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The Development of a Tracking Tool to Improve Health Behaviors in African American Adults

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Abstract

Although African Americans (AAs) have high risk for cardiovascular disease, few individual tailored interventions are available to improve healthy lifestyles in this population. The purpose of this study was to develop and pilot-test a tracking tool for AA adults to examine the extent to which participants initiated health goals and were ready for change, improved health behaviors (increased fruit/vegetables and physical activity, decreased fat), and perceived the tool was useful in tracking and improving health behaviors. AA adults (n=11, 40 years or older) were recruited and completed for one week the Health Check Report Card (HCRC), a tracking tool that measures types of food eaten and physical activity using a pre-determined point system. Findings showed that the participants at post-test significantly increased fruit/vegetable consumption. The HCRC was perceived as helpful in tracking health behaviors. This study suggests that the HCRC may be a tool to explore in improving health behaviors of AAs.

Keywords

African Americans; tracking tool; health behaviors; church-based health

The health of African Americans (AAs) is an ongoing issue in the United States. In particular, cardiovascular disease (CVD), which has the highest rates of morbidity and mortality for all Americans, affects AAs the most. For example, AAs, both male and female, have the highest mortality rates from CVD when compared with Whites (405.0 per 100,000 for AA males, 286.1 AA females; 294.0 White males, 205.7 White females).¹ Two key risk factors for CVD are diet and physical activity. Studies show that AAs, in comparison with Whites, consume less fruit, vegetables and calcium rich foods;^{2–3} consume more fats, sodium and sugar;⁴ and participate in less daily physical activity.⁵ Clearly, improving the dietary and physical activity health of AAs is a national priority.⁶

To address health issues of AAs and other underserved populations, *Healthy People 2010* and now *Healthy People 2020* call for community-based approaches that intervene with these populations in natural settings.⁶ Within AA communities, the church is historically and currently a valued organization for reaching individuals and families,⁷ continues to grow in membership and participation,⁸ and is effective in bringing about change in health behaviors and in clinical outcomes.^{7, 9–15} Most of the methods used in church-based health interventions involve targeting the church itself as well as the individual.⁷ Individual focused interventions are important for targeting individual characteristics that may influence health behavior change such as knowledge, attitudes, beliefs, affect, and past experiences.⁷ Methods used to target individuals, normally within multicomponent interventions, include motivational interviewing and tailored communication.^{11, 13–15}

There is evidence that individual methods are effective in improving health behaviors in AA adults in the church setting. Studies using motivational interviewing in particular show improved dietary and physical activity behaviors. For example, in the Eat for Life study, a multicomponent intervention with three groups (motivational interviewing, self-help and comparison) delivered through AA churches, the findings showed that change in fruit and vegetable intake was significantly greater in the motivational interviewing group than in the comparison and self-help groups.¹³ Similarly, the Healthy Body Healthy Spirit study, which used a multicomponent intervention with three groups (educational materials, culturally targeted self-help nutrition and physical activity materials, and motivational interviewing with self-help materials) in 16 AA churches, showed significant changes in both fruit and vegetable intake and physical activity for the self-help materials group and the motivational interviewing and self-help materials group at one year follow-up.¹⁴ Finally, in the Eating for a Healthy Life Project, a multicomponent intervention that included motivational interviewing-based messaging to improve dietary behaviors of a racially mixed sample in religious organizations, intervention participants significantly decreased fat consumption in a 12-month follow-up compared to the comparison group.¹⁵

While these results are encouraging, motivational interviewing along with tailored communication have limitations, including (1) an external party is necessary to prompt the intervention, (2) one behavior is usually targeted, and (3) sustained behavior change is often lacking.^{16–23} Further, researchers point out that tracking tools, or self-monitoring devices that assist individuals in tracing and recording their health behaviors, are needed for underserved populations that allow for independent implementation on the part of the participant, focus on more than one behavior, and foster sustainability.^{23, 24} Yet few tracking tools that are designed to help reduce CVD risk in underserved populations are available.²⁴ Thus, the purpose of this study was to develop and pilot-test a tracking tool to improve health behaviors in AA adults. Specifically, the study examined the extent to which participants (1) initiated health goals and were ready for change, (2) improved health behaviors (increased daily fruit and vegetable consumption, increased daily physical activity, and decreased fat consumption), and (3) perceived the tool as useful in tracking and improving health behaviors.

