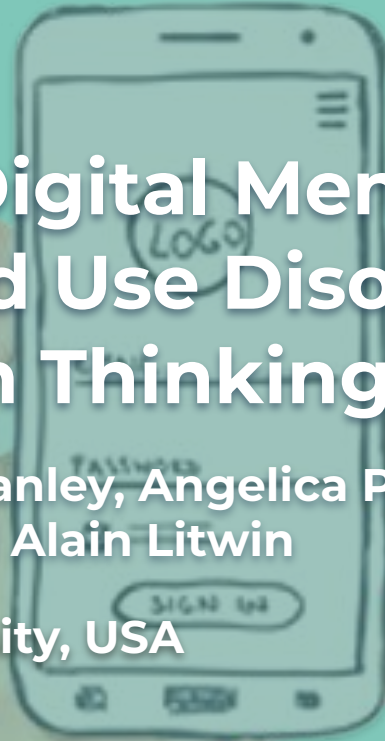


HCI International 2022

Designing a Digital Mental Health App for Opioid Use Disorder Using the UX Design Thinking Framework

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The Opioid Crisis: A National Public Health Emergency



38 opioid-related deaths per day



Isolation, disruption to treatment,
increased risk of life-threatening illness



Decreased quality of life and productivity



Significant healthcare, criminal justice,
and economic costs





**Less than 10% of
people who need help
receive care for opioid
dependence.**

The Opioid Crisis: A National Public Health Emergency



Stigma; Negative public and healthcare professional attitudes



Travel barriers, especially in rural areas



Financial instability



Outdated policies

A hand is holding a black smartphone. The screen of the phone is black and displays the text 'Could mHealth be a solution?' in white. The word 'mHealth' is highlighted in green. The hand is visible on the left side of the phone, with fingers gripping the edges.

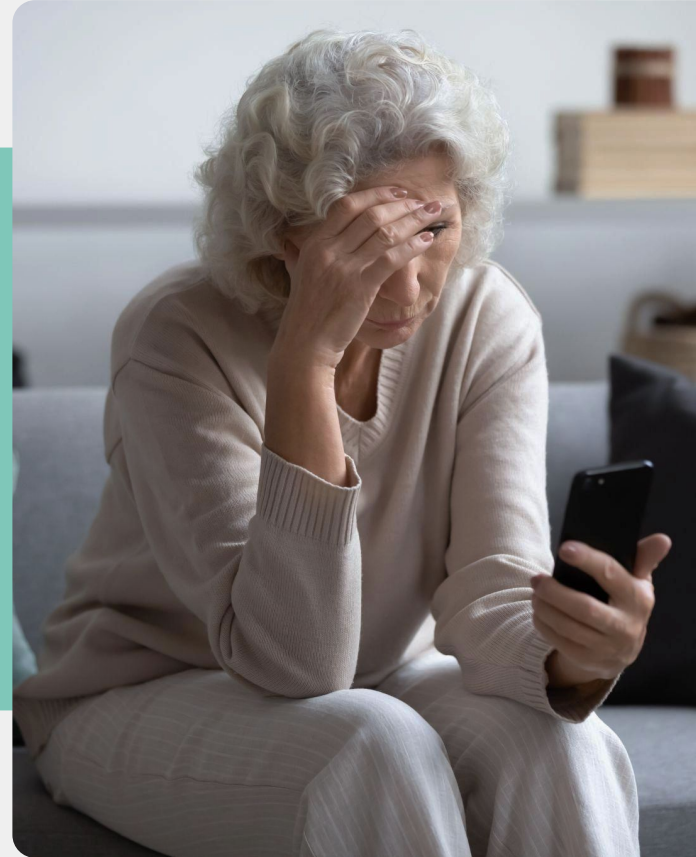
Could
mHealth be
a solution?

There is a need to design an easily **accessible**, **discreet**, and **efficacious** remote intervention for those who suffer from OUD.

Over 100,000 mhealth apps are currently available.

However, most of these apps:

- contain gaps in assessments of efficacy; Have little documentation or evidence of clinical validation.
- do not address privacy concerns.
- lack personalization.
- do not follow a UX Design Thinking approach during development.
- do not focus specifically on OUD.



Despite their current state, mHealth apps have potential.



- Offer remote help
- Deliver “Just-in-time” Interventions
- Cost-effective
- Customizable
- Provide anonymity
- Show promise in improving interventions in addictive disorders.

The UX Design Thinking Framework



Empathize

Understand user needs, preferences, and mental models.



Define

Identify and clearly state the problem.



Ideate

Brainstorm potential solutions.



