

Usability Testing of a Mobile App-based Health Literacy Intervention to Improve Self-Care in People with Heart Failure

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BACKGROUND

Low health literacy (HL) has been identified in 24% to 39% of people with heart failure (HF).^{1,2} People with low HL have difficulty processing health information, have poorer adherence to HF self-care, and experience poorer health outcomes.³ Despite the significant negative impact of low HL on HF self-care and HF outcomes, existing HF self-care apps are not designed for people with low HL.

PURPOSE

The purpose of this study was to develop and test a mobile app-based health literacy intervention to improve self-care in people with HF.

METHODS

Development

The information presented in H2Lit is based on the updated HF self-care guidelines⁴ and includes topics such as an overview of HF, symptoms of HF, medication adherence, low sodium diet, physical activity, and symptom monitoring.

Biomedical animation videos were created to make the content in H2Lit easier to understand for people with low HL.

Usability Testing

Healthy adults (≥ 18 years) were recruited via Amazon Mechanical Turk, UI Health Research Registry, and TNN Match to test the earlier prototypes of the H2Lit app. Adults with HF were recruited via Research Match to test the final version of the H2Lit app.

METHODS (continued)

The usability testing sessions were conducted online via Loop11. The participants were asked to think aloud while performing archetypal tasks. The sessions were screen- and audio-recorded. The participants were asked to complete a follow-up survey after completing the usability testing portion.

Instruments Used:

- System Usability Scale – consists of 10 items and uses a 5-point Likert scale to assess the app's usability.
- Newest Vital Sign – consists of 6 items and assesses the participant's health literacy

RESULTS

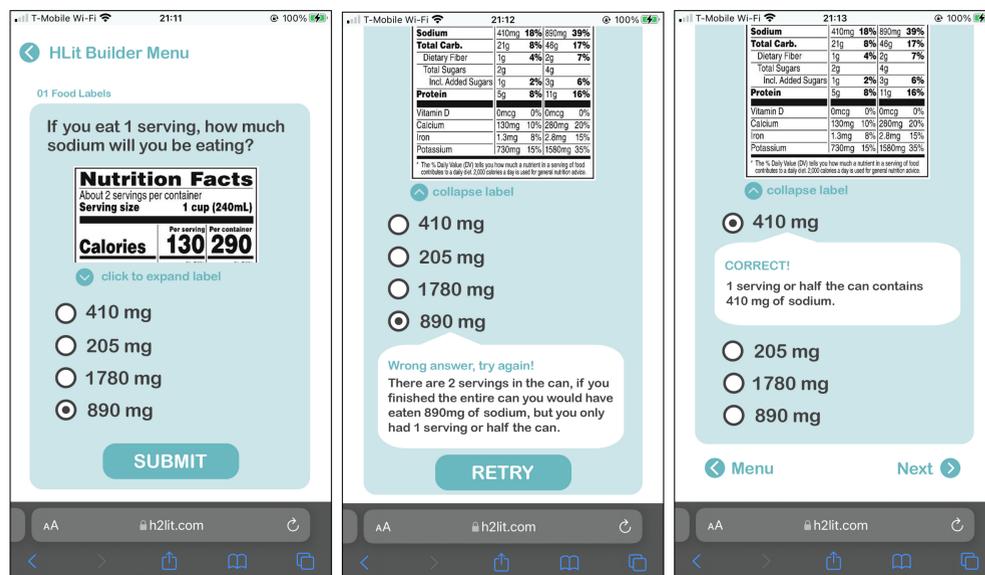


Fig. 1 Screenshots of the Health Literacy Builder

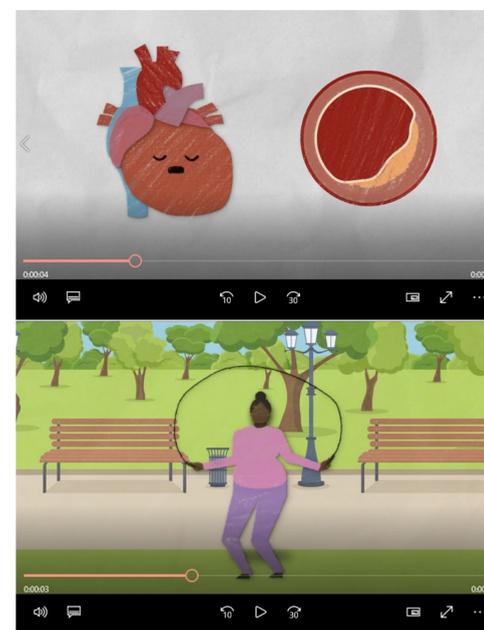


Fig. 2 Examples of the Biomedical Animations

A total of 44 individuals participated in the usability testing—14 participants in session 1 and 10 participants each for sessions 2-4. Participants were middle-aged adults (mean age 47.6 ± 15.4 years), mostly White (31/44, 70%), and primarily college-educated (31/44, 70%). Overall, 34% of the participants had low HL. The H2Lit intervention had a mean usability score of 74.1 (good usability) for round 1; 67.5 (high-marginal usability) for round 2, 85.3 (excellent usability) for round 3, and 82.5 (excellent usability) for the last round with the HF participants. Additionally, 80% of the HF participants agreed that they would continue to use H2Lit. Lastly, 80% of the HF participants would recommend H2Lit to other people with HF.

CONCLUSIONS

The final iteration of H2Lit with HF participants had excellent usability. Our next step will be to pilot test the H2Lit intervention for feasibility and preliminary efficacy, leading to future large-scale, well-powered interventional studies with diverse samples. If determined to be efficacious, H2Lit would be an easily scalable and low user burden HF self-care intervention.

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ACKNOWLEDGMENTS

- 2019 Sigma Small Grants
- National Center for Advancing Translational Sciences, National Institutes of Health, under Grant KL2TR002002