



Formative research to develop a lifestyle application (app) for African American breast cancer survivors

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ABSTRACT

Background: There is a proliferation of lifestyle-oriented mobile technologies; however, few have targeted users. Through intervention mapping, investigators and community partners completed Steps 1-3 (needs assessment, formulation of change objectives, and selection of theory-based methods) of a process to develop a mobile cancer prevention application (app) for cancer prevention. The aim of this qualitative study was to complete Step 4 (intervention development) by eliciting input from African American (AA) breast cancer survivors (BCSs) to guide app development.

Methods: Four focus group discussions (n=60) and three individual semi-structured interviews (n=36) were conducted with AA BCSs (40-72 years of age) to assess barriers and strategies for lifestyle change. All focus groups and interviews were recorded and transcribed verbatim. Data were analyzed with NVivo qualitative data analysis software version 10, allowing categories, themes, and patterns to emerge.

Results: Three categories and related themes emerged from the analysis: 1) perceptions about modifiable risk factors; 2) strategies related to adherence to cancer prevention guidelines; and 3) app components to address barriers to adherence. Participant perceptions, strategies, and recommended components guided development of the app.

Conclusions: For development of a mobile cancer prevention app, these findings will assist investigators in targeting features that are usable, acceptable, and accessible for AA BCSs.

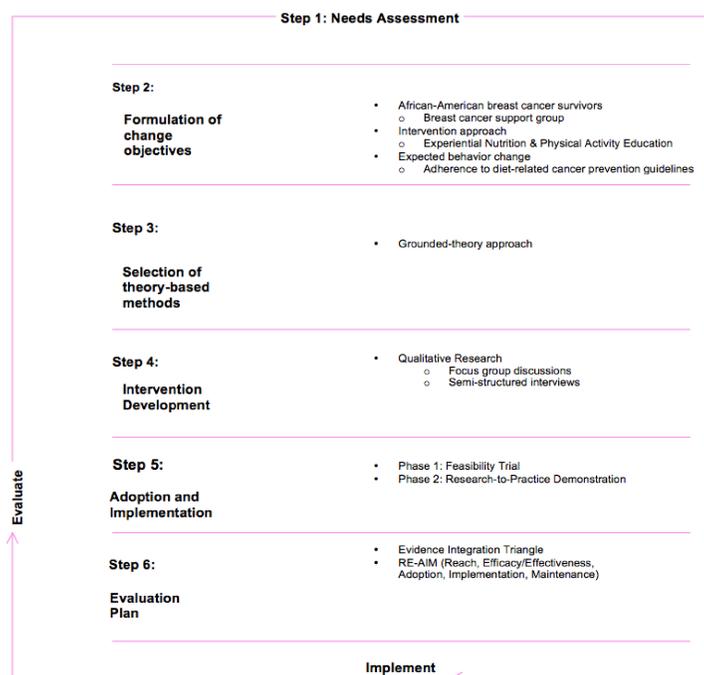
Key Words: Lifestyle modification; intervention mapping; cancer prevention guidelines; breast cancer survivors; smartphone app

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INTRODUCTION

Few lifestyle apps have included targeted users in their development. The present study was designed to develop an educational intervention to promote adherence to cancer prevention recommendations among AA breast cancer survivors (BCSs) and to evaluate the feasibility and acceptability of delivering the intervention through a smartphone app. Intervention mapping (Figure 1), an iterative process that begins with a needs assessment and continues by fostering collaborations with stakeholders during development, implementation, and evaluation, was used to support the app development process.

Figure 1. SISTA AH Talk App Intervention Map



METHODS

❖ The study phases include:

- Mixed-methods assessment of the lifestyle needs and experiences of the targeted population (2013-2015)
- Qualitative study, which is the subject of this report, to elicit stakeholder input to guide intervention development (2015-2016)
- Feasibility study piloting the app to assess its usability (2018)

❖ The health belief model (HBM) and theory of planned behavior (TPB) were selected to undergird the SISTA AH Talk app

❖ SISTA AH Talk members engaged in experiential educational sessions (e.g., cooking and exercise) and audio- and videotaped facilitated discussions.

❖ Cooking demonstrations followed cancer prevention guidelines relative to nutrition and dietary intake (e.g., portion control, weight control, vegetables and fruits, red and processed meat, and whole grains).

❖ Exercise sessions focused on guidelines specific to physical activity (e.g., 150 minutes per week).