Prototype

Transform ideas into tangible solutions.

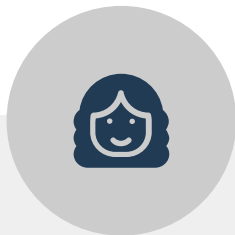


Test

Get feedback and make improvements.

The UX Design Thinking Framework

User



- Improve User Engagement
- Strengthen Trust
- Increase Retention

Business



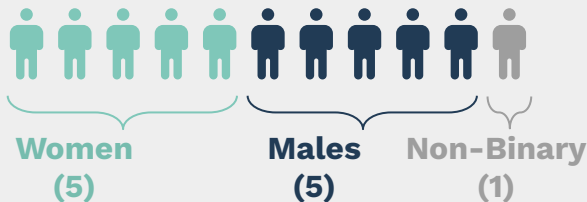
- Save Time
- Save Money

Target Population

Inclusion Criteria

- Adults 18-75 years
- Diagnosed with Opioid Use disorder and have participated in medication-assisted treatment
- Own a smartphone

Gender (N=11)



Age

Mean: 40.27 years
SD: 8.13 years



Rent (63.64%)



High School or GED (54.55%)



Unemployed (54.55%)



Hospital Sponsorship (45.45%)



Empathize



- Transportation, stigma, and access to care are pain points for people in recovery.
- The most influential triggers to craving are anxiety, pain, people, and arguments.
- Despite being an efficacious strategy, most participants have not tried Cognitive Behavioral Therapy.
- Some do not receive the appropriate level of care.



Empathize

Thinks

[illegible]

Feels

Overwhelmed	Worried about what other people are thinking	Worried about getting addicted again	Scared of withdrawal
Out of control when withdrawal hits	Uninterested when going to therapy due to lack of judgement	Happy to have a new perspective	Felt isolated and alone when they were sick
Tired of addiction	Worried about what they may become in recovery (sobriety, etc.)	Desire to connect with others	
Embarrassed by childhood family experiences	Afraid of what they may become in recovery (sobriety, etc.)	Afraid of not succeeding	
Emotional	Likes to feel real things - feels more in control	Came and sat around the sand and beach	

Says






such a young age	be in the middle of the world to work.	giving a letter without a return address	I don't think I will have time ready for it.	going through and out of the window to escape
Once the initial shock of the death passed from him, he went back to work.	Small amounts of money were given to him through his family.	Swearing a letter without a return address	I just think the middle-class and the middle-class auditors	"I hope Audience will dig and see how it is made."
He was looking for a way to escape from his family and himself and to find a way to live.	Once the initial shock of the death passed from him, he went back to work.	How can I go home to my parents and my wife?	The middle-class and the middle-class auditors	"Relapse is my biggest concern."
He was looking for a way to escape from his family and himself and to find a way to live.	You just got to want to be a good person (goodbye)	How can I go home to my parents and my wife?	The middle-class and the middle-class auditors	"Relapse is my biggest concern."
"It was pretty good to me"	CONSIDER the many ways in which the world is a place to live	How can I go home to my parents and my wife?	The middle-class and the middle-class auditors	"Relapse is my biggest concern."
"I think I am a good person"	Nobody wishes to be a good person	I don't know if I can live a good life	"I don't have many friends right now."	"As long as I can live a good life."
"I think I am a good person"	Nobody wishes to be a good person	I don't know if I can live a good life	"I don't have many friends right now."	"As long as I can live a good life."

Does

The image shows a 4x4 grid of 16 yellow sticky notes. Each note contains a different phrase or icon. The phrases are: 'Goes to therapy', 'Does not work.', 'Takes walks to relax', 'Cooks dinner', 'care of the kids', 'Working on being in shape and watching weight', 'Listens to music', 'Watches TV', 'Hangs out at the river', 'Cleans the house to manage cravings', 'Lovers the outdoors and the outdoorsy clothing (hiking, climbing, etc.)', 'Dates', 'Wears a watch', 'Gardens', 'Looks for things to do', 'Does online research for recovery', 'Has trouble with sleep', 'Makes furniture', 'Goes to therapy', 'Uses phone more than 15 times a day', 'Plays Guitar', 'Gives medical supplies and/or medical advice to friends', 'yoga', 'Plays on phone to', 'Cares', 'To watch a new movie, get a massage or visit friends'. The notes are arranged in a grid that is roughly 4 rows by 4 columns, with some notes spanning multiple rows or columns.

