Implementing a Multicomponent Pediatric Health Promotion Program

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Abstract

Health statistics for physical activity, nutrition, and psychological wellbeing demonstrate the tenuous status of youth in the United States (US). These factors significantly affect growth and development during this critical period and indelibly influence adult health. Consequently, the successful utilization of multicomponent pediatric health promotion programs could improve current and future health, saving billions in health-care costs. The analysis of a literature review on this topic led to the development and completion of an evidence-based project. The project was guided by two conceptual frameworks, Pender's Health Promotion Model and the Stetler Model for Evidence-based Practice. The project was completed in partnership with a local after-school youth program. Methodology included a project intervention comprised of a single specialized training session. Data was collected using a pretest-posttest format with repeated measures from a survey adapted from the Organization Readiness to Change Assessment (ORCA) tool. Survey questions focused on participant's knowledge, skills, attitudes, and use of the selected health promotion program. Descriptive Statistics, the Wilcoxon-Signed Rank Test, and the Friedman Test were completed for data analysis using IBM SPSS v25. Using a critical value $p < .1$, results from the data indicated improvement in median scores for participant's knowledge and skills (p-value's range = .05 - .082). Other changes were not statistically significant (p-value's range = .135 - .317). The results indicate the project intervention's efficacy. Future research may focus on optimal training formats, a comparison of repeat sessions versus supplemental web-accessible resources, and program sustainability via refresher sessions and/or designated management.

Keywords: Pediatric health, health promotion program

Implementing a Multicomponent Pediatric Health Promotion Program

Child and adolescent health promotion is a major concern worldwide. While there are many contributing factors, some of the more compelling elements are both highly influential to pediatric health and amenable to health promotion efforts. The most important components of pediatric health are levels of physical activity, nutrition, and psychosocial wellbeing. Childhood obesity rates represent an easy method for tracking health changes in this population as they strongly correlate with these key elements (Sahoo et al., 2015). In the United States (US), the Centers for Disease Control and Prevention (CDC, 2018a) notes that childhood obesity rates have more than tripled since 1970. Numerous organizations are dedicated to improving health in this age group through dynamic and diverse programs or initiatives.

Purpose and Rationale

The purpose of this paper is to provide information on the background and significance of pediatric health related to physical activity, nutrition, and psychosocial health. This will be followed by the results of a literature review focused on health promotion programs, which represent the best available solution. Finally, details regarding the framework, completion, and results of an evidence-based project on this topic will be presented. Programs like these significantly promote healthy habits, improve nutritional knowledge, and boost psychological wellbeing. These changes can improve population health across the lifespan and save billions in healthcare expenditures.

Background

The importance of health promotion in the US was catapulted into the spotlight with the advent of the “Healthy People” initiatives nearly 50 years ago (Raingruber, 2016). Its potential to increase the health of specific populations and reduce the overall cost of healthcare ensures its continued relevance today (Institute for Healthcare Improvement, 2019).

Target Age Group

When examining pediatric health, children and adolescents ages 5-19 are of particular interest. Cognitive development during this time frame moves from the pre-operational stage, into the concrete operational stage, and on to the formal operational stage present in adulthood (McLeod, 2018). This progressive flow from simple to increasingly complex presents a prime opportunity to instill important tenets of health. Health promotion programs have been successful at fostering lifestyle changes for children as young as three years of age (Sobko, Jia, Kaplan, Lee, & Tseng, 2017). Nevertheless, the majority of programs are designed for children and adolescents between the ages of 5-19 (Linnell et al., 2016). With this in mind, US statistics of vital health characteristics, juxtaposed with current recommendations, demonstrate the concerning state of this population.

Physical Activity

Several prominent organizations independently recommend that youth obtain at least 60 minutes of daily moderate-to-vigorous physical activity (American Academy of Pediatrics [AAP], 2018; US Department of Health and Human Services [HHS], 2018; World Health Organization [WHO], 2019b). It is also advised that while most of the 60 minutes be composed of aerobic activities, three days per week should include resistance training to improve muscle and bone strength. Compared to these guidelines, current estimates show that only 21.6% of young people manage one hour of physical activity at least five days of the week (CDC, 2018c). These rates improve only slightly, to 27.1%, when examining high school students alone.

Nutrition

Dietary guidelines recommend consuming a majority of fruits, vegetables, grains, and legumes while limiting fat intake, sugar, and salt (AAP, 2016; United States Department of

Agriculture [USDA], 2015; WHO, 2019a). Recent assessments indicate that only 32% of US children and adolescents maintain a diet which follows most of the food recommendations from the USDA (2019). Evidence suggests that nearly 40% of daily caloric intake for children and adolescents is attributable to "empty calories," calories composed of added sugars and solid fats (CDC, 2017). Nearly half of all empty calories consumed by young people are categorized as soda, fruit drinks, dairy desserts, grain desserts, pizza, or whole milk.

Psychological Health

Current recommendations stipulate greater availability of resources and programs focused on enhancing awareness and improving mental health in this population (AAP, 2019; HHS, n.d.; WHO, 2014). It is estimated that nearly 20% of adolescents have a serious mental health disorder (HHS, n.d.). Moreover, 7.4% of US children and adolescents are diagnosed with behavioral problems and 7.1% are diagnosed with anxiety (CDC, 2018b). While these statistics alone are concerning enough, they are also indicative of a more subtle, prevailing issue. There is a trend towards decreasing resilience and psychosocial health in young people. This ultimately leads to poorer health outcomes (Brody, Yu, Miller, & Chen, 2016).

Multicomponent Programs

It has been demonstrated that current standards of care for pediatric health are inadequate. To this end, current research supports the use of health promotion programs to address these shortcomings. Of the available options, the most successful programs focus on aspects of physical activity, nutrition, and psychosocial health. One park-based program primarily focused on physical activity to improve participants' health metrics. The results showed improvement in Body Mass Index (BMI) scores and cardiovascular health (Messiah et al., 2017). Often, it is noted that improving one of these health components precipitates an improvement in the other

aspects as well (Smedeggard, Christiansen, Lund-Cramer, Bredahl, & Skovgaard, 2016). For example, improvements in nutrition, exercise habits, and BMI scores were noted when using an educational program focused on nutrition (Rodriguez-Ventura et al., 2018).

More comprehensive programs are able to focus concurrently on multiple aspects of pediatric health to achieve results. The ability to simultaneously improve multiple aspects of a person's health results in dramatically improved overall condition (Bougea, Spantideas, & Chrousos, 2018). A six-week fitness and nutrition education program successfully improved BMI scores and enhanced nutrition related knowledge and behaviors (Lim et al., 2016). Available research indicates that the more comprehensive a health promotion program is, the greater its success. To this end, the optimal program successfully incorporates all three key health components. These programs are capable of nullifying previously established health disparities and improving physiological and psychological aspects of health (Ofosu et al., 2018; Annesi, Walsh, Greenwood, Mareno, & Unruh-Rewkowski, 2017). This is the new gold standard for pediatric health promotion programs.

Measurable Improvements

To gauge the effect of multicomponent health promotion programs for children and adolescents, it is important that measurable results, related to physical activity, nutrition, and psychosocial health, are attainable. These measurements are typically comprised of physiological factors (BMI, blood pressure, heart rate, stamina, etc.), knowledge-based elements (nutritional knowledge, health habits, self-awareness), and psychological criteria (measures of stress, anxiety, depression, resilience, etc.).

Significance

The significance of pediatric health and health promotion is best viewed via analysis of its financial impact on the US healthcare system and its influence on population health. It is known that factors of childhood health strongly correlate with key health components later in adulthood (Campbell et al., 2014). Therefore, childhood presents a critical period which ultimately influences lifelong health.

