

**Sankofa HEAL Project: Health Education, Agriculture, and Leadership Program to Improve KIPP High School Students Nutritional Status**

Christina Derbes

Selma B.M. Naimhwaka



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# BACKGROUND & SIGNIFICANCE

The food consumption trends in the U.S. are compromising the nutrition and health of our youth; leading to a rising incidence of chronic disease in adults. Unhealthy eating and a lack of physical activity are two of the main risk factors contributing to the rise in chronic diseases such as diabetes, hypertension, and heart diseases. According to Cavadini, Siega-Riz & Popkin (2000), adolescents do not consume enough sources of fiber such as whole grains, pasta, and cereal sufficient to make a difference in the total fiber intake. Cavadini et al. (2000), continued arguing that adolescents are therefore at risk of chronic diseases because of low intake of not only fiber, but also of antioxidant and nutrient sources of plant foods that may serve as protective factors from chronic disease such as cancer.

The prevalence of overweight and obesity has increased for both adults and children the past 30 years. Physical inactivity and unhealthy eating contributes to overweight and obesity and a number of chronic diseases including heart diseases and diabetes (CDC, 2008). In Louisiana, chronic diseases such as heart disease, stroke, cancer, and diabetes are among the most prevalent, costly, and preventable of all health problems. Heart diseases accounted for 25% of deaths in Louisiana in 2005 (CDC 2008). In 2007, 65% of adults in Louisiana were overweight or obese, (CDC, 2008) and the rate for diabetes was 10.7% in 2010 (CDC, 2011). Thiess data indicates the need for developing interventions during adolescence in order to instill proper dietary habits.

Through the Youth Risk Behavior Survey, New Orleans was shown to have a higher incidence of chronic disease risk factors, such as poor diet and lack of physical activity when compared to other cities in the U.S. (Steps to a Healthier New Orleans (Stepsla), 2011). 35.9% of children ages 10-17 in Louisiana are obese, which is higher than the national average of 31.6% (Kumanyika, S. & Grier, S, 2006). Orleans students were shown to be more overweight and eat fewer fruits and vegetables per week than most other cities, putting them more at risk for chronic disease later into adulthood (Stepsla, 2011). Although obesity has increased for all ethnicities, the obesity rate has disproportionately increased for African Americans and Hispanic children between the ages of 12-19. Caucasian boys and girls are 14.6% and 12.7% obesity rate, respectively, compared to the rates of 18.7% and 23.6% in African American boys and girls (Kumanyika, S. & Grier, S, 2006).

 According to Nelson (2010), food preferences are also key factors in children’s food choices and taste, environment at home, and family support also affects preferences. Lakkakula et al. (as citited by Nelson, (2010)) looked at the association between low income African American children’s preferences for fruits and vegetables and their risk of becoming overweight. The study by Lakkakula et al. identified that, 60% African American children were at a healthy weight; 17% were at the risk of being overweight; and 20% were overweight.

 Healthy eating nutrition programs, including gardening projects, foster improved students health. Students who participate in school garden projects can discover fresh food, make healthier food choices, and can be more physically active. The California Department of Health Services (2007) evaluated the impact of the *5-A Day Power Play! Campaign*, a large-scale social marketing initiative. Results of the study indicated that students who had experienced gardening not only ate more fruits and vegetables at baseline, but also demonstrated a greater increase in consumption as a result of the intervention. The California department also identified that students’ nutrition knowledge increased, as did their preference for vegetables, while growing their own vegetables. Improving the desire to taste vegetables is the first step in developing healthier eating patterns, which will help in reducing the risk of chronic diseases, related to food during childhood and adulthood.

# SUMMARY OF INTERVENTION & EVALUATION PLAN

## Name of the program/intervention

Sankofa HEAL Project: Health Education, Agriculture, and Leadership program to Improve KIPP High School Students Nutritional Status.

## Program Description:

The Sankofa HEAL Project is an integrated, school-based program where KIPP Renaissance students learn about gardening, the health benefits of eating fresh fruits and vegetables and the associated risk reduction for obesity, hypertension, cardiovascular disease and type II diabetes.

