Poster: Preliminary Outcomes of a Culturally Tailored Mindfulness Mobile App for Mental Health within Underserved African American Communities During COVID-19

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ABSTRACT

This poster presents preliminary findings from a study in progress, which indicate that a specially-designed mobile app can serve as a viable delivery system for a mindfulness-based stress reduction (MBSR) intervention for historically underserved and minority communities experiencing mental health effects of worry and stress during the COVID-19 pandemic. Our early data suggest that the app is well-received and usable for the target population and serves as an effective delivery platform for MBSR interventions for underserved and minority communities.

CCS CONCEPTS

Human-centered computing • Ubiquitous and mobile computing • Ubiquitous and mobile computing design and evaluation methods

KEYWORDS

culturally sensitive design, community-based research, smartphone application technologies, mental health, health equity, COVID-19

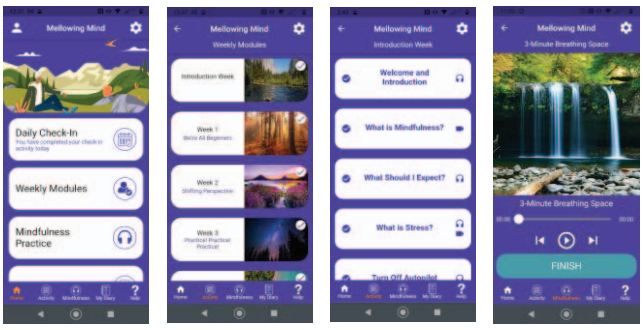
CONTEXT/SIGNIFICANCE

Technologies Addressing Health Inequity. Although the global interconnectivity afforded by advanced health technologies carries great promise for global public health and health equity across borders, there is also a risk that these technologies may reinforce systemic and structural health disparities for members of marginalized communities at more localized scales if the specific needs of underserved and minority communities are not built into the design and delivery systems of healthcare technologies [1,2,3]. The COVID-19 pandemic made it clear that disparities in access and applicability of technologies parallel disparities in health and healthcare. That is, access to healthcare resources and familiarity with the norms of their use are not evenly distributed across communities. In the case of technologies, this can be an even more stark divide: new innovations are often not only costly, but their novelty can be off-putting for communities that have experienced historical trauma at the hands of the medical and academic research establishment [3].

Our research team addressed these concerns in the process of adapting a mindfulness-based stress reduction (MBSR) app that was specifically intended as a resource for members of historically underserved, majority African American neighborhoods in a city highly impacted by the COVID-19 pandemic. However, there were unique concerns specific to our target community. Informed by the tenets of community based participatory research (CBPR), we gained a better sense of these concerns, and developed ways to address them in the user interface design and delivery system of our app by garnering feedback and input from an established group of community stakeholders and testing the app-in-progress with them.

METHODS

App Design and Usage. The Mellowing Mind app was designed to mirror the traditional, in-person MBSR program, in which participants meet in person once per week over 8 weeks for 2-hour sessions and are encouraged to practice independently for 45 minutes per day. Content traditionally delivered in person by an interventionist was provided through video and audio, with some opportunity for participants to provide feedback and journaling via text. Aesthetically, the app was designed for cultural relevance to the African American target population for this study. Community stakeholder input was garnered regarding images and content, and community leaders were engaged in providing much of the audio-visual content. The user interface was intentionally simple, with large clear buttons and clear pathways between sequential activities in a weekly module. Participants were provided with a brief individual training session on how to use the app before beginning the intervention. Some features of the App are shown below.



Frequency and duration of use for each participant was monitored along with completion rates for each weekly module. Participants receiving the Mellowing Mind app intervention were assessed for primary outcomes, including worry and perceived stress at five timepoints: at baseline, midway through the intervention, at post-intervention, as well as follow-ups at one and three months after the intervention.

Eligibility and Data Collection. Participants who met eligibility criteria (residence in the target city, aged 18 years or older, fluent in English, not diagnosed with substance abuse or having had a change in psychotropic drugs in the past two months, not currently receiving psychotherapy or cognitive behavioral therapy, not currently experiencing severe clinical depression or suicidal ideation, and experiencing worry) and chose to enroll in the study were randomly assigned to a control group, a group receiving MBSR via Zoom classes, or the mobile app group. Data from 31 participants randomly assigned to the mobile app group between August 2021 and May 2022 were examined for this preliminary analysis. See Table 1 for a demographic demographic breakdown.

Table 1. Demographics

	African American	White Caucasian	Asian
Female	21	5	1
Male	3	1	0

PRELIMINARY RESULTS

App Engagement. Rates of engagement with the app and participant feedback suggest good accessibility and technical ease of use for all participants. Of the sample examined here, 61.3% (n=19) participants completed between 95-100% of the weekly module activities, 12.9% (n=4) completed 50-94%, and 25.8% (n=8) completed less than 50%. (See Table 2 for rates of engagement by demographic group). Participants who did complete less than 50% cited reasons of time constraints and personal, family, and health issues as barriers to use. None cited difficulties with the technology or its use.

Table 2. App Engagement (Completion of Modules)

	95-100% Module Activity	50-94% Module Activity	< 50% Module Activity
African American Female (n=21)	14	3	4
African American Male (n=3)	2	1	0
WhiteCaucasian Female (n=5)	2	0	3
White Caucasian Male (n=1)	1	0	0
Asian Female (n=1)	0	0	1

Outcomes. The primary outcome of this study is worry. For the preliminary sample considered here, 87.1% (n=27) showed improvement in worry scores. It should be noted that three participants who showed an increase in worry had low rates of engagement with the app (<50% completion of weekly module activity). Improvement was also evident for secondary outcomes including perceived stress, at 78% (n=24), loneliness, at 84% (n=26), quality of life, at 58% (n=18), and flourishing, at 78% (n=24).

Table 3. Primary Outcomes

Improvement in:	Worry	Perceived Stress
African American Female (n=21)	19	15
African American Male (n=3)	2	2
White Caucasian Female (n=5)	4	5
White Caucasian Male (n=1)	1	1
Asian Female (n=1)	1	1

DISCUSSION

The preliminary findings from our early data, along with participants' reported experiences with the app, suggest that a culturally sensitive app design provides a viable method for delivering an effective MBSR intervention for members of underserved, minority communities who experience stress and worry. Although we recognize certain limitations, such as the time requirement for completing module activities, and the challenges regarding the costs of devices and service plans, our research suggests that with continuing attention to the needs of target communities, there is great potential for addressing health and mental health disparities through culturally attuned mobile apps.

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DISCLAIMER All statements in this report, including its findings and conclusions, are solely those of the authors and do not necessarily represent the views of the Patient-Centered Outcomes Research Institute (PCORI), its Board of Governors or Methodology Committee.

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