Financial Impact

Total healthcare spending in the US reached 3.5 trillion dollars in 2017, equating to nearly 11,000 dollars per individual (Centers for Medicare & Medicaid Services, 2018). It is estimated that nearly 75% of health expenditure is attributable to chronic disease management (Raghupathi & Raghupathi, 2020). Mitigation of healthcare spending is critical in order to minimize healthcare's current and future fiscal impact. As such, the financial benefits of improving health in the pediatric population are profound. It has been projected that participation in health promoting programs could save billions of dollars in healthcare costs, even if only a small percentage of the population is involved (Ahn, Smith, Altpeter, Post, & Ory, 2015). The specific ability to cut costs and maintain a positive return on investment has been independently supported in pediatric programs (Ekwaru et al., 2017). Thus, pediatric programs present an opportunity to alleviate some of the healthcare associated financial burden.

Health Impact

Early and middle childhood are recognized as important influences on an individual's health across the lifespan (Healthy People 2020, 2020). It is during this critical and vulnerable time period that the bulk of physical and cognitive development is accomplished (McLeod, 2018). Physical activity is known to facilitate physical, cognitive, emotional, social, and mental development (Bidzan-Bluma & Lipowska, 2018). Meanwhile, levels of nutrition highly

influence neurocognitive development (Cusick & Georgieff, 2016). Finally, psychological health defends against physical disease and poor self-esteem/social skills (Bastiaansen et al., 2019). Ultimately, health habits and thinking formulated during this period are more likely to continue throughout the lifespan.

Internal Evidence

A local youth after-school care organization is seeking to implement a multicomponent health promotion program that was first introduced in 2005. The organization is composed of multiple sites, each with designated managers. These sites serve anywhere from 50-200 youth ranging in age from 5-19. Preliminary discussions with several managers have revealed the necessity and aspiration to integrate such a program. Moreover, many of the barriers experienced in attempting to implement one have been disclosed. No hard data exists to corroborate this anecdotal information; nevertheless, the need and desire for a fully integrated multicomponent health promotion program is clear.

PICOT

The culmination of the abovementioned information has led to the formation of the following PICOT question: In children and adolescents ages 5-19 (P), how does a multicomponent health promotion program (I) compared with standard care (C) affect select health metrics, physical activity levels, nutritional knowledge, and psychosocial wellbeing (O)?

Search Strategy

A thorough review of available literature pertinent to the PICOT question was conducted including the following databases: CINAHL plus, PubMed, Academic Search Premier, MedNar, and Cochrane Library. A combination of relevant key terms was utilized to complete the search. These terms included *multicomponent health promotion program, multicomponent healthy living*

program, health promotion program, healthy living program, pediatric, children, adolescent, healthy habits, nutritional knowledge, BMI, vital signs, and *psychosocial wellbeing*. The initial search in each database was "*multicomponent health promotion program* OR *multicomponent healthy living program* AND *pediatric* OR *children* OR *adolescent* AND *healthy habits* OR *nutritional knowledge* OR *BMI* OR *vital signs* OR *psychosocial wellbeing*.

Search Refinement

This preliminary search was found to be too limiting, returning the following results in each database: zero in CINAHL plus, 28 in PubMed, zero in Academic Search Premier, and 36 in the Cochrane Library. The exception to these overly narrowed results was in MedNar which initially returned 714 results. Subsequent searches were enacted in each database, following a systematic approach, wherein key terms were alternated, removed, and/or added to capture a manageable number of findings. In the case of MedNar, the search was limited to applicable topics of "ClinicalTrials.gov" and "U.S. Department of Health and Human Services." The end product of this processional manipulation was the following results: 48 in CINAHL plus, 67 in PubMed, 92 in Academic Search Premier, 104 in MedNar, and 36 in Cochrane Library. Further searches with variations on key search terms were also executed but failed to yield additional results.

Exclusion and Inclusion Criteria

Exclusion criteria for this literature review included works published before 2011, subject ages less than four years or greater than 19 years, and publications in a non-English language. These criteria generated the following final results: 33 in CINAHL plus, 23 in PubMed, 68 in Academic Search Premier, 102 in MedNar, and 30 in Cochrane Library. Inclusion criteria was targeted at capturing studies which incorporated multicomponent health promotion programs in

the specified population range with appreciable results on health metrics, levels of physical activity, nutritional knowledge, and/or psychosocial wellbeing. Preference was given to studies yielding higher levels of evidence. For example, randomized control trials (RCT) and systematic reviews were selected over qualitative or descriptive research.

Critical Appraisal

Evaluation of the titles and abstracts of the literature review accumulated 31 unique and appropriate studies. Two rapid critical appraisal checklists were utilized including one from Melnyk and Fineout-Overholt (2005) and another by the Public Health Resource Unit (2006). This process narrowed the findings to the ten most appropriate and high quality studies. These articles are comprised of the most current studies demonstrating the highest levels of evidence with minimal bias (Appendix A). These publications include six cluster-randomized trials, two quasi-experimental designs, and two systematic reviews with meta-analysis (Appendix A).

Synthesis and Discussion

These quality studies demonstrate a high degree of homogeneity regarding the aspects of the study characteristics, the interventions and tools utilized, and the observed outcomes. To begin with, the majority of the studies were designed as cluster-randomized trials (Appendix B). As noted by one of the authors, this study design is particularly useful as it sequesters members of the control and experimental groups in order to reduce cross-contamination and foster the production of more accurate results (Youth Development Strategies, Inc, 2009). Each of the included studies maintained a sufficiently large sample size; ranging from 100s to 1000s of subjects in experiment-based studies and dozens of articles in the systematic reviews with meta-analysis (Appendix B). These large sample sizes increase the statistical power of the studies and sustain broader application of the results.

Furthermore, the articles almost unanimously focused on subjects ten years old, +/- four years, with only slightly higher rates of male participants versus females (Appendix B). The consistency in age range is indicative of the most efficacious period to initiate a health promotion program for youth. Of note, there is high heterogeneity regarding the ethnicities participating in the studies (Appendix B). This factor was largely dependent upon the region wherein the study was conducted (Appendix A). Nevertheless, this heterogeneity is beneficial as it demonstrates the wider applicability of the results. The trend in homogeneity continues with regard to the interventions and study tools.

All of the selected studies reported the utilization of one or more health promotion programs for the experimental group (Appendix B). The composition of these multicomponent programs is highly variable, though each contains components focused on improving physical activity, nutrition, and/or psychosocial wellbeing (Appendix A). Due in part to the broad similarities across included health promoting programs, the types of utilized experimental instruments are also highly homogenous. These study tools can be succinctly categorized as either physiological measuring instruments, Likert-type questionnaires, or multiple-choice knowledge exams. Over half of the selected studies used tools from each of the three categories and all included at least two of the three (Appendix B). Considering the high degree of homogeneity amongst the articles thus far, it is not surprising that the outcomes are likewise very similar.

All of the retained studies focused on outcomes related to important facets of health including changes in physiological factors, physical activity, nutrition, and/or psychosocial health. Demonstrating significant homogeneity, four of the ten articles exhibited improvement in three of the four categories. Five of the remaining six articles demonstrated advances in two of

the four abovementioned components (Appendix B). These elements, in conjunction with the previously mentioned congruence between the articles, provide ample evidence regarding the efficacy of multicomponent health promotion programs.

Conclusions

There are two important conclusions that may be drawn after the analysis of the synthesized data. First, and arguably most important, it is demonstrated that a single program may be used to profoundly affect multiple components of a child or adolescent's health. Second, it is apparent that the application of a well developed health promotion program is more important than the particular details and components of said program. This affords latitude in tailoring health promotion programs to specific populations in order to improve pediatric health; which is the goal. Nevertheless, due to the complex nature of health, enacting changes can be invariably complicated. As such, various conceptual frameworks have been developed to guide the process.

Conceptual Framework

Nola Pender developed the Pender Health Promotion Model as a means of increasing a person's level of well-being, as compared to simply being in a state absent from disease (Nola, 2011). This model describes the multi-faceted means by which a person interacts with elements of the environment in pursuit of health, or well-being. According to Petiprin (2016), vital to this pursuit are some important assumptions; namely, individuals seek to self-regulate behavior, individuals and the environment interact and change with time, and self-initiated environmental modifications are necessary to enact adaptations in habits and behavior (Appendix C).