Background and Theoretical Framework

This study was part of a larger research project to reduce cardiovascular risk by determining the effectiveness of a church-based health intervention with mid-life and older AAs.²⁵ The tracking tool was developed to identify a possible health programming component for mid-life and older participants in conjunction with the 18-month intervention developed for the broader project. The Transtheoretical Model of Behavior Change (TTM) was used as the theoretical framework for the intervention.²⁶ Specifically, TTM was used to examine progress in stage of change in participants' health behaviors, incorporating the standard

stages of change in the theory (i.e., precontemplation through maintenance/termination).²⁶ Community-based participatory research (CBPR) approaches were used in developing the broader intervention. The current study provides information on the development and testing of the tracking tool that would eventually be used in the broader study. The project was approved by the Florida State University Institutional Review Board.

Methods

Participants

Participants for the study were AA adults aged 40 years and older who were members of a church in North Florida not part of the broader study. Age 40 and over was used as a recruitment criterion because of the increased risk in CVD for AAs approaching mid-life.⁴ Using participants of this age in a separate faith-based setting was in keeping with testing the feasibility of the tracking tool for the broader study. A student completing a pre-medical master's program served as the coordinator for the study. She received approval from the pastor and then recruited participants from the church, using announcements during church services at mid-week and on Sunday. A total of 11 participants volunteered within the recruitment period and met the study criteria, thus serving as the purposive sample.

Tracking tool—The need for the tracking tool came from discussions with the project team after monthly meetings to plan the 18-month intervention with church health leaders of the broader study. These discussions focused on how to assist the primarily Southern, rural older AAs in the broader study with adopting and sustaining more than one health behavior. Based on project team discussions, key features in a tracking tool needed for this population included straightforward categorization of health behaviors, verbiage appropriate for low literacy levels, limited paperwork, and easy to follow directions. Based on this information, the tracking tool, Health Check Report Card (HCRC), was developed because no comparable measure for tracking individual health behaviors was found in the literature that had these features.

The HCRC, which is designed to be used in conjunction with multi-component interventions, utilized concepts from the Traffic Light Diet, developed to treat childhood obesity, which incorporates an easy to use weight loss plan that provides enough calories and nutrients for a child's growth and development.^{27–30} Epstein used the traffic light to categorize foods into three groups: Red light—STOP eating these foods, Yellow light—Caution—eat moderate amounts, and Green light—Go—eat these foods. In the current study, the tracking tool categorizes food choice into two groups: *Go foods* and *Slow/Stop foods*.²⁷ Consistent with CVD health, *Go foods* and *Slow/Stop foods* are categorized based on sugar, sodium, fat, and calcium. The goal is to increase consumption of *Go foods* low in sugar, sodium and fat and high in calcium, and to decrease consumption of *Slow/Stop foods* high in sugar, sodium and fat.³⁰ The HCRC also included tracking for fruit and vegetable intake and minutes of physical activity to capture progress in these specific health behaviors that are important for CVD health.

A report card format was used to measure the targeted health behaviors. Weekly goals were listed next to each category with a specified number of points a participant should obtain each week (Sunday through Saturday) for each category (see Figure 1). The point system was designed to balance daily food intake with daily physical activity using the 2010 Dietary Guidelines.³¹ For example, participants were asked to record one point for each Go, Slow/Stop, and fruit/vegetable eaten. Physical activity scores varied based on number of minutes spent engaging in an activity (with less than 15 minutes being two points). Weekly point goals for Slow/Stop foods were seven or fewer per week, for fruit and vegetables 28 or more per week (based on 5–6 servings per day), and physical activity was 42 points or more