## Intervention Activities:

### Garden and Nutrition Classes

During the HEAL project meetings (twice a week for an hour) students from KIPP Renaissance High School will be educated on how to grow and harvest vegetables and ornamental cut flowers. A Registered Dietician (RD) will also educate the students on the nutritional benefits of the produce they are growing in order to help them understand the benefits of maintaining healthy eating habits. The RD will also provide the students with healthy cooking demonstrations, which the students can use at home and for demonstrations at the Farmers Market and Community Health Fair.

During the weekly garden club, students will also create artwork in the garden to beautify the area and develop a sense of place and commitment to the project. Artwork will include pottery, stepping stone tiles, and a ceramic mural.

### Weekly Farmers Market Participation

Students will work in a microenterprise selling the weekly harvest and cut ornamental flowers from the community garden receiving a stipend for an incentive. At the Sankofa Farmers Market, students will also set up cooking demonstrations with nutrition displays, providing the community with nutrition information and easy recipes.

KIPP Renaissance School Health Science Fair: A biannual Health Science Fair will be created, allowing for free health screenings for community members. Participants will be able to be screened for Body Mass Index, Blood Pressure, Lipoproteins, Triglycerides, and Glucose.

Students will create cooking demonstrations and nutrition education displays, enabling the students to illustrate what they have learned through the program to community members.

### Community Garden Day

The fourth Saturday of each month there will be a Community Garden Day held at the community garden. Those in the community will have the opportunity to help the students in the garden. The students will also provide cooking demonstrations for those attending.

## Target Population

The Sankofa HEAL project targets sophomore students that are enrolled in P.E. at KIPP Renaissance High school. The students are African American boys and girls between the ages of 15-17 living in the 9th Ward area of New Orleans, Louisiana.

## Problem Statement

Our intervention focuses on addressing unhealthy eating, which is one of the main contributing factors to chronic diseases. 35.9% of children ages 10-17 in Louisiana are obese, which is higher than the national average of 31.6% (Kumanyika, S. & Grier, S, 2006). Orleans students were shown to be more overweight and eat fewer fruits and vegetables per week than most other cities, putting them more at risk for chronic disease later into adulthood (Stepsla, 2011).

Program Goal:

To reduce the incidence of obesity and chronic diseases among KIPP Renaissance High School students enrolled in the Sankofa HEAL project.

##  Objectives:

1. Increase fruit and vegetable consumption by 15% in those students enrolled in the KIPP Renaissance High School Garden Club, by Dec. 30th, 2012.

2. Increase KIPP Renaissance High School Students knowledge of the basics of nutrition, including how nutrition is linked to chronic disease by 20% by Dec. 31st, 2012, judged by pre-post test.

3. Increase meals cooked at home that include fruits and vegetables by 5% by Dec. 31st, 2012.

# THEORY OF BEHAVIOR CHANGE

The Sankofa program intends to use the social cognitive theory, which focuses on how people interact with their environment (as illustrated in figure 1 below). The intervention takes into consideration that unhealthy eating behaviors are influenced by personal, environmental and behavioral factors. Moreover, it focuses on improving student’s behavioral capabilities and self-efficacy so that they can make healthy eating choices.

 The Sankofa HEAL project also takes into account the Health Belief Model by increasing perceived susceptibility and perceived severity relating to chronic disease. By increasing student’s awareness of their own risk for chronic disease and helping the students understand the devastating effects chronic disease can have, the Sankofa HEAL project hopes to improve dietary patterns among students.

 Lastly, the Sankofa HEAL Project will focus on the contemplation and preparation phases of behavior change from the Stages of Change Model, aiming to move students to action. The program will focus on those students that have thought about eating healthy, but need more of an incentive to move toward eating more fruits and vegetables. In order to move students to action, the HEAL project will present cognitive models, increase benefits, and attempt to minimize barriers.