As suggested by the model, an individual who chooses to make a change to their environment ultimately produces a change to his or herself. It is upon this key interaction that the

validity for this project is founded; in fact, this tenet is the basis for the success of all multicomponent health promotion programs. These programs foster a desire for change in individuals, equip him or her with adequate knowledge and resources, endorse necessary environmental changes, and ultimately enable modifications to habits and behaviors. This results in a net positive change in health. While the benefits of this type of program are apparent and well founded in theoretical framework, often the intricacies of established systems inhibit even beneficial changes such as these. To this end, numerous evidence-based practice (EBP) models have been developed to facilitate the change process.

EBP Model

One particularly useful model is the Stetler model of EBP. This model succinctly describes the necessary steps for implementing changes in an established system. Stetler (2001) describes these steps, termed phases, as beginning with preparation, moving through data collection, analysis, and application, and ending with evaluation (Appendix D). Notably, this model is particularly well suited for changes made by small organizations or for individual divisions within larger organizations (Stetler, 2001). As such, it is an ideal model to guide this evidence-based project. The site for the project recognized the urgent need for a change in current practice which led to the gathering and selection of the pertinent data and studies. This step was followed by analysis and validation of the data in order to tease out which methods or practices were best suited. The information garnered from this process was then translated into the selected health promotion program for its application at the site. Future evaluation of the program's efficacy will be facilitated using tools provided by the evidence-based project and will be carried out by the site's management. In this way the Stetler model has served as a roadmap for the various phases of change requisite in this project.

Methods

Guided by the abovementioned frameworks, a project aimed at implementing a multicomponent pediatric health promotion program was conducted at the local branch of a nationally instituted, after-school program for youth. The site is run and organized by a branch manager and impact specialist who utilize various auxiliary staff and volunteers. The intervention for the project is geared towards these individuals, in particular, to the staff and volunteers charged with planning and executing daily activities with the youth. Budget requirements for the implementation of the project are minimal; therefore, no additional funding was necessary (Appendix E). Participation in the project was limited to individuals over the age of 18 who were able and willing to give consent. IRB approval was obtained and ethical considerations and human subject protections were ensured. Once received, consenting individuals were encouraged to participate in the project implementation at the specified date and time.

Intervention

The implementation process utilized a custom-designed project intervention in a single training session. The intervention consisted of a Power Point presentation to key stakeholders at the project site. This presentation encompassed key aspects of the selected multicomponent pediatric health promotion program, the Triple Play Program (TPP). It began with background information, synthesized from current evidence, related to pediatric health statistics in the U.S. juxtaposed with the benefits of health promotion programs. This was followed by an introduction to the TPP, highlighting research supporting its effectiveness. Finally, a thorough discussion was conducted on the mechanics of the TPP. Particular focus centered on who is involved, how it is accomplished, what resources are available, and methods for tracking the progress and

effectiveness of the program. In order to gauge the success of this project intervention, appropriate data was collected before and after the project implementation.

Instruments and Analysis

The TPP Survey and Demographic forms, with pre- and post-intervention variants, were created in order to capture the necessary information. The survey forms were adapted from the Organizational Readiness to Change Assessment (ORCA) tool in order to investigate changes in participants' knowledge, skills, attitudes, and beliefs as pertaining to the TPP (Helfrich, Li, Sharp, & Sales, 2009). These forms were administered immediately prior to and following the project intervention. Furthermore, a second posttest data collection was completed six weeks after the project intervention in order to determine the magnitude of the interventions impact over time. These data points were then statistically analyzed using IBM SPSS v25 statistical software. Analysis employed the use of descriptive statistics, the Wilcoxon-Signed Rank test, and the Friedman test.

Project Impact

The impact from the successful incorporation of the TPP is multifaceted; nevertheless, two impacts are of particular note. First, from the perspective of the organization, a successful project implementation serves as a pilot study blueprint for program integration across the several East Valley sites. This allows the organization to meet internal goals resulting in the potential to boost retention and acquisition of youth club members, improve club experiences, and continue the reception of grant money. Second, application of the health promotion program is likely to improve various health metrics of children participating at the site. This has the potential to improve the participants' current and future health. Moreover, the potential for local community impact is prevalent as principals are applied by the youth within individual homes.

Ultimately, the project's impact aligns with the goals of the Triple Aim for health care (Institute for Healthcare Improvement, 2019) by improving population health and relieving or mitigating a portion of the U.S. healthcare burden.

Results

Survey results were collected from current employees at the project site. Descriptive statistics were used to describe the sample. The sample (n=4) consisted of 4 (100%) females, 2 (50%) between the ages of 18-25, 1 (25%) between the ages of 26-35, and 1 (25%) 36 and older. Of the participants 4 (100%) have obtained an associate's degree, 3 (75%) are part time employees and 1 (25%) is a full time employee, and 3 (75%) identify as Caucasian with 1 (25%) identifying as Hispanic/Latino.

Program Utilization

Descriptive Statistics and the two –tailed Wilcoxon Signed-Rank test were used to analyze the pre and posttest data regarding the number of TPP lessons participated in over the last week and month and the number of TPP lessons taught in the last week and over the last month (Appendix F). This project is similar to an exploratory pilot study with a very small sample size. Due to the importance of detecting small to moderate differences with a very small sample size the level of significance was set at $p < .1$ (Woods, Lentz, Mitchell, Heitkemper & Shaver, 1997). The score indicated on the pretest for the number of TPP lessons participated in over the last week was lower (*Mdn* = 1.5, *SD* = 1.41) than the score on the posttest (*Mdn* = 4, *SD* = 1.91). The increase in median score from pretest to posttest was not significant ($Z = -1.07$, $p = .285$). The pretest score for the number of TPP lessons participated in over the last month was lower (*Mdn* = 2.5, *SD* = 2.06) than the posttest score (*Mdn* = 4.5, *SD* = 1.89). The increase in median score from pretest to posttest was not significant ($Z = -1$, $p = .317$). The pretest score for

the number of TPP lessons taught over the last week was lower (*Mdn* = 1, *SD* = 0.5) than the posttest score (*Mdn* = 3, *SD* = 2.31). The increase in median score from pretest to posttest was not significant (*Z* = -1.34, *p* = .180). The pretest score for the number of TPP lessons taught over the last month was lower (*Mdn* = 1, *SD* = 2) than the posttest score (*Mdn* = 4.5, *SD* = 1.89). The increase in median score from pretest to posttest was not significant (*Z* = -1.34, *p* = .180).

Staff Metrics

Descriptive statistics and the Friedman test was used to compare data from the pretest, posttest 1 and posttest 2 of each category relating to changes in knowledge, abilities, and attitudes in relation to the TPP (Appendix G). Once again, due to the very small sample size the significance level for the analyses was set at $p < .1$. Pretest scores on motivation to use the TPP were lower (*Mdn* = 3.5, *SD* = 1.708) compared to posttest scores at time one (*Mdn* = 4, *SD* = 0.816) and time two (*Mdn* = 4, *SD* = 0.816). The increase in scores was not significant ($\chi^2(2) = 4$, $p = .135$). The scores on the pretest for confidence in utilizing the TPP were lower (*Mdn* = 5, *SD* = 0.5) than the scores on the posttests at time one (*Mdn* = 4.5, *SD* = 1.414) and time two (*Mdn* = 4, *SD* = 2.082). These increases were not significant ($\chi^2(2) = 3.71$, $p = .156$). All other analyses resulted in statistically significant changes in median scores.

Pretest scores for the belief that the TPP was important (*Mdn* = 2.5, *SD* = 1.41) were less than posttest scores at time one (*Mdn* = 4.5, *SD* = 0.577) and time two (*Mdn* = 4, *SD* = 0.816). The increase in scores was significant ($\chi^2(2) = 5$, $p = .082$). Scores on the pretest for knowing the benefits of the TPP (*Mdn* = 2.5, *SD* = 1.708) were lower than posttest scores at time one (*Mdn* = 4, *SD* = 0.816) and time two (*Mdn* = 4, *SD* = 1.258). These increases were significant ($\chi^2(2) = 5.6$, $p = .061$).