per week (based on 30 minutes per day). These point goals were based not only on national dietary and physical activity standards but also on what was considered reasonable and achievable for participants (e.g., two points were given for less than 15 minutes of physical activity because we wanted to give credit for any activity; fruit and vegetable goals were set at four points per day which was considered more easily achieved for the one week timeframe). An information sheet was provided as a reference that lists types of foods (Go foods, Slow/Stop foods, and fruit and vegetables) and physical activity examples participants could use in making healthy choices and in completing the HCRC. Once developed, the HCRC was reviewed by all members of the project team, which included a registered dietitian. In addition, a small group of African American adults, who were not involved in the pilot or the broader study, reviewed the HCRC for format design and readability of instructions. Minor adjustments in the HCRC were made following this review.

Instruments—A survey instrument that included a compilation of established measures was used at pre-test. Where available, information on reliability and validity estimates is provided.

- *Health goals*: Initiating health goals was measured using two related questions: “In 2010, did you develop health goals?” (coded yes=2, no=1). “If yes, have you started to implement these goals?” (coded yes=2, no=1).
- *Stage of change*: Stage of change, which measures an individual’s motivational readiness to embrace health goals and has been used extensively in health promotion research,²⁶ was assessed by the following item: “In general, how would you classify your readiness for change?” Possible responses ranging from “no recognition of need” (coded as 5) to “change is now completely part of my life” (coded as 1).
- *Daily fruit and vegetable servings*: Daily fruit and vegetable intake was measured by the item: “A serving is considered ½ cup, one piece of whole fruit or 8 oz. of 100% fruit juice. On average, what is the number of fruit/vegetable servings that you eat daily?” This single-item measure, which has been used extensively in previous dietary studies,^{32–34} is considered valid for use in health behavior studies.³² Validity of this item was determined in a major study that compared its use with multiple 24-hour recalls (24HR), considered the gold standard in food consumption surveys. The single item was positively correlated overtime with 24HR ($r=0.45$ baseline, 0.50 follow-up), slightly underestimated fruit and vegetable intake, indicated no treatment effects, and was considered adequate when investigating intervention effects.³² The single item has an inter-measure reliability of $r=0.56$ when correlated with mean servings from a 61-item food frequency questionnaire.³⁵
- *Daily minutes of physical activity*: Daily minutes of physical activity was measured by the item: “Examples of physical activity would be walking, running, gardening, housework, exercise class, dancing, weight training, and bicycling, among others. How many minutes of physical activity do you get daily?” Single item physical activity measures have been used extensively in previous studies.³⁶ In a study to determine reliability and validity of one item PA measures using “past week” and “past month” as a timeframe, researchers found that the past week measure showed strong reproducibility ($r=0.72–0.82$), modest concurrent validity ($r=0.53$) with the validated Global Physical Activity Questionnaire, and strong agreement with current physical activity recommendations ($\kappa=0.63$, 95% CI 0.54 to 0.72).³⁶ Based upon work with participants in our broader study, we selected “daily” as the

timeframe for measuring physical activity because of difficulty in using longer time estimates with the target population.

- *Fat intake:* The global measure of the National Cancer Institute (NCI) Fat Screener³⁷ was used to determine the extent participants consistently avoided eating high fat foods within the past six months: “Do you consistently avoid eating high fat foods with responses ranging from ‘No and I do not intend to in the next six months’” (coded as 0) to ‘Yes, and I have been for more than 6 months’” (coded as 4). In addition, the fat consumption practice items of the NCI Fat Screener were included (i.e., almost always take skin off chicken, often eat reduced/low fat cheese, use light/fat free or no salad dressing, eat fruit and vegetables as snacks, and often eat bread, rolls or muffins without butter or margarine, coded as no=2, yes=1). Thompson and others validated the NCI Fat Screener and reported estimated correlations of 0.64 and 0.58 between true intake and this instrument.³⁸ With regard to reliability, Williams and colleagues examined the ability of the NCI Fat Screener to predict change in percent energy from fat in dietary intervention studies, using a diverse sample of 278 participants from four study sites. They found that the correlations, by gender, for the NCI Fat Screener and 24 Hour Recalls were consistent from baseline to follow-up (6 or 12 months depending on site) (women, $r=0.45$ and 0.51 ; men, $r=0.68$, 0.58 , respectively).³⁹

