

Title Development and pre-pilot testing of STAMP+CBT: An mHealth app combining pain cognitive behavioral therapy and opioid support for patients with advanced cancer and pain

Authors Desiree R. Azizoddin,^{1,2} Sara DeForge,¹ Ashton Baltazar,¹ Robert R. Edwards,³ Matthew Allsop,⁴ James A. Tulsky,² Michael S. Businelle,¹ Kristin L. Schreiber,³ Andrea C. Enzinger⁵

1 Health Promotion Research Center, Stephenson Cancer Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA

2 Department of Psychosocial Oncology and Palliative Care, Dana-Farber Cancer Institute, Boston, MA, USA

3 Department of Anesthesiology, Perioperative, and Pain Medicine, Brigham and Women's Hospital, Boston, MA, USA

4 Academic Unit of Palliative Care, Leeds Institute of Health Sciences, University of Leeds, Leeds, UK, USA

5 Division of Population Sciences, Dana-Farber Cancer Institute, Boston, MA, USA

Corresponding Author

Desiree R. Azizoddin

Desiree-Azizoddin@ouhsc.edu

Supportive Care in Cancer

Online resource 1 Patient post-study interview guide used to learn about participants' experience using the STAMP+CBT app

Patient Post-Study Interview Guide

Thank you for participating in our study and using My Pain Pal CBT. We are very excited to hear about your experience using the app, and are particularly interested in any suggestions you might have on we can make the app better.

Before we start, I want to check in with you to see if you have any more questions about the purpose of the research study and what is involved, and is it alright if I turn on the recorder?

- If no: Stop and discuss the study, elements of consent, answer questions, and obtain continuing consent to participate and be recorded prior to continuing
- If yes: Thank you, I am turning the recorder on

Our goal in creating this app is to help patients better manage their pain. As I mentioned, we want to get your feedback on the app and how helpful or unhelpful it has been to you in the past 4 weeks. Please don't hesitate to share anything that comes to mind - we are hoping to learn more about what parts of the app work and what parts we can make better!

1. To get started, could you tell us a little bit about your experience using the application?
 - a. How often would you say you used it?
 - i. How often should people use the app?
 - b. What prompted you to use the app when you did?
 - i. What did you think of the push notifications? Did they impact how you engaged with the app, or were they bothersome?
 - ii. Did you interact with notifications for the content vs the survey differently?
 1. If yes, why?
 - c. What did you like and dislike about the app?
 - d. Was the app helpful for your pain management, and if so how?
2. Could you tell us a little bit about what you thought about the daily surveys?
 - a. How long did it usually take you to complete?
 - b. Were there too many or not enough questions?
 - i. If so, what would you want more or less of?
 - c. Any questions you would add?
 - d. Any questions you would remove or re-word that confused you?
3. Let's talk a little bit about the survey summary that you got after completing the daily surveys.
 - a. Did you notice the messages at the end of the survey?
 - i. Did you read them?
 - ii. Did they impact your pain coping?
 - b. Tell me more about a time you used something you learning in the app?
 - i. How did it go?
 - ii. What were you doing for this before using the app?
 - c. Tell me about a time you saw advice/a coping skill in the app that you used?
 - i. What about one you saw that you would never use?
 - d. Were there times that you used the advice given by the application changed the way you managed your pain?
 - e. How often would you say that you clicked on the recommended links in the survey summary?
 - f. How about the way you used your medications?
 - g. *Would you want to report non-opioid pain meds?*
4. The app pushed daily content to you. Let's review your thoughts about that.
 - a. Did you like that the app recommended daily content? If yes, why? If not, what would you change?
 - b. Did you review the content when it was pushed? Or did you go back to the content later?

- c. If you didn't review the pushed content, can you think of another way the content could be sent that would make you more likely to review it? (time of day, messaging, etc.)
- d. How helpful/unhelpful was the resource library?
 - i. What were the parts of the resource library that you used the most?
 - 1. Why?
 - 2. What were the parts of the resource library that you used the least?
 - ii. Did you read or watch any of the materials more than once? If so, why?
 - iii. What type of content did you prefer? (audio, video, text, game)
 - iv. Did you feel change when and how you interacted with the content or the app?
 - v. Was there any content that you reviewed that you didn't relate to? Why?
 - vi. Were there any aspects about your pain management you wish had been included and weren't?
 - vii. Were there thoughts and feelings about pain that you wish had been addressed in the material?
 - viii. Some of this content may have included topics you already knew about. Was there any content that you felt was very new to you? Did you find it useful?
 - ix. Did you play the games?
 - 1. If so, what did you think of them?
 - 2. Would you change anything about the games?
- e. How helpful/unhelpful was the Medication cabinet?
 - i. How often did you use it?
- f. What about reporting your opioid use? Did you use it?
 - i. If so, why?
- g. Did you use the relaxation exercises?
 - i. If you used them, how often did you use them?
 - ii. What made you want to use them?
- h. Did you watch the educational videos?
 - i. If yes, how helpful/unhelpful were the educational videos?
 - ii. Would you change anything about them?
- 5. Caregiver involvement?
 - a. Who helps you manage your pain?
 - b. Who have you shown the app to? What did that person think?
 - c. Who do you talk to about what it's like being sick? Who do you talk to about taking opioids?
 - d. How did your caregiver help you use the app?
- 6. Did the app or its functions change how you communicated your pain management needs to your care team?
 - a. If so, less or more?
 - b. How do you feel about your doctor getting an alert about your significant symptoms?
 - c. Would you/did you change your answers to avoid triggering an alert?
 - d. Do you think your answers would change if you knew your care team was monitoring them?
 - e. Did the nurses call you?
 - i. How did that go? Helpful/unhelpful?
 - a. Did this change how you reached out for support?
 - ii. Urgent care? ED?
 - iii. Bringing up thoughts and fears to your care team?
 - b. Did this change how you accessed opioids?
 - iv. Logistical changes, refills?
- 7. Would you say that using this app has helped you gain new insights about your pain?
 - a. What behavioral skills, if any, would you say you gained from using the application?
 - i. Did you use specific strategies such as activity pacing through the advice provided by the app?

- ii. Which parts of the thought-focused content were helpful to your understanding of your own experience of pain? Which parts were unhelpful?
 - iii. Did the interactive Sort the Thought game help you recognize your own thoughts?
- 8. What did you think of setting a goal as part of this intervention?
 - a. What were your thoughts on having the goals on the home screen? Did you visit this page?
 - b. What were your thoughts about being asked about your progress towards your goals on the daily survey?
 - c. Do you think goal setting had an impact on your pain or ability to cope with your pain?
 - d. Did you change your goal(s) during the course of the intervention?
 - e. What would you change?
 - f. Would you want to include more than one goal?
- 9. How was your onboarding to using the app?
 - a. How would you describe the app to another patient dealing with pain during their cancer experience?
 - b. Would you add anything to the onboarding experience?
- 10. What did you think about integrating the mental and physical/medication aspects together in this app?
- 11. Lastly, would you recommend the app to a friend of yours who is trying to manage their cancer-related pain?
 - a. How would you describe the app to them? What would you tell them about the app?
 - b. How easy do you think it would be for someone to use the app?