing text-heaviness. Our findings align with the established theoretical model and provide alternative methods to investigate user engagement.

Conclusion: This study investigated engagement with a DA for surrogate decision-makers faced with critical choices regarding neurocritically ill patients. Effective DAs that convey information and engage users are crucial for promoting shared decision-making. Our holistic methodology, encompassing questionnaires, interviews with retrospective think-aloud protocols, and eye-tracking, underscores the need for multidimensional engagement assessments in high-stakes scenarios. While the small sample size warrants caution, the study demonstrates the value of mixed methods in generating rich datasets and insights to understand user behaviors and engagement. Future research should validate findings with larger and more diverse samples, refine the DA based on feedback, and explore longitudinal effects on decision outcomes. Conducting field studies with broader participant pools will further bolster generalizability and facilitate iterative refinements of the DA's design.

Keywords

User engagement, decision aid, shared decision-making, mixed-methods, information system success model, design evaluation.