The post-test survey included the same items as the pre-test survey as well as the following items to provide participants’ perceptions of use of the HCRC: (1) nine items on participants’ perceptions of use (e.g., “My report card helped me keep track of what I eat, I looked forward to writing in my report card everyday”) with responses of strongly agree, somewhat agree, somewhat disagree and strongly disagree (coded 1 to 4, respectively); and (2) open-ended questions that captured the strengths and challenges of the HCRC and how participants used it to track their health behaviors.

Data collection—Data were collected by the investigators from the participants at the church. For the pre-test data collection, a one-hour training was held to distribute the HCRC packet (report card, information sheet and survey) and to orient the participants to use the tool. No other health programming was provided so that we could assess the outcomes of the pilot study based on use of the HCRC alone. Participants completed the pre-test survey at the church and then took the rest of the packet with them. If participants could not attend the orientation during the designated meeting time, the investigators arranged a convenient time to complete the training. The participants were instructed to use the HCRC for one week, coding their food intake (Go foods or Stop/Slow foods), fruit and vegetable intake (number of fruits and vegetables consumed daily) and minutes of physical activity, using the point coding system (see Figure 1). One week was chosen for the initial pilot because the HCRC was based on weekly goals. Further, one week would serve as a means to assess a minimal length of time that participants might complete the tool. After one week, participants met again at the church to complete the post-test survey.

Data analysis—The questionnaire data were analyzed using SPSS software version 16.0 (SPSS Inc., Chicago, IL, 2006). Descriptive statistics (frequencies, percentages and means) were used to determine background characteristics of the sample (age, educational level, marital status, gender), HCRC data (daily point total means for Go foods, fruits and vegetables consumed, and minutes of physical activity minus Slow/Stop foods), and the perceived usefulness of the HCRC. Paired t-tests were used to compare pre-test and post-test mean scores for initiation of health goals, daily servings of fruits and vegetables, daily minutes of physical activity, and decrease in fat consumption to determine if there were

significant differences at post-test in the mean scores. The level of significance was set at $p < .05$.

Results

A total of 11 participants completed the HCRC and 10 completed both the pre-test and post-test surveys. The majority of the sample was female ($n=10$), and about half were 50–56 years of age ($n=5$), divorced ($n=5$) and had a bachelor's or master's degree ($n=6$) (Table 1).

Paired t-test results, including pre/post-test means, mean differences, t-values and confidence intervals, are presented in Table 2. The findings showed daily servings of fruit and vegetables significantly increased from pre-test to post-test ($p=.002$). The means show that fruit and vegetables increased by almost 1½ servings (2.4 to 3.8, respectively). Daily physical activity averaged over 30 minutes at pre-test and post-test and increased by about 3½ minutes, but this increase was not significant. Initiation of health goals showed a trend toward change at post-test ($p=.08$). Fat consumption, as measured by the global NCI fat screener and the fat consumption practices, saw little change between pre-test and post-test. However, there was a trend toward change between pre-test and post-test in “eating breads without butter/margarine” ($p=.08$). There was no significant difference in stage of change from pre-test to post-test.

Descriptive data from the HCRC support these findings (Figure 2 and Table 3). The average daily point totals showed that over the seven-day period, consumption of *Go foods* increased from 30 in Day 1 to 33, 35, 37 and 32 in Days 4–7, respectively. *Stop/Slow foods* generally remained flat with 22 on Day 1 and increasing to 26 on Day 4 and staying approximately at this level towards the end of the week (25, 24 and 26 on Days 5–7, respectively). Participants' fruit and vegetable consumption started strong at 40 points in Days 1 and 2 and then dwindled to 27 at midweek but then increased again to 38, 34 and 43 in Days 5–7, respectively. Finally, participants increased physical activity throughout the week, starting at 42 on Day 1, peaking at 64 on Day 2 with the remaining week showing slightly lower numbers (54, 46, 60 58 and 60 for Days 3–7, respectively) (Figure 2 and Table 3). Interestingly, Day 4 (Wednesdays) appeared to be the most difficult day for adopting the health behaviors yet participants picked up the pace towards the end of the week. Clearly, participation in the HCRC activity could have served as an external motivator for these behaviors.