Pretest scores on knowing enough about the TPP to feel comfortable discussing it with others were lower (*Mdn* = 1.5, *SD* = 0.957) compared with posttest scores at time one (*Mdn* = 3.5, *SD* = 0.957) and time two (*Mdn* = 4, *SD* = 1.5). These increases were significant ($\chi^2(2) = 5.69$, $p = .058$). Scores on the pretest related to having the skills necessary to utilize the TPP effectively were lower (*Mdn* = 2.5, *SD* = 0.957) than the posttest scores at time one (*Mdn* = 4, *SD* = 1) and time two (*Mdn* = 4, *SD* = 1.732). The increase in scores was significant ($\chi^2(2) = 5.69$, $p = .058$).

Pretest scores on comfortability with planning lessons for the TPP were lower (*Mdn* = 2, *SD* = 0.816) than posttest scores at time one (*Mdn* = 3.5, *SD* = 0.957) and time two (*Mdn* = 4, *SD* = 1.732). These increases were significant ($\chi^2(2) = 5.29$, $p = .071$). The scores on the pretest for knowing how to make the TPP effective at the club were lower (*Mdn* = 1.5, *SD* = 0.957) compared to scores on the posttests at time one (*Mdn* = 3.5, *SD* = 0.577) and time two (*Mdn* = 4, *SD* = 1.5). The increase in scores was significant ($\chi^2(2) = 5.69$, $p = .058$). Pretest scores on knowing how to access help and resources for the TPP were lower (*Mdn* = 1.5, *SD* = 1.414) than posttest scores at time one (*Mdn* = 4, *SD* = 0.5) and time two (*Mdn* = 3.5, *SD* = 1.291). These increases were significant ($\chi^2(2) = 5.69$, $p = .058$). The scores on the pretest regarding adequate supplies and support for the TPP were lower (*Mdn* = 1.5, *SD* = 1.414) compared with the scores on the posttests at time one (*Mdn* = 3.5, *SD* = 1.291) and time two (*Mdn* = 3, *SD* = 1.826). The increase in scores was significant ($\chi^2(2) = 6$, $p = .05$).

Intervention Impact

The abovementioned results reflect staff knowledge, skills, attitudes, and use of the TPP at the project site before and after the intervention. With one exception, confidence in working with the kids, the results indicate an increase in all measured aspects of the project (Appendix

H). Most of these increases are shown to be statistically significant. The TPP was newly initiated at the time of the project intervention through the single specialized training session. Tracking tools were provided in order to facilitate the continuity of the program following the project's completion. The project champion or designated manager was delegated the important task of maintaining the momentum provided by the intervention. It is anticipated that the combination of the specialized training session, use of the provided tracking tools, and a productive site manager is capable of fully establishing the TPP in continuity.

Discussion

The overall results of the project indicate that the project intervention, a single specialized training session, is capable of facilitating the implementation of a multicomponent pediatric health promotion program. This conclusion is similar to those drawn by other researchers in related scenarios. It has been shown that one-time training sessions successfully instilled adequate knowledge and skills for participants to enact community based wellness programs both immediately and at one year post-intervention (Lai et al., 2017). Other analogous programs utilized an in-person training session in combination with additional web-accessible resources to successfully train employees on integrating health promotion programs (Cluff, Lang, Rineer, Jones-Jack, & Strazza, 2018). In examining the beneficial changes precipitated by this project's intervention, a closer look at the non-significant results is merited first.

Summary

Two of the collected metrics from the TPP survey indicated non-statistically significant results. However, it can be seen that these non-significant results are simply a positive reflection on the prepared state of the intervention participants. The first survey question relates to the participants' motivation to use the TPP at the club. The second question determines the

participants' confidence in interacting with kids at the site. Both of these scored high on the prettest leaving little room for improvement post-intervention. In other words, the participants were already well trained and confident in their ability to work with youth club members and desired to use the TPP program. This indicates that the barrier to utilization relates to a gap in program related knowledge and skills as opposed to a lack of motivation.

The other eight survey metric results demonstrate the interventions successful improvement in these barrier areas. Participants showed significant improvement in understanding the importance of the program and its benefits, the acquisition of practical knowledge and skills for its utilization, and knowing how to access program resources and help. Notably, the measured progress in these areas was maintained at the six week post-intervention mark. This further signifies the project intervention's ability to generate important and lasting changes which facilitate the implementation of this type of program. Nevertheless, despite these marked improvements in various metrics, the actual use of the TPP in the previous week and month did not show significant improvement. While unanticipated, it is possible that this result was more heavily influenced by the various challenges and limitations faced during this project.

Challenges and Limitation

One of the most significant limitations to this project is the small sample size. While this project is akin to a pilot study and small sample sizes are expected, complications arose in securing participants in larger numbers. This resulted in two major challenges. First, the sample size limited the use of statistical analysis and its ability to indicate significance of the measured changes. Second, the small sample size introduces the possibility of data distortion due to personal biases. For example, in looking at the individual scoring of participants it was noted that one individual tended to score very highly on each of the metrics both pre- and post-intervention.

Another individual trended in the opposite direction scoring very low both pre- and post-intervention. Based upon the collected demographics, these tendencies may relate to employment status, full or part-time, and age. Whereas very large sample sizes naturally mitigate the effects of biases related to personal experience or characteristics, very small samples are incapable of doing so. To limit the possibility of skewing the results, both the descriptive statistics and the nonparametric statistical analyses relied upon median values instead of means. While this may limit the application of this project intervention to broader populations, it serves its purpose as a pilot study for the project site.

Another significant challenge that was encountered related to the project champion. Recent studies show how important having a strong leader is to the successful integration of health promotion programs (Darlington, Violon, & Jourdan, 2018). Initially the role of project champion was held by the branch manager. When obligations in other areas required greater attention, this arrangement was modified such that the site's impact specialist acquired the new responsibility. This individual maintained a very heavy load before taking on the role of project champion; as such, the effectiveness of this pivotal role was limited. Ultimately, this likely reduced the degree of improvement initiated by the project intervention.

Recommendations

While the results of this evidence-based project indicate the potential a single specialized training session has, opportunities for future study remain. With advances in technology, it is now possible to participate in training sessions in-person, remotely, or asynchronously. It would be important to determine what format is most effectual. Further research could also study the necessity or benefits of repeat training sessions or supplemental web-accessible resources provided to participants. Finally, a long term study looking at the necessity and effectiveness of

either refresher trainings or designated management for program sustainability would be useful. The answers to these questions could produce powerful and efficient training methods.

Conclusion

In conclusion, health statistics related to physical activity, nutrition, and psychological wellbeing demonstrate the fragile state of US children and adolescents. Current conditions hamper the health and development of this population and result in an unnecessary financial burden for the US healthcare system. Multicomponent health promotion programs have effectively improved these health components and represent an optimal solution. To this end, an evidence-based project was completed as guided by the application of two theoretical frameworks. The project intervention utilized a single specialized training session to facilitate the implementation of a selected health promotion program at the partnering site. The results of this project signify the success of this approach, but further research is indicated to evaluate various aspects of this type of intervention.