Goes to therapy	Does not work.	Takes walks to relax	Cooks dinner	care of the kids
Working on being in shape and watching weight	Listens to music	Watches TV	Hangs out at the river	Lovers the outdoors and the outdoorsy clothing (hiking, climbing, etc.)
Dates	Wears a watch	Gardens	Looks for things to do	Does online research for recovery
Has trouble with sleep	Makes furniture	Goes to therapy	Uses phone more than 15 times a day	Plays Guitar
Gives medical supplies and/or medical advice to friends	yoga	Plays on phone to	Cares	To watch a new movie, get a massage or visit friends

Natalie Williams

-  35 years old
-  10th Grade
-  Single
-  15+ times/day
-  Unemployed



👍 Motivations

Being there for her son and family.

Getting healthy and staying in shape to feel better.

Finding joy in life again.

Learning; getting her GED.


Frustrations

Being stuck on medicine the rest of her life because of a mistake.

Gets anxious when she tries breathing exercises or meditation.

Wrong therapist at the wrong time in her recovery.

Ryan Jones

-  44 years old
-  High School Diploma
-  Dating
-  6-15 times/day
-  Part-time Mechanic



👍 Motivations

Helping other people with their recovery through group counseling.

Wanting to make his friends
and family proud.

Using wood working as a distraction tool during withdrawal. He likes having a nice end result.

Frustrations

Transportation is an issue. It makes it very difficult to make it to therapy meetings and appointments on time.

Ryan doesn't have any tools to help him prevent cravings right now.

Physical withdrawal symptoms make it very difficult to stay away from opioid use.

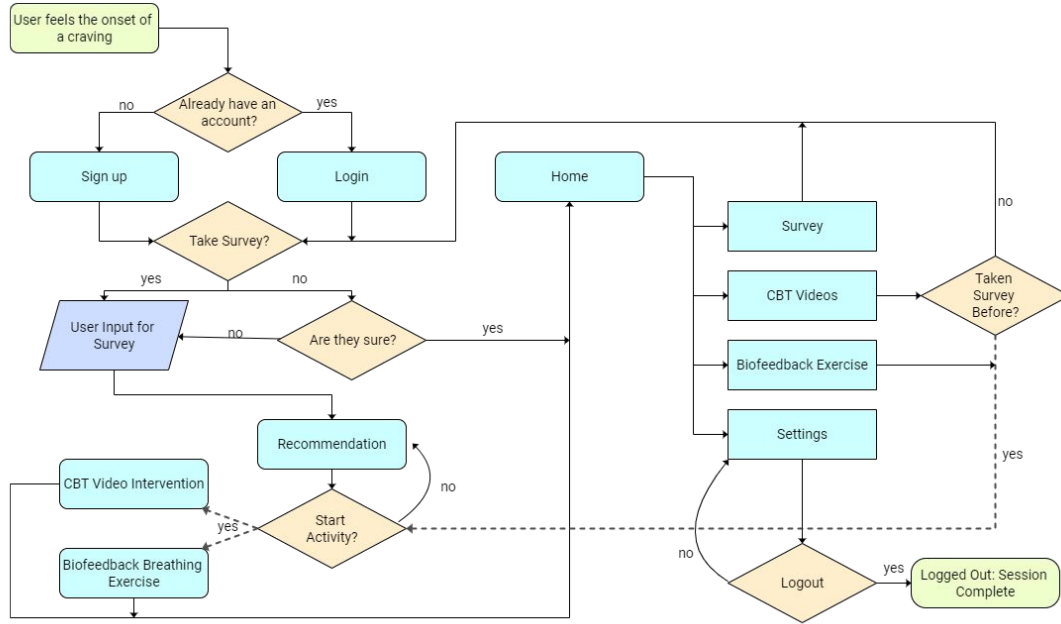


Define

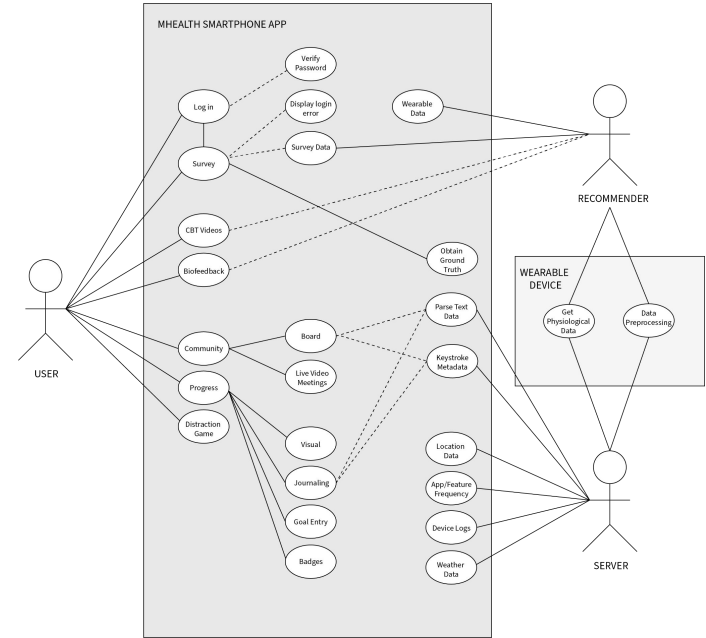
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Ideate