The results regarding the perceived effectiveness of the HCRC were generally positive. The majority of the participants strongly agreed that the tool helped them to track their eating habits (six) and daily exercise (six), made them aware of what they were eating (eight) and how much they exercised (eight), helped them to start developing health goals (six), and overall felt that the tool was helpful (seven). However, fewer participants strongly agreed that the tool helped them to develop better eating habits (four) or looked forward to recording their scores (three).

Discussion

The purpose of this study was to develop and pilot test a tracking tool with AA adults to examine the extent that participants initiated health goals and were ready for change, improved health behaviors, and perceived the tool as useful in tracking and improving health behaviors. The findings show that the tracking tool may have influenced an increase in fruit and vegetable consumption and a trend towards initiating health goals. The findings also show a trend towards participants increasing physical activity. The daily point totals for the HCRC support these findings.

In terms of perception of the use of the HCRC, the findings suggest that participants felt it was helpful in tracking their health behaviors. As stated by one participant, “It helped me stay focused and aware each day of what I need to put in my system to stay healthy and create good habits.” However participants also expressed the idea that the HCRC may not have actually helped them to change health behaviors. It could be that the short length of time (one week) in using the tool influenced these results. Having the opportunity to use the tool over a longer period may help participants perceive that tracking their behaviors would be a motivator for change. A participant, addressing this concern, said, “I just wish it had been for a month or longer to ensure good habits were formed.”

This study contributes to the literature in that it provides initial information on a tool developed to assist a population with high cardiovascular risk to track their health behaviors. As previously discussed, motivational interviewing and tailored communications are two individual methods that have been used effectively with AAs in church settings.^{11, 13–15} While effective in changing behaviors, there is concern that these methods do little to foster internal motivation to sustain behavior change.^{23, 24} Although the current study does not provide longitudinal data, it does show that participants kept their records for one week with some behavior changes noted. Thus, although participants did not perceive health behavior change in relation to using the tool, the results for fruit and vegetable consumption suggest that some behavior change may have occurred.

This pilot study has implications for future research. Consistent with the TTM theoretical framework, testing the HCRC over a longer period may determine whether or not the tracking tool contributes to progress in stage of health behavior change. Further, studies can explore use of other theoretical frameworks, such as the socio-ecological model that includes the intrapersonal level of change that is often used in conjunction with TTM. Finally, in a larger study the HCRC might be explored as an intervention itself, with an expanded orientation to provide some basic information on diet and physical activity. This use of the HCRC would allow for examining if the actual process of tracking becomes an immediate application of knowledge or “teachable moment” that moves participants along in their health behavior change.

There were several limitations to this study. The project included a very small sample and did not include a comparison group. The questionnaire was brief with global items to measure health behavior change. Finally, all data are self-report and depend on the participants to provide honest and accurate responses. Effectiveness studies will need to be conducted that include more rigorous methods, including collecting clinical data and using longitudinal designs.

In conclusion, this pilot study has shown that a tool can be developed to track health behaviors of AA adults in a church setting. In order to determine effectiveness of the tool, the limitations from this study will need to be addressed in future studies. Yet, the HCRC may have promise in improving the health behaviors of AAs and other underserved populations with cardiovascular risk.

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Notes

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This tool is easy to use and will help you develop healthy habits such as healthy eating and increased physical activity. It will also help you to balance the amount and type of foods you eat.

Instructions: Please complete the Health Check Food Report Card each day for 1 week. Use the Go, Slow/Stop Foods, and Fruit and Vegetable lists to help you. Each food from the lists is worth one point each. For physical activity, place a number from 2 – 8 corresponding to the length of time for physical activity. Use the Physical Activity List to help you. At the end of the week, add the numbers in each category for each day and place the number in the “weekly total” box. If you reached your goal for a particular category, place a sticker in the “I reached my goal” box.