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Appendix A

Table 1

Evaluation Table

Citation	Conceptual/Theoretical Framework	Design/Method	Sample Description	Major Variables & Definitions	Measurement	Data Analysis	Study Findings/Results	Worth of Study
Annesi et al., (2017). Effects of the youth fit 4 life physical activity/nutrition protocol on body mass index, fitness and targeted social cognitive theory variables in 9- to 12-year-olds during after-school care. **Funding**: Not specified **Bias**: Selection bias (small geographical area for sample selection), Researcher bias	Physiological framework, Self-regulator/Self-management theories	**Design**: CRT **Purpose**: To measure the effects of participation in the YF4L on BMI, self-regulation, psychosocial variables, and fitness measures.	**N**: 141 **n**: 86 (EG) **n**: 55 (CG) **Setting**: YMCA after-school care sites in the Southeastern USA. **Inclusion**: Age 9-12 yrs **Exclusion**: Less than 2 data points across 9m span. **Demographics**: Age- 9-12 m/f- 55%/45% AA- 65% W-31% Other ethnicity- 4% ATR- not	**IV**: Participation in YF4L **DV_1**: BMI **DV_2**: Self regulation for PA scores **DV_3**: Overall negative mood scores **DV_4**: Exercise self-efficacy scores **DV_5**:CV Endurance **DV_6**: Muscle Strength YF4L: Youth program incorporating elements of physical activity, nutrition education, goal setting/self-efficacy, and psychosocial improvement.	Calibrated digital scale, stadiometer, Likert-type scale, POMS-A, EBSESC, 3 minute run/walk test, and push-up test.	Descriptive statistics (M, SD), Mixed Model and one way ANOVA, Multiple mediation analysis (with R^2 regression analysis), and Cronbach's α,	**DV_1**: ΔM=0.13, SD= 0.86, $F(1,139)=9.06$, $p<0.01$, $\eta^2_p=0.06$, **DV_2**: ΔM=0.87, SD= 2.43, $F(1,139)=11.96$, $p<0.01$, $\eta^2_p=0.08$, α=0.69 and 0.72, TRTR= 0.77 **DV_3**: ΔM=-2.59, SD=4.04, $F(1,139)=5.98$, $p<0.05$, $\eta^2_p=0.04$, α= 0.6 and 0.71, TRTR=0.72 **DV_4**: ΔM=1.58, SD=4.77, $F(1,139)=9.17$, $p<0.01$, $\eta^2_p=0.06$, α=0.78 and 0.75,	**Level of Evidence**: II **Strengths**: LSD CRT design, adequate sample size for calculated power, corrected for attrition with intent-to-treat design, validated tools, applicability not limited by specific health conditions/indicators. **Weakness**: Some researchers affiliated with YMCAs in the same geographical area.

Key: **AA**- African American; **ACT**- Action; **ANCOVA**- Analysis of Covariance; **ANOVA**- Analysis of Variance; **ATR**- Attrition Rate; **BGCA**- Boys and Girls Club of America; **BHC**- Building Healthy Communities; **BMI**- Body Mass Index; **BMIz**- Body Mass Index z-score; **C**- Contemplation; **CG**- Control Group; **CI**- 95% Confidence Interval; **CRT**- Cluster-randomized Trial; **CV**- Cardiovascular; **d**= Cohen's *d*; **DV_1**- Dependent Variable 1; **DV_2**- Dependent Variable 2; **DV_3**- Dependent Variable 3; **DV_4**- Dependent Variable 4; **DV_5**- Dependent Variable 5; **DV_6**- Dependent Variable 6; **EBSESC**- Exercise Barriers Self-efficacy Scale for Children; **EG**-Experimental group; **EM4L**- EmpowerMe4Life 9-item scale; **F**= *F* Statistic; **f**- Female; **F2P**- Fit-2-Play; **H**- Hispanic; **HHP**- Healthy Habits Program; **HPP**- Health Promotion Program; **HPS**- Health Promoting School; **IV**- Independent variable; **kg**- Kilogram; **LSD**- Longitudinal Study Design; **M**- Mean; **m**- Male; **MA**- Meta-analysis; **MANT**- Maintenance; **MDPROS**- Miami Dade County Parks, Recreation, and Open Spaces; **mn**- month; **N**- Number of studies in SR or participants in study; **n**- number of participants in SR or number of study participants in subgroup; **NK**- Nutrition Knowledge; **p**- p-value; **PA**- Physical activity; **PACER**- Progressive aerobic cardiovascular endurance run; **PC**- Pre-contemplation; **POMS-A**- Profile of Mood States-Adolescents; **PREP**- Preparation; **QED**- Quasi-Experimental Design; **R^2**- Coefficient of determination; **RCT**- Randomized Control Trials; **RR**- Relative Risk; **SA**- Statistical Analysis; **SaR**- Sit and Reach test; **SASE**- Student Attitudes and Self-Efficacy scale; **SBP**- Systolic Blood Pressure; **SD**- Standard Deviation; **SE**- Standard Error; **SHCP**- Shaping Healthy Choices Program **SHEI**- School Physical Activity and Nutrition Healthy Eating Index; **SR**- Systematic Review; **TPP**- Triple Play Program; **TRTR**- Test-retest reliability; **USA** – United States of America; **VS**- Versus; **W**- White; **WHO**- World Health Organization; **YF4L**- Youth Fit 4 Life; **α**- Cronbach's alpha; **Δ**- Change in; **η^2_p**- Partial eta-square; **χ^2**– Chi-squared

(researchers affiliated with YMCA organization) **Country**: USA			specified	DV_1- Weight (kg)/height(meters^2) DV_2-Scores based on Likert-type frequency rating. DV_3- scores based on POMS-A DV_4- Scores based on EBSESC DV_5- Scores based on 3 minute run/walk test DV_6- Scores based on number of push-ups			TRTR=0.77 **DV_5**: ΔM=45.38, SD=90.31, F(1,139)=4.35, $p<0.05$, $\eta^2_p=0.04$, TRTR=0.72 **DV_6**: ΔM=0.72, SD=1.86, F(1,139)=5.07, $p<0.05$, $\eta^2_p=0.04$, TRTR=0.9 Mediated Relationships **DV_1-→DV_2**: $R^2=0.13$, F(2,138)=10.73, $p<0.001$. **$DV_{2,3,4}$→DV_1**: $R^2=0.12$, F(2,138)=9.19, $p<0.001$.	**Conclusions:** Significant positive changes in BMI, self-regulation for PA, psychosocial variables, self-efficacy, CV endurance, and muscle strength. There was a mediated relationship between self-regulation/self-efficacy and mood on changes in BMI. **Utility to PICOT**: This is a similar program to the HPP desired at the community partner site. These results suggest the efficacy of such a program and lend credibility to the use of HPP in a similar setting and demographic.

Key: **AA**- African American; **ACT**- Action; **ANCOVA**- Analysis of Covariance; **ANOVA**- Analysis of Variance; **ATR**- Attrition Rate; **BGCA**- Boys and Girls Club of America; **BHC**- Building Healthy Communities; **BMI**- Body Mass Index; **BMIz**- Body Mass Index z-score; **C**- Contemplation; **CG**- Control Group; **CI**- 95% Confidence Interval; **CRT**- Cluster-randomized Trial; **CV**- Cardiovascular; **d**= Cohen's *d*; **DV_1**- Dependent Variable 1; **DV_2**- Dependent Variable 2; **DV_3**- Dependent Variable 3; **DV_4**- Dependent Variable 4; **DV_5**- Dependent Variable 5; **DV_6**- Dependent Variable 6; **EBSESC**- Exercise Barriers Self-efficacy Scale for Children; **EG**-Experimental group; **EM4L**- EmpowerMe4Life 9-item scale; **F**= *F* Statistic; **f**- Female; **F2P**- Fit-2-Play; **H**- Hispanic; **HHP**- Healthy Habits Program; **HPP**- Health Promotion Program; **HPS**- Health Promoting School; **IV**- Independent variable; **kg**- Kilogram; **LSD**- Longitudinal Study Design; **M**- Mean; **m**- Male; **MA**- Meta-analysis; **MANT**- Maintenance; **MDPROS**- Miami Dade County Parks, Recreation, and Open Spaces; **mn**- month; **N**- Number of studies in SR or participants in study; **n**- number of participants in SR or number of study participants in subgroup; **NK**- Nutrition Knowledge; **p**- p-value; **PA**- Physical activity; **PACER**- Progressive aerobic cardiovascular endurance run; **PC**- Pre-contemplation; **POMS-A**- Profile of Mood States-Adolescents; **PREP**- Preparation; **QED**- Quasi-Experimental Design; **R^2**- Coefficient of determination; **RCT**- Randomized Control Trials; **RR**- Relative Risk; **SA**- Statistical Analysis; **SaR**- Sit and Reach test; **SASE**- Student Attitudes and Self-Efficacy scale; **SBP**- Systolic Blood Pressure; **SD**- Standard Deviation; **SE**- Standard Error; **SHCP**- Shaping Healthy Choices Program **SHEI**- School Physical Activity and Nutrition Healthy Eating Index; **SR**- Systematic Review; **TPP**- Triple Play Program; **TRTR**- Test-retest reliability; **USA** – United States of America; **VS**- Versus; **W**- White; **WHO**- World Health Organization; **YF4L**- Youth Fit 4 Life; **α**- Cronbach's alpha; **Δ**- Change in; **η^2_p**- Partial eta-square; **χ^2**– Chi-squared