**Figure 1: Theory of behavior change**

**Improved dietary patterns**

* **Increased consumption of fruits and vegetables**

**Decreased Incidences of chronic disease during childhood and adulthood**

* **Decreased BMI**
* **Reduced obesity**

**Biological and proximate determinant:**

* Genetics and hereditary factors

**Change attitudes and behaviors:**

* Taste preference
* Personal choices and norms toward healthy eating
* Self-efficacy towards eating vegetables and fruits

**External Factors (not part of our intervention)**

Community level:

* Media influence
* Availability of vending machines at schools
* Points of purchase for fruits and vegetables
* The cost of healthy foods
* Rules and regulations influencing choices and eating habits
* Social support for adopting healthy foods
* Social pressure to engage in unhealthy eating
* Social norms towards healthy eating

Family Level:

* •Parental encouragement and modeling toward health eating behaviors
* •Availability of resources at home such as money to purchase fruits and vegetables
* •Availability of fruits and vegetables at home
* Family pressure to engage in unhealthy eating

**Increased knowledge on:**

* Knowledge of basic nutrition
* Benefits of eating fruits and vegetables
* Associated risk reduction for obesity, hypertension & diabetes

**Increase awareness on:**

* Health benefits of eating fresh fruits and vegetables
* How nutrition is linked to chronic diseases

# LOGIC MODEL:

The logic model below is illustrating the description of the HEAL program. It shows the resources, planned activities, and the outcomes as well as the result the HEAL program is aiming to achieve.

**Figure 2: Logic Model**

KIPP Students , Teachers, and Faculty

P.E. Class and Classroom at KIPP

Garden Director: Brennan and Program Assistant : Casey

LSU Ag Registered Dietician

Garden at KIPP Renaissance

Sankofa Farmers Market

Astrazeneca Grant

Inputs

Activities

10 Nutrition Education and cookimg demo Classes provided Twice Monthly using LSU Ag Curriculum

Students will plant and harvest in the Garden for an hour every week and some hired to work on weekends

Students will sell produce and provide cooking demo every week at the Market

Outputs

Outcomes

Distal Outcomes

Decrease incidence of Risk Factors related to chronic disease in the community

PROCESS EVALUATION

**Table 1: Process Evaluation Plan**

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# FORMATIVE EVALUATION

The purpose of the formative evaluation is to identify the grade that will be our target population at KIPP high school, the specific need of the students in that grade and the available resources at the school. The formative evaluation process will involve students at KIPP and all the relevant stakeholders to ensure that the HEAL project is appropriate and will be accepted by the students who are the target audience. Focus group discussion, in-depth interviews and literature review will be conducted to address the following three questions:

1. What are the existing health needs and problems related to nutritionamong the students at KIPP High school?
2. What are the existing behavioral and environmental risk factors, which are influencing the existing health needs and problems related to nutrition, and of those needs which ones are strongly associated with nutritional problems?
3. What changes would students at KIPP and stakeholders like to see after implementation of the HEAL projects?

OUTCOME EVALUATION

The evaluation of the HEAL project will analyze a combination of behavior and knowledge outcomes.  First, a measure of whether food choices are affected by the program will be analyzed.  To evaluate food choices, the evaluation will consist of indicators to see if fruit and vegetable consumption increases over the span of the program.  We will also measure whether there is an increase in students understanding of nutrient content of foods and the benefits of those nutrients in disease prevention. How the program impacts the family unit will also be evaluated by looking at whether there is an increase in meals cooked at home that include fruits or vegetables.

## Outcome Evaluation Questions And Data Collection Plan

 **Table 2: Outcome evaluation questions and Data collection plan**

|  |
| --- |
| ***Evaluation Question # 1*** ***Are the Participants developing healthier eating habits than those not participating in the HEAL Project?***  |
| **Indicators** | **Data source/Mode****/ Instrument**  | **Collection time**  |
| Indicator # 1# Of fruits and vegetables consumed daily | Self-reported number of fruits and vegetables consumed through food diary  | Nutrition and physical activity journals will be collected every week.  |
| Indicator # 2# Of times fast food is eaten per week | Self reported # of times per week fast food was eaten  | Nutrition and physical activity journals to be collected once a week. |
| Indicator # 3# Of carbonated beverages consumed | Self reported # of times per day carbonated beverages were consumed | Nutrition and physical activity journals to be collected once a week |
| ***Evaluation Question # 2*** ***Are participants more knowledgeable about nutrition, healthy eating and the risk of diet related diseases?*** |
| Indicator # 1# of students who are able to list at least 2 chronic diseases that may be avoided with better nutritional status. | Judged by Self Administered questionnaire | Before the start of the intervention and at the end of the 4 month intervention |
| Indicator # 2# of students who are able to look at a nutrition label and list amount of fat (in grams), amount of fiber (in grams), serving size, daily percentage of micronutrients and amount of calories per container. | Judged by Self Administered questionnaire  | Before the start of the intervention and at the end of the 4 month intervention. |
| Indicator # 3# of students who are able to list at least 2 health benefits of fruits and vegetables | Judged by Self Administered questionnaire | Before the start of the intervention and at the end of the 4 month intervention. |
| Indicator #4 # of students who are able to list at least 2 health benefits of fiber | Judged by Self Administered questionnaire | Before the start of the intervention and at the end of the 4 month intervention. |
| ***Evaluation Question # 3******Are the participants eating more meals cooked at home that include fresh fruits and vegetables than those not participating?*** |
| Indicator # 1# of home cooked meals consumed per week including fresh fruits and vegetables | Judged by Self Administered questionnaire | Nutrition and physical activity journals will be collected every week. |
| ***Evaluation Question # 4******Did the intervention lead to a reduction in weight among the participants than those not participating?*** |
| Indicator # 1# of student whose BMI decreased with at least 5% or more | Calibrated scale  | Before the start of the intervention and at the end of the 4 month intervention |

