

Background

Reports from the CDC's Division of Nutrition, Physical Activity, and Obesity (DNPAO) indicate that only 21.7% of Arizona's adolescents are meeting physical activity guidelines of one hour/day. Additionally, 12.7% and 10.7% of Arizona adolescents were classified as overweight or obese, respectively.¹ Appropriately, The Arizona Department of Health (ADHS) Services Bureau of Women's and Children's Health has created a state priority to "improve the percentage of children at a healthy weight."² The Nutrition and Health Awareness (NHA) program was implemented and evaluated for its impact on health literacy and activity as a means of addressing ADHS's state priority of improving physical activity and healthy body weight.

Objectives

- Evaluate the effectiveness of the Nutrition and Health Awareness (NHA) curriculum in the following areas:
 - Knowledge of health and wellness concepts
 - Attitudes towards health and wellness
 - Changes in physical activity levels
- Promote health and wellness in a school-based setting

Methods

- Lessons were developed and taught to eligible 4th-grade students (n=93) at Superstition Springs Elementary School.
- Topics included physical exercise, nutrition labels, food groups, sugar metabolism, heart disease, and oral hygiene.
- Participants were randomly assigned anonymized ID numbers and Fitbit Flex 2TM accelerometers to be worn continuously. Activity data was measured in daily steps.
- A pre-intervention questionnaire evaluating baseline knowledge and attitudes was administered a week prior to program commencement.
 - Seventeen objective questions evaluate health knowledge and five subjective questions evaluate health attitudes.
 - The questionnaire is written at a 3rd-4th grade literacy level.
- Five different lessons were provided once weekly.
- One week after lessons concluded, participants were again assessed using the questionnaire.

Results

- Ninety-three students participated in this research.
- Analysis of the paired pre/post questionnaires (n=81) showed statistically significant changes in responses for 8 of 22 questions regarding health knowledge and attitudes.
- Correct student responses for 5 of 6 questions, related to health knowledge, showed an increase; but 1 of 6 showed a decrease (Fig 1).
- Increases in the number of days students exercised (p=0.021) and personal health knowledge (p=0.029) were observed (Fig 2).
- Accelerometers recorded activity levels of students (n=84) as average steps walked each week.
- Due to technical difficulties, no baseline average activity was established. Average activity levels over 5-week period did not differ due to inconsistent data collection.

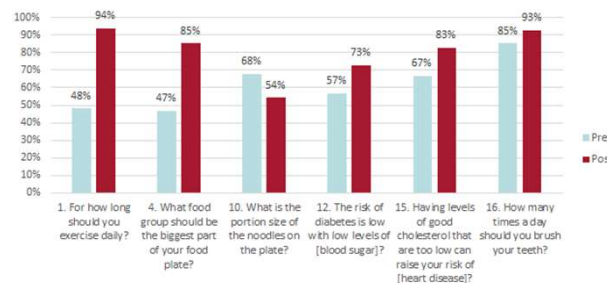


Figure 1. Pre vs Post Questionnaire results. Percent correct responses of pre(blue), and post(red) questionnaires for questions that showed statistically significant change.

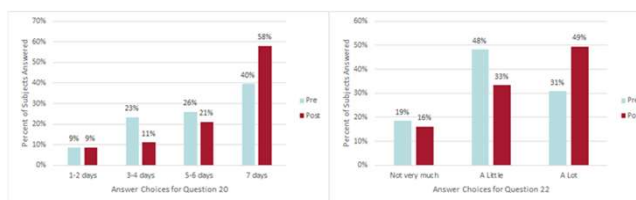


Figure 2. Pre vs Post Questionnaire results for Question 20 on the Left (How many days in a week do you exercise?), and Question 22 on the Right (How much do you know about your health?).

Discussion

- As a result of this program, students scored higher on questions testing their cognitive ability to correctly identify healthy foods, importance of exercise, dental hygiene, and risk factors of diabetes and heart disease (Fig 1).
- The decline in correct student responses related to portion sizes is likely due to chance. Students likely encountered difficulty in the comprehension of volume-related tasks in this age group of 9-10 years olds.
- Students self-reported to be more active, but were also empowered and motivated to be more healthy (Fig 2).
- Poor accelerometer compliance of the students could be mitigated by involving parents to improve data collection in the future.

Conclusions

The NHA program improved understanding of health concepts, health attitudes, and as a result, health literacy. This curriculum may serve well in academic and pediatric healthcare settings. Future research should focus on how to effectively measure activity levels, involve parents in health and wellness improvement, and assess long term retention of health knowledge.

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References

1. Arizona State Nutrition, Physical Activity, and Obesity Profile. Center for Disease Control and Prevention website. <https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/arizona.html>. Updated September 7, 2016. Accessed October 11, 2018.
2. Bureau of Women's and Children's Health Strategic Plan 2011-2015. <http://www.azdhs.gov/phs/owch/index.htm>. Accessed October 12, 2018.