Citation	Conceptual/Theoretical Framework	Design/Method	Sample Description	Major Variables & Definitions	Measurement	Data Analysis	Study Findings/Results	Worth of Study
Messiah et al., (2017). Impact of a park-based afterschool program replicated over five years on modifiable cardiovascular disease risk factors. **Funding**: Health Foundation of South Florida and the Aetna Foundation **Bias**: Selection Bias (only participants in one geographical area) **Country**: USA	Physiological Framework	**Design**: QED (pre- and post-test) **Purpose**: Determine the effect of F2P on weight, CV health, fitness, and health/wellness behaviors/knowledge.	**N**: 1546 **Setting**: MDPROS, Miami, FL **Inclusion**:Age 6-14 yrs, 1st yr participation in F2P only, complete pre and post test, **Exclusion**: none **Demographics**: Age- 6-14yrs m/f- 55%/45% AA- 44% H- 51% W- 3% ATR: not specified	**IV**:F2P program participation **DV_1**:BMIz **DV_2**:SaR **DV_3**:SBP **DV_4**: Endurance **DV_5**: NK F2P: afterschool park-based program for health and wellness focusing on physical activity and nutrition education. BMIz: BMI converted to age and sex adjusted scores SaR: Flexibility as determined by scores on the modified sit and reach test Endurance: as determined by number of laps completed on PACER	Electronic scale, Tape measure, Electronic sphygmomanometers, The Presidential Youth Fitness Program – Fitness Gram tests, Modified sit and reach test, PACER, EM4L.	Descriptive statistics (M, SD), Generalized linear mixed model	**DV_1**: Normal BMI: postM= 0.07, SD=1, ΔM= 0.27, p<0.001 Overweight BMI: postM= 1.3, SD=0.4, ΔM= -0.06, p=0.02 Obese BMI: postM= 2, SD=0.7, ΔM=-0.2, p<0.001 **DV_2**: Normal BMI: postM= 26, SD=7.2, ΔM= 0.05, p=0.81 Overweight BMI: postM= 26.2, SD=7.1, ΔM= -0.1, p=0.76 Obese BMI: postM= 25, SD=6.9, ΔM=-0.1, p=0.65 **DV_3**: Normal BMI: postM= 65.7, SD=25, ΔM= -2.7,	**Level of Evidence**: II **Strengths**: LSD across 5 years, large proportion of minority participants, validated tools, applicability not limited by specific health conditions/indicators. **Weakness**: Non-controlled QED, attrition rate not discussed, limited discussion of SA **Conclusions:** BMIz scores decreased in the overweight and obese subgroups, maintained in the normal subgroup. SaR had no

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				NK: Health and wellness scores as determined by scores on the EM4L			p=0.004 Overweight BMI: postM= 71.7, SD=24, ΔM= -6.1, p=0.004 Obese BMI: postM= 77.9, SD=21.6, ΔM=-4.4, p=0.001 **DV_4**: Normal BMI: postM= 20.7, SD=17.3, ΔM= 3.9, p<0.001 Overweight BMI: postM= 17.8, SD=15.5, ΔM= 3.1, p<0.001 Obese BMI: postM= 13.7, SD=10.3, ΔM=2.6, p<0.001 **DV_5**: Normal BMI: postM= 7.7, SD=2, ΔM= 0.8, p<0.001 Overweight BMI: postM= 7.5, SD=1.9, ΔM= 0.9, p<0.001	statistically significant changes. SBP decreased across all subgroups. Pacer results improved across all subgroups. NK improved across all subgoups. **Utility to PICOT**: This study demonstrates the efficacy of afterschool HPP in affecting positive changes in CV aspects of health and NK. This supports the use of a comparable HPP at the community partner to improve key health indicators.

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							Obese BMI: postM= 7.8, SD=2, ΔM=0.8, p<0.001	
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**
Youth Development Strategies, Inc., (2009). Promoting healthy lifestyles: Impact of boys and girls club of America's triple play program on healthy eating, exercise patterns, and developmental outcomes (final evaluation report) **Funding**: The Coca-Cola Company and Kraft Foods Inc. **Bias**: Selection bias (only	Theory of Change	**Design**: CRT **Purpose**: Measure the impact of TPP on nutritional knowledge and behavior, physical activity and exercise levels, and psychosocial skills.	**N**: 727 **n:** 507 (EG) **n**: 220 (CG) **Setting**: BGCA clinics across the USA, Midwest, Northeast, Pacific, Southeast, and Southwest regions. **Inclusion**: Club participation, age 9-14yrs **Exclusion**: Did not complete all 3 surveys (22mn interval). **Demographics**: Age- 9-14yrs	**IV**: Participation in TPP **DV_1**: Total NK **DV_2**: Fruits/Vegetables eaten in last week **DV_3**: Days exercising ≥ 60 minutes **DV_4**: High quality peer interaction **DV_5**: High sense of mastery and control TPP: Multi-faceted HPP focused on PA, nutrition, and psychosocial improvement. Total NK- score based on a 7 item test to assess nutritional	Quantitative and Likert-type scale surveys	Descriptive statistics (M, SD), ANCOVA, Cohen's *d*,	**DV_1**: M=45%, SD=0.31, F(1,500)=21.26, p≤0.001, d=1.36 **DV_2**: M=3.22, SD=0.75, F(2,499)=5.68, p=0.028, d=0.61 **DV_3**: M=3.24, SD=0.94, F(2,499)=7.37, p≤0.001, d=0.84 **DV_4**: M=31%, SD=0.29, F(2,718)=4.92, p=0.008, d=0.46 **DV_5**: M=20, SD=0.29, F(2,718)=4.03, p=0.018, d=0.21	**Level of Evidence**: II **Strengths**: LSD CRT, attempt to correct for selection bias and attrition using intent-to-treat analysis and , inclusion of effect sizes for statistical significance, thorough use of figures/graphs, applicability not limited by specific health conditions/indicators **Weakness**: Concerning biases

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included top rated clubs in each region). Funding bias(research paid for by same company sponsoring TPP at each club) Publication bias (non-peer reviewed) **Country**: USA			M/F- 52%/48% AA- 38% H- 10% W- 32% ATR- 55%	knowledge Peer interaction- scores based on 16 item survey covering 4 key dimensions of quality peer interactions Mastery/control- scores based on 10 item survey reflecting participant's feelings of control over the environment				noted, attrition rate (plausible explanation provided), use of non-validated measurement tools (internal validation/reliability testing only) **Conclusions:** Participation in the TPP was shown to improve each of the measured DVs **Feasibility**: This study was performed on the HPP the community partner desires to implement. The conclusions and data collected in the study are corroborated by numerous other studies. Therefore, despite some concerning weakness, the