# OUTCOME EVALUATION DESIGN:

## Design and justification

The Sankofa HEAL Project intends to use the quasi-experimental design. The effectiveness of the program will be measured by comparing students enrolled in the program at KIPP Renaissance High School to a matched group of student from Warren Easton High School in mid-city New Orleans, not exposed to the same intervention. Another school was chosen as a control group to ensure the same grade category and age range is used in the control group. However, this is not feasible to achieve at KIPP Renaissance High School, because it is not practical to divide students from the same grade and school into both treatment and control groups. Moreover, another school was also chosen to avoid sharing of information among students in the 2 groups. Sharing information is likely to lead to contamination and this could have an effect on the outcome of the evaluation.

Recruitment of participants for the intervention group will be done first, followed by matching and selection of the control group from Warren Easton High School in mid-city New Orleans. Informed consent will also be obtained from the participants prior to the pre-test. Baseline measures will be collected at the beginning of the intervention. Students at KIPP Renaissance School will receive the intervention while students at Warren Easton High School will not receive the intervention for a period of 4 months. A post-intervention study will then be conducted for the intervention and the control group to measure the outcome of the study and the effectiveness of the program. The diagram below shows the notation of the evaluation design:

**Figure 3: Pre and Post - test quasi-experimental design**

**N**

**N**

**O**

**O**

1E

1C

**X**

**O**

**O**

2C

2E

## Recruitment

Recruitment will be conducted within the KIPP Renaissance High School Sophomore P. E. Class. The Program will be presented to the student on the first day of class and participation will be voluntary. Sankofa Staff will explain all components of the program-including cooking, garden work, nutrition education, and the possibility of employment with Sankofa. The Sankofa HEAL project plans to enroll about half of each P.E. class- approximately 10 boys and 15 girls.

Eligibility Criteria:

1. Must be between the ages of 15-17

2. Must be enrolled at KIPP Renaissance High School at Frederick Douglas

3. Must be enrolled in P.E.

4. Must be in their second year of High school

KIPP Renaissance does not have an afterschool program and many of the students must catch the bus or have sporting activities in the evening, making it impossible to hold the program after school. Sankofa Staff did not feel comfortable pulling students out of academics, concluding that P.E. hour may be the best option. We did not want to take the students out of P.E., since physical activity is encouraged, but with the lack of structure, Sankofa Staff realized that P.E. was essentially free hour for the students and lacked a physical activity component. P.E. was only offered to sophomore students during the spring semester of 2012, explaining the inclusion of school year as enrollment criteria. Students must be enrolled in KIPP Renaissance due to the partnership Sankofa Community Development Corporation has with the school. Sankofa developed a community garden on KIPP Renaissance High School campus, which will be the site for garden work in the HEAL project.