	Goals	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Weekly Total	I reached my goal!!
GO Foods	21 or more per week									
SLOW/STOP Foods	7 or less per week									
Fruits & Vegetables	28 or more per week									
Physical Activity	42 points or more per week (at least 30 min. per day)									

Foods: Add 1 point for each food you eat from the **Go, Slow/Stop, and Fruits & Vegetables List**

Physical Activity: 2 points = Less than 15 minutes a day
 4 points= 15 - 29 minutes a day
 6 points= 30 – 44 minutes a day
 8 points = 45 minutes or more a day

Figure 1.
Health Check Report Card.

Figure 2.
Healthy Check Report Card daily totals (n=11).

Table 1**CHARACTERISTICS**

Sample	Frequency (n=11)
Age Range	
40–49	4
50–56	5
64–70	1
71–77	1
Gender	
Female	10
Male	1
Marital Status	
Single	1
Married	3
Divorced	5
Widowed	1
Separated	1
Education	
High School Graduate	2
Some College	3
Bachelor's Degree	2
Master's Degree	4

Table 2

PAIRED T-TESTS RESULTS (n=10)

	Pre-test Mean (S.D.)	Post-test Mean (S.D.)	Mean Difference (S.D.)	t-value	Confidence Interval (Lower/Upper)	p-Value
Health Goals	1.5 (±0.5)	1.2 (±0.4)	.3 (±0.4)	1.96	-.04, .64	.08
Stage of Change	2.1 (±1.1)	2.5 (±1.0)	-.4 (±1.6)	-0.76	-1.57, .77	.46
Daily Servings of Fruit & Vegetables	2.4 (±1.4)	3.8 (±1.7)	-1.4 (±1.0)	-4.33	-2.13, 1.66	.002
Daily Minutes of Physical Activity	32.2 (±27.3)	35.9 (±24.5)	-3.6 (±17.1)	-0.67	-15.92, 8.62	.51
Avoid Eating High Fat Foods (coded 0-4)	3.0 (±1.0)	2.9 (±1.2)	.1 (±1.6)	0.19	-1.09, 1.29	.85
NO, and do not intend in next 6 mo.						
NO, but intent to in next 6 mo.						
NO, but intend in next 30 days						
YES, and have been for less 6 mo.						
YES, and have been for more 6 mo.						
Fat Practices (coded no 2, yes 1)						
Almost always take skin off chicken	1.9 (±3.1)	1.8 (±0.4)	.1 (±0.3)	1.0	-.12, .32	.34
Often eat reduced fat/low fat cheese	1.5 (±0.5)	1.4 (±0.5)	.1 (±0.6)	0.5	-.35, .57	.59
Often use light/fat free or no salad dressing	1.4 (±0.5)	1.4 (±0.5)	.0 (±0.5)	0.0	-.38, .38	1.00
Sometimes eat fruit & vegetables as snacks	1.1 (±0.3)	1.0 (±0.0)	.1 (±0.3)	1.0	-.17, .42	.35
Eat breads without butter/margarine	1.2 (±0.4)	1.5 (±0.5)	-.3 (±0.5)	-2.0	-.71, .05	.08

Table 3
DAILY POINT TOTALS (SD) FOR HEALTH CHECKREPORT CARD RESULTS (n=11)

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Go Foods	30 (.78)	29 (1.50)	31 (1.40)	33 (1.73)	35 (1.32)	37 (1.68)	32 (1.44)
Slow/Stop Foods	22 (1.18)	25 (1.10)	24 (1.32)	26 (1.50)	25 (1.19)	24 (1.32)	26 (.92)
Fruit & Vegetables	40 (1.68)	40 (2.94)	35 (2.04)	27 (1.43)	38 (1.86)	34 (2.11)	43 (1.30)
Physical Activity	42 (3.02)	64 (2.75)	54 (3.04)	46 (2.44)	60 (1.80)	58 (2.53)	60 (1.57)