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								value of the study is sufficient to merit its inclusion
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**
Ribeiro et al., (2013). Comparison of two school-based programmes for health behavior	Transtheoretical Model of behavior change and Stages of behavior change.	**Design**: CRT, LSD pre/post test (7mn interval) **Purpose**: To compare the changes in stages of behavior change with participation in	**N**: 2038 **n**: 1191 (EG) **n**: 847 (CG) **Setting**: Elementary schools located	**IV**: Participation in TIRE 10! HPP **DV_1**: Fatty food Consumption **DV_2**: Fruit and vegetable intake **DV_3**: PA	Likert-type scale surveys derived/adapted from previously validated, unspecified surveys	Descriptive statistics (M, SD, RR), Multivariate analysis by Poisson	**DV_1**: RR= 1.79, CI: (1.61, 2.02), PC – Δn_{EG}: -258, p=<0.001 C- Δn_{EG}: -63, p=<0.001 PREP - Δn_{EG}:	**Level of Evidence**: II **Strengths**: CRT with LSD, unique study variables, large sample size. **Weakness**:

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change: The belo horizonte heart study randomized trial. **Funding**: International Life Sciences Institute Research Foundation **Bias**: Selection bias: school selected were from low income areas, one geographical area. **Country**: Brazil		TIRE 10! on eating habits, PA, and sedentary behaviors compared to participation in Agita Galera, the HPP already in place	in cities. **Inclusion**: students in 1st-6th grades, ages 6-11 years **Exclusion**: none **Demographics**: Age- 6-11 m/f- 50.4%/49.6% ATR – 17.7%	**DV_4**: Sedentary activities – TV watching **DV_5**: Sedentary activities – video games TIRE 10! – based on the US TAKE 10! HPP which focuses on PA and health knowledge integrated with academic learning, modified to Brazilian culture and standards. DV_1- Overall reduction DV_2- ≥ 5 servings/day DV_3- ≥30 minutes vigorous exercise/day DV_4- Watching ≥2 hours/day DV_5- Playing video/computer games ≥ 2		model (log-linear model)	+113, p=<0.001 ACT - Δn_{EG}: +41, p=<0.001 MANT - Δn_{EG}: +30, p=<0.001 **DV_2**: RR= 1.78, CI: (1.58, 2.07), PC – Δn_{EG}: -170, p=<0.001 C- Δn_{EG}: -149, p=<0.001 PREP - Δn_{EG}: +47, p=<0.001 ACT - Δn_{EG}: +110, p=<0.001 MANT - Δn_{EG}: +32, p=<0.001 **DV_3**: RR= 1.67, CI: (1.43, 2.11), PC – Δn_{EG}: -81, p=<0.001 C- Δn_{EG}: -119, p=<0.001 PREP - Δn_{EG}: -50, p=<0.001 ACT - Δn_{EG}: +126, p=<0.001 MANT - Δn_{EG}: +5,	Specific tools for measurement not disclosed/validated. **Conclusions:** Participants in the TIRE 10! Program showed significant improvement in readiness to change based upon stages of behavior change model, more so than the comparison group. **Utility to PICOT**: The results of the study support the idea that an HPP can improve the readiness to change in pediatric participants regarding key health indicators.

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				hours/day 5 stages of behavior change – pre-contemplation, contemplation, preparation, action, and maintenance DV_{1-5}- Results based upon survey responses corresponding to the 5 stages of behavior change			p=<0.001 **DV_4**: RR=1.75, CI: (1.57, 2.01), PC – Δn_{EG}: -272, p=<0.001 C- Δn_{EG}: +20, p=<0.001 PREP - Δn_{EG}: +53, p=<0.001 ACT - Δn_{EG}: +57, p=<0.001 MANT - Δn_{EG}: +19, p=<0.001 **DV_5**: RR= 2.08, CI: (1.86, 2.36), PC – Δn_{EG}: -163, p=<0.001 C- Δn_{EG}: -13, p=<0.001 PREP - Δn_{EG}: +6, p=<0.001 ACT - Δn_{EG}: +23, p=<0.001 MANT - Δn_{EG}: +7, p=<0.001	

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Citation	Conceptual/Theoretical Framework	Design/Method	Sample Description	Major Variables & Definitions	Measurement	Data Analysis	Study Findings/Results	Worth of Study
Kulik et al., (2019). Knowledge, attitudes, self-efficacy, and healthy eating behavior among children: Results from the building healthy communities trial. **Funding**: Blue Cross Blue Shiled of Michigan, Michigan Department of Health and Human Services, United Dairy Industry of Michigan, Food Corps, and Gopher SPorts **Bias**: Selection	Social Cognitive Theory	**Design**: QED, pre-post test (8mn interval) **Purpose**: To determine the most efficient explanation for behavior change among youth and determine the effectiveness of the BHC HPP on health knowledge, eating attitudes, and self-efficacy.	**N**: 628 **n:** 377 (EG) **n:** 251 (CG) **Setting**: schools located in Midwestern USA **Inclusion**: 5th grade student **Exclusion**: none **Demographics**: Age- M=10, SE= 0.02 m/f- 45.4%/54.6% (EG), 51%/49% (CG) AA- 14.9% (EG), 29.1% (CG) W- 50.6% (EG), 31.5% (CG) Other - 34.5% (EG), 39.4% (CG) ATR – 6%	**IV**: Participation in the BHC **DV_1**: Knowledge **DV_2**: SASE **DV_3**: SHEI BHC – HPP for elementary school students with 6 main components: principal engagement, nutrition and PA lessons, active recess, physical education, student leadership, and after school healthy kids clubs. DV_1: Scores based on multiple choice health knowledge exam DV_2: Scores from SASE DV_3: Scores from	Multiple-choice exams, Student Attitudes and Self-Efficacy scale, School Physical Activity and Nutrition Index	Descriptive Statistics (M, SD) Principal Component Analysis, Chi-square test, Cohen's D test, standardized regression analysis	**DV_1**: $M_{pre}EG=4.27$, $SD_{pre}EG= 4.16$, $M_{pre}CG=3.42$, $SD_{pre}CG= 1.4$, $d_{pre}=0.59$; $M_{post}EG = 6.9$, $SD_{post}EG= 1.29$, $M_{post}CG = 4.04$, $SD_{post}CG= 1.45$, $d_{post}= 2.08$; $M_{post}EGvsCG=$ not statistically significant **DV_2**: $M_{pre}EG=$ 4.07, $SD_{pre}EG=$ 0.48, $M_{pre}CG=$ 4.03, $SD_{pre}CG=$ 0.5, $d_{pre}=0.08$; $M_{post}EG = 4.07$, $SD_{post}EG= 0.48$, $M_{post}CG = 4.02$, $SD_{post}CG= 0.51$, $d_{post}= 0.1$; $M_{post}EGvsCG= \Delta$	**Level of Evidence**: II **Strengths**: QED with control/comparison group and randomization, validated tools for measurement. **Weakness**: Limited ability to support causal relationship between the variables. **Conclusions:** Health knowledge, PA, and healthy eating were all significantly improved in the EG vs CG. Attitudes and self-efficacy were not significant

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bias: limited to one geographical area. **Country**: USA				SHEI			χ^2= 498.46, p<0.001 **DV3**: $M_{pre}EG$= 42.4, $SD_{pre}EG$= 9.53, $M_{pre}CG$= 40.47, $SD_{pre}CG$= 9.37, d_{pre}=0.2; $M_{post}EG$ = 45.78, $SD_{post}EG$= 10.22, $M_{post}CG$ = 43.04, $SD_{post}CG$= 8.95, d_{post}= 0.29; $M_{post}EGvsCG$= Δ χ^2= 11.66, p<0.001	between groups. **Utility to PICOT**: Study supports the ability of HPPs to improve health knowledge, eating behaviors, and PA in youth.
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**
Scherr et al., (2017). A multicomponent, school-based intervention, the shaping healthy choices program, improves nutrition-related outcomes.	Social Cognitive Theory and Social Ecological Model	**Design**: CRT, pre-post design (1 year interval) **Purpose**: To determine the effectiveness of the SHCP on improving children's dietary behaviors and prevent obesity	**N**: 872 **n**: 412 (EG) **n**: 460 (CG) **Setting**: Schools in Northern/Central California, USA **Inclusion**: 4th grade students selected school	**IV**: Participation in SHCP **DV1**: BMI-z **DV2**: NK **DV3**: Vegetable Identification SHCP – HPP focused on nutrition education/promotio	Stadiometer, electronic scale, Knowledge questionnaire,Vegetable preferences assessment,	Descriptive Statistics (M, SD) Student *t* test, χ^2 test, ANOVA, multilevel regression mixed model	**DV1**: ΔMCG = -0.07, SD = 0.27; ΔMEG=-0.28, SD= 0.56; p<0.001 **DV2**: ΔMCG = 0.54, SD = 3.55; ΔMEG=2.20, SD= 3.48; p<0.001 **DV3**: ΔMCG = 0.63, SD = 1.04;	**Level of Evidence**: II **Strengths**: CRT design, thorough analysis of sample demographics, large sample, validate tools **Weakness**: Sampling bias,