Due to the possibility of contamination, it has been decided to use a control group outside of KIPP Renaissance High School. The goal was to find a high school population with a similar Socioeconomic Status and environment to KIPP Renaissance High School. Warren Easton in mid-city New Orleans is a comparable charter school in terms of academic performance and Socioeconomic Status. Students from Warren Easton will be matched with KIPP Renaissance students using the aforementioned criteria:

* The students should be sophomores
* The students should be African Americans,
* Boys and girls (matched according to the sex ratio in intervention group)
* Age should be from 15 -17
* They should be living in the 9th ward area of New Orleans, Louisiana

## Potential limitations

The outcome of the evaluation cannot be generalized to the intervention because of the threat to internal validity. The effect of extraneous factors, maturation and previous events could have an effect on the outcome of knowledge and attitudes towards healthy eating. Moreover, genetic factors could also have an effect on the distal outcome of the intervention. The small number of participants also limits the ability to generalize the outcome of the evaluation, and does not make it feasible to conduct a randomized control study among the 25 students who are based at the same school.

## Sampling

The study population for the intervention will be sophomores students enrolled in the HEAL project, while the study population for the control group will be sophomores at Warren Easton High School High School. And because of the small number of participants, all 25 students enrolled in the project will be sampled for the study. The study will therefore use the criterion non-probability sampling, which allow us to pick all students at KIPP who are enrolled in HEAL project. The stratified purposeful sampling method will be used for the control group Warren Easton High School High School. A different sampling method for the control group was chosen to ensure matching and comparison between the intervention and control group.

## Bias

In order to ensure that the HEAL project evaluation enhances internal validity and decreases contamination, the control group was chosen from a different charter in New Orleans, LA. Selection bias is one of the biggest concerns for the HEAL project evaluation. Entry into the program is voluntary. Since the participation rate is low, randomization is not feasible for statistically significant results. There is also concern that the intervention and control may not be comparable. KIPP Renaissance and Warren Easton High Schools are in different locations. There is the possibility that one group may have more access to healthier food options than the other. To counteract selection bias, the HEAL Project Evaluation will match to make the two groups as comparable as possible.

There is also the concern that there will be a different drop out rate for the treatment and control, leading to differential attrition bias. To counteract this problem, we will track participants and offer incentives to strengthen participation and retain participants.

The HEAL Project evaluation also has to be aware of possible external events. Students at Warren Easton may also have nutrition education programs within the school, affecting the results of the evaluation. In order lesson this possible bias, HEAL Project evaluators will ensure that those students that have been matched have not previously been enrolled in a nutrition education program. We can also ask participants about previous programming they may have been involved in, which may affect the baseline knowledge of the intervention group.

Lastly, there is the worry of instrument bias. HEAL project evaluators will be conducting BMI measurements at baseline and at the end of the 4 month intervention. HEAL project evaluators must make sure to calibrate scale before taking both measurements. There is also the issue of differential response rates in relation to the food journals. Those students that are not responding may be fundamentally different from those that are filling out the food journals. In order to counteract this problem, HEAL project evaluators will try to get higher response rates by providing incentives.

## Stakeholders:

The table bellow indicates the stakeholder who will benefits from the outcome of the evaluation, which will be disseminated using different ways and methods.

**Table 3: Stakeholders**

|  |  |  |  |
| --- | --- | --- | --- |
| **Stakeholders** | **Purpose of evaluation** | **Type of results** | **Channel of dissemination & format** |
| AstraZeneca  | Funder- success of intervention- outcome-evaluation design | Interested in significant improvement in dietary habits- results required if expect future funding | Formal report |
| KIPP High School Personnel | Help with formative research – give feedback on curriculum | Showing the end success of the program- will show the school whether or not the program is worth having at the school and whether the program should be expanded | In-class presentation during PE class (power point presentation) |
| Garden Manager, Program Manager, Executive Director  | Success of the intervention- ongoing | Process evaluation to show program staff what is working and what isn’t- what can be changed to make a better program. | Meeting |
| LSU Agriculture Center | On-going- will be involved in curriculum and evaluation | Process and outcome- since the curriculum has been tested, could be the responsibility of the RD if the program is not successful. Show post-test result. | Meeting |
| Xavier University Students | On-going- Xavier students will participate in developing classes and a service learning day | Want to show Xavier how the students may be impacted the results of the evaluation. What can students change to get a better result. | Formal Report |
| 9th Ward community | Help with formative evaluation- provide feedback on program | Formative evaluation- highlight the main environmental indicators in the 9th ward community that are determining health outcomes. What can be changed in the community? What type of programs are needed? | Meeting |
| Family members of students | Formative and outcome evaluation  | Showing the parents how the program is impacting the students, giving the parents a reason to request the program in the future and fight for continued school support. | Meeting |

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