Usability Study of a Web-Based Cognitive Behavioral Intervention (Web-CBI) for Older Adults With Arthritis Fatigue

Miaomiao Shen, MNS, Jeungok Choi, PhD, RN, MPH, Rae Walker, PhD, RN, FAAN

Elaine Marieb College of Nursing, University of Massachusetts Amherst

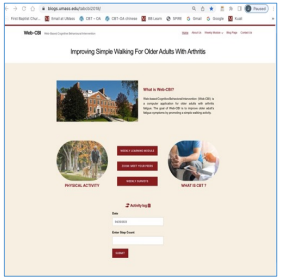
UMassAmherst | Elaine Marieb College of Nursing

INTRODUCTION

- Fatigue occurs in 70% of arthritis patients
- Arthritis fatigue significantly impacts patients' physical/mental health and quality of life
- Current physical activity/exercise interventions (e.g., pool-based therapy, yoga, low-impact aerobics) are:
  - Resource intensive, requiring specially trained personnel, highly structured activities, and attendance at classes or a specified facility
  - A little or no long-term effect because of patients' lack of long-term engagement and adherence after the intervention's completion

STUDY OBJECTIVES

- We developed a web-based cognitive behavioral intervention (Web-CBI) to improve long-term engagement of a simple walking activity for older adults with arthritis fatigue
- The purpose of this study was to examine the feasibility of Web-CBI using the user-centered approach and report the findings



- Web-based cognitive behavioral intervention (Web-CBI) consists of cognitive behavioral therapy(CBT)-based 4 weekly leaning modules and peer-support videoconferencing sessions using Zoom
- Each weekly learning module consists of video recording, key points to remember, SMART (specific, measurable, achievable, realistic and time limited) goal, homework, and self-assessment quizzes

METHODS

- This was a mixed method feasibility study
- Quantitative data were collected using the System Usability Scale and qualitative data were collected using the User Experience Interview Guide
- Quantitative data were analyzed using a paired t-test and interview transcripts were interpreted with a directed content analysis

RESULTS

Demographics (n=15)	
Age	67 years old (SD=8.6)
Gender	5 (33%) males; 10 (67%) females
Race	11 (74%) White; 2 (13%) Asian-American; 2(13%) African-American
Education	4 (25%) less than high school; 2 (12%) technical school; 9 (63%) college or higher
Use of Tablet/laptop/ smartphone	13 (87%) any one or more devices; 2 (13%) never used

System Usability Scale				
	Mean (SD)	Paired *t*	*df*	*p*
Week 1	84.00 (7.84)	1.80	9	0.11
Week 4	77.25 (16.60)			

User Experience Interview Guide		
Items	Week 1	Week 4
Frequency	1/2/3 time(s)	1/2/3/4 time(s)
Help to manage fatigue	The smart goals are helpful It is a good reminder Enjoying reading the information "it has made me more cognizant" "It has kind of motive my thinking where I tried to think out of the box"	Motivating to walk more Focusing on physical activities more "It made me more accountable to myself and more likely to make the effort to go" "It made me to be more conscious about my wellbeing"
Suggestions	Making it into an app Using white board in the video Having a place to put suggestions Providing more space/ box for goal setting Sending the link and reminder email one day before each meeting	Having the group forums to exchange ideas and experiences Having a tool to contact the research nurse Adding journaling to homework and more questions to quizzes Adding place for personal dairy or journal
Exercises	"It was a learning experience"	"It's been fun! And it has been beneficial" "it was a very wonderful experience"

DISCUSSION

- Older adults perceived that Web-CBI as easy and intuitive to use and helpful for improving their walking and managing their fatigue
- Positive feedback of Web-CBI included intuitive layout; videoconferencing ability; allows participants to be the "driver" of care; and continuity of presentation through modules and media.
- A videoconferencing tool was well suited to meet the needs of older adults who have difficulties traveling outside the home because of their physical and functional impairments associated with arthritis.
- ✓ Critique of Web-CBI involved a large amount of content in learning modules
- ✓ Limitations include participants were not diverse; they were mostly White, female, and highly educated. Therefore, sample representativeness may be limited

CONCLUSION

- Use of technology to promote health outcomes and quality of life continue to grow. Web-CBI is one such application designed specifically for older adults with arthritis fatigue.
- User-centered evaluation has provided insight into the validity and reliability of Web-CBI and end user experience.
- End-users have provided valuable critique and led to refinements of Web-CBI.
- Nurse educators, clinicians, and researchers may find the user-centered approach helpful in developing and evaluating technology in the future.

ACKNOWLEDGEMENT

Research reported in this presentation was supported by the 2020 Sigma Theta Tau International Small Grants

KEY REFERENCES

- Hackney, A., Klinedinst, N. J., Resnick, B., Renn, C., & Fiskum, G. (2019). A review and synthesis of correlates of fatigue in osteoarthritis. International Journal of Orthopaedic and Trauma Nursing, 33, 4–10.
- Katz, P., Margaretten, M., Gregorich, S., & Trupin, L. (2018). Physical Activity to Reduce Fatigue in Rheumatoid Arthritis: A Randomized Controlled Trial. Arthritis Care and Research, 70(1), 1–10.
- Overman, C., Kool, M., Da Silva, J. A., & Geenen, R. (2016). The prevalence of severe fatigue in rheumatic diseases: An international study. Clinical Rheumatology, 35(2), 409–415. https://doi.org/10.1007/s10067-015-3035-6