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- Focus group discussions (FGDs) were completed to generate ideas and determine app content. Individual semi-structured interviews (SSIs), which included an open set of questions that allowed new ideas to evolve based on participant responses, were completed to determine barriers to lifestyle modification, potential strategies to address them, and desired app components

❖ NVivo 10 (qualitative data analysis computer software) was used to facilitate the coding process (i.e., assessing the degree of agreement/disagreement across themes and calculating inter-rater reliability scores).

❖ Recurring themes were identified, the research team came to a consensus on coded themes, and themes were summarized for analysis.

RESULTS

Sociodemographic characteristics of SISTA AH Talk coaches

Characteristics	Participants (n=12)
Mean age, years (range)	50 (40-72)
Educational Level	
High school or less	3 (25.0)
College	7 (58.3)
Graduate	2 (16.7)
Marital Status (percent)	
Single	3(25.0)
Married	4(33.0)
Widow/Divorced	5(42.0)
Annual Income (%)	
\$0-\$24,999	4(33.0)
\$25,000-\$49,000	5(42.0)
>\$50,000	3(33.0)
Mean years (range) since diagnosis of breast cancer	8.7 (2-26)

RESULTS

Strategies and participant app component preferences

App Component	Strategy	Quotes
WCRF/AICR cancer prevention guidelines	Educational materials	"Because as a cancer survivor, I think we need that kind of education. Because there are so many programs teaching how to work out; but as breast cancer survivors, need special education that will not traumatize our bodies."
Food and exercise diary	Dietary intake and physical activity progress	"I want an app to chart or journal what I have been eating and doing—to give me ideas and guidance."
Email reminders	Feedback Instructions	"I like email reminders and tips for eating every day, reminding me to drink water, to eat fruits and vegetables."
Body mass index calculator	Self-monitoring of body weight	"The best app is one that calculates how fat you are. Having a BMI calculator is a must!"
Healthy weight range	Self-monitoring of body weight Goal setting	"Healthy weight in my community is different from for other women. I need to know how much I should weight to prevent my breast cancer from coming back—I need a goal."
Energy/calorie requirement calculator	Self-monitoring of portion control Goal setting	"Apps that have restaurant information and the calculation of the calories for any of the foods you eat are best."
Food group recommendations	Self-monitoring of fruits and vegetables; red and processed meats; whole grains	"It would help if the app allowed me to track my progress—tell me if I am eating the right number of foods to prevent cancer."
Recipes—pictures of foods, YouTube videos	Educational materials Instructions	"The ones (apps) with links to other websites was very good."
Exercise—instructions, YouTube videos	Educational materials Instructions	"More information, especially about physical activity."
Tracking negative thoughts/stress	Stress reduction	"I learned how to release my stress, to breathe, that's a good thing and also not to stress our body, to go further than we can. We need to include this in the app."
Links to Facebook, Twitter	Social support Feedback	"Another thing I like is when you can talk with certain people—people going through what you are going through; experts like nutritionists and fitness experts."
Internet website links	Resources	"If it's too much information, someone like me who is new to using apps, if it's too technical, the user will give up." It's important to make the app 'user-friendly' and link out to other resources."
Reminders to log food and activity	Self-monitoring Goal setting	"The best app is one that communicates with you—that sends you reminders to track your progress."
Flags for lapses in diet and physical activity goal adherence	Self-monitoring Goal setting	"Once I set a goal, I usually stick to it. But some things that I think that I am doing right, I am not really doing right. I need someone to tell me."

DISCUSSION/CONCLUSIONS

❖ Twelve AA BCSs (coaches) with a mean age of 50 years, participated in this qualitative study

❖ Responses from participants were organized into 3 categories:

- Perceptions about modifiable risk factors
- Strategies related to adherence to cancer prevention guidelines
- App components to address barriers to adherence

❖ The app components included educational materials about WCRF/AICR prevention guidelines, a diary and reminders, a BMI calculator, links to social media, internet educational videos, and flags for lapses

❖ Among AA BCSs, complex cultural and socioeconomic issues may hinder optimal adherence to cancer prevention guidelines, and general prevention measures may not be sufficient for eliminating disparities that exist as a result of such issues

❖ Researchers should work collaboratively with survivors and support groups to ensure that interventions that are developed and tested are relevant and practical in meeting the needs of this group.

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