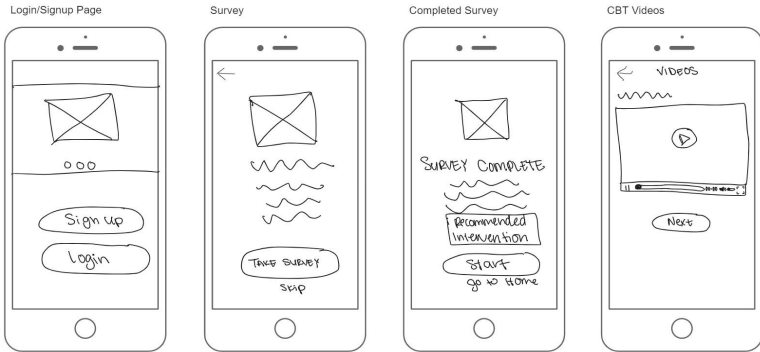
User Flow



Use Case

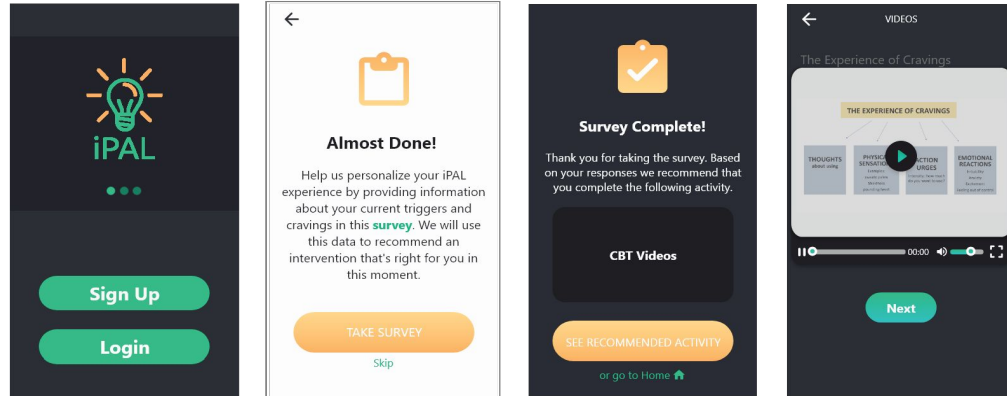


Prototype



miro

Paper Sketches



Low-fidelity Adobe XD Prototype



Test

Heuristic Evaluation

20

- 1. Visibility of System Status**
2. Match Between System and Real World
3. User Control and Freedom
- 4. Consistency and Standards**
5. Error Prevention
6. Recognition Rather Than Recall
7. Flexibility and Ease of Use
8. Aesthetic and Minimalistic Design
9. Help Users With Errors
10. Help and Documentation

An intelligent Pervasive Augmented ReaLity (iPAL)

Good to see you again.



You've Checked in for 6 Days
in a row now. Keep it up!

Remember why you're here.

Listen to the audio message from yourself
or create a new one.

00:00 02:00



Delete



New



HOME



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SETTINGS

Survey



[Learn More](#) ?

Please Take This Brief Survey

We will recommend an activity to help
you manage this craving based on your
responses.

[Start Activity](#)



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Videos



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Watch Recommended Videos

We've picked out three short videos to
help you in this moment.

[Start Activity](#)



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SURVEY



VIDEOS



BREATHING



SETTINGS

Breathing Exercises



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Practice Breathing Exercises

Once you put on your AR glasses and
watch, we'll walk you through a breathing
exercise to help you feel better.

[Start Activity](#)



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VIDEOS



BREATHING



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HOME



SURVEY



VIDEOS



BREATHING



SETTINGS

Conclusion

- Follow a user-centric UX design thinking framework
- Consult experts in addiction psychology, UX design, and development.
- Base interventions in cognitive behavioral therapy.
- Utilize diagrams, personas, and wireframes to establish a shared understanding of project aims throughout a team.

Future Directions >>

Usability and Efficacy Testing

Contact Information



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