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Funding: University of California Agriculture and Natural Resources Competitive Grant, United States Department of Agriculture Nutrition Institute of Food and Agriculture HATCH project, United States Department of Agriculture training Grant and University of California Supplemental Nutrition Assistance Program-Education. **Bias**: Sampling bias: some bias indicated in sample analysis			**Exclusion**: none **Demographics**: Age- 9-10 m/f- 53%/47% AA- 8% H- 14% W- 23% Other – 55% ATR -	n, family/community partnerships, support regional agriculture, foods on school campus, and school wellness policies. DV_1- BMI converted to age and sex adjusted scores DV_2- Scores based on 35 point knowledge questionnaire DV_3- Scores based on vegetable preferences assessment			ΔMEG=1.18, SD= 1.15; p<0.001	narrow study focused on nutrition aspects only **Conclusions:** Improvement in BMI scores, NK, and vegetable identification in the sample**.** **Utility to PICOT**: Supports the assertion that HPP improve health metrics and NK.

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for randomization **Country**: USA								
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**
Pablos et al., (2017). Effectiveness of a school-based program focusing on diet and health habits taught through physical exercise. **Funding**: Universidad Católica de Valencia "San Vicente Martir" **Bias**: Selection bias: the randomization process produced some bias in demographic	Physiologic framework, Health Behaviour in School Aged Children framework	**Design**: CRT, pre-post design (8mn interval) **Purpose**: To determine the effectiveness on modifying health related behaviors of a HPP founded upon themed-based physical activity and healthy behavior education	**N**: 158 **n**: 82 (EG) **n**: 76 (CG) **Setting**: **Inclusion**: Students in 5^{th} or 6^{th} grade **Exclusion**: Concurrent participation in another study **Demographics**: Age- 10-12 m/f- 48%/52% ATR: 25%	**IV**: Participation in HHP **DV_1**: BMI **DV_2**: SBP **DV_3**: VO^2_{max} **DV_4**: Perceived Health HHP – HPP focused on PA in the form of themed games and nutrition and healthy habits education for classroom and home. BMI – weight (kg)/ height (m2). VO2max- CV fitness/ endurance	Seca 714 scale with built in height rod, digital sphygmomanometer, Eurofit physical fitness-20m shuttle run, Inventory of Healthy Habits	Descriptive statistics (M and SD) Independent t-test, χ^2 test, repeated measures ANOVA, Bonferri correction and post-hoc pairwise comparison McNemars test,	**DV_1**: $ObeseBMI\%EG_{pre}$ =34.1%, $ObeseBMI\%EG_{post}$ =24.2%, ΔObeseBMI%EG= 9.9%, p=0.004 $OverweightBMI\%EG_{pre}$=19.5%, $OverweightBMI\%EG_{post}$=25.6%, ΔOverweightBMI%EG=6.1%, p=0.004 $NormalBMI\%EG_{pre}$=46.3%, $NormalBMI\%EG_{post}$=50%, ΔNormalBMI%EG=3.7%, p=0.004 **DV_2**: M_{pre}=115.6,	**Level of Evidence**: II **Strengths**: CRT design, utilized reliable measurement tools, thorough statistical analysis **Weakness**: Small sample size, some bias in demographic of samples, several results found to be not statistically significant **Conclusions:** The HHP effectively improved health metrics of BMI, SBP, CV endurance, and

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distribution between EG and CG **Country**: Spain				determined by 20m shuttle run Perceived health – Self- perception of overall health and confidence as determined by Inventory of Healthy habits Inventory of Healthy Habits - 27 item self report inventory of eating habits, physical activity, sleep, sedentary activities, and perceived health habits			SD_{pre}=16.3; M_{post}=110.7, SD_{post}=15.4; p=0.031 **DV_3**: M_{pre}=43.4, SD_{pre}=4.3; M_{post}=44.5, SD_{post}=4.9; p<0.001 **DV_4**: M_{pre}=2.6, SD_{pre}=0.5; M_{post}=3, SD_{post}=0.7; p<0.001	perceived health/confidence. **Utility to PICOT**: Supports the use of HPP to improve both physiological and psychological factors that influence overall health of pediatric populations.
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**

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Lee et al., (2014). Childhood obesity management shifting from health care system to school system: Intervention study of school-based weight management programme. **Funding**: Hong Kong Special Administrative Region Government, Health Care Promotion Fund. **Bias**: None **Country**: China	Physiologic framework, WHO Social and Environmental Health Promotion Framework	**Design**: CRT, LSD (4mn and 8mn interval) **Purpose**: Determine the effectiveness of HPS program on anthropometric measurements and health related attitudes and behaviors.	**N**: 106 **n**: 57 (EG) **n**: 49 (CG) **Setting**: Elementary schools in Hong Kong, China **Inclusion**: 8-12 years of age, overweight and obese students **Exclusion**: **Demographics**: Age- M=10.4 SD=.95 m/f- 71%/29% ATR: 9.5%	**IV**: Participation in HPS **DV$_1$**: BMIz **DV$_2$**: Body Fat % **DV$_3$**: Desire to exercise HPS- 8mn HPP utilizing PA, nutrition education, and positive self-image sessions. Questionnaire- 20 item questionnaire regarding attitudes towards dietary and exercise habits, self control, and self perception of weight. DV$_1$- BMI adjusted for age and sex DV$_2$- Scores determined by bio-impedance body fat scale DV$_3$- Scores based on self-report 20	Stadiometer, bio-impedance body fat scale, questionnaire	χ^2 test, independent t-test, repeated measures ANOVA, McNemar test,	**DV$_1$**: ΔEGvsCG = -0.16, p<0.05, CI (-0.3, -0.02) **DV$_2$**: ΔEGvsCG = -3.09, p<0.05, CI (-5.91, -0.26) **DV$_3$**: $\Delta\%n_{pre\ vs\ post}$= +30%, p=0.002, CI (-5, 66)	**Level of Evidence**: II **Strengths**: CRT LSD design, excellent statistical analysis, **Weakness**: Use of non-verified/disclosed measurement tools, small sample size, many non-significant results, applicability narrowed to obese/overweight participants **Conclusions:** Significant improvement in BMI and body fat % for participants with improved attitude towards exercise. **Utility to PICOT**: Supports the use of HPP to

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				item questionnaire				diminish obesity and improve attitudes towards living healthier. While many of the results were not statistically significant, many other variables showed improved attitudes and confidence regarding healthy habits and exercise
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**
Hoek et al., (2014). Effective interventions in overweight or obese young children: systematic review and meta-analysis. **Funding**: Not	Physiological framework, Framework of Cognitive and Behavioral theory in Young Children	**Design**: SR and MA **Purpose**: To summarize the effectiveness of treatment programs for overweight and obese young children.	**N**: 27 **n**: 11 (MA) **Setting**: PubMed, Embase, Web of Science, and PsycINFO databases **Inclusion**: Studies with	**IV_1**: Very low intensity multicomponent treatment program **IV_2**: Moderate or high intensity multicomponent treatment program **DV_1**: BMIz	None specified	Cochran's heterogeneity statistic with conversion to I^2	**Overall DV_1**: 11/11 studies: Δ=-0.25, CI (-0.36, -0.14), I^2=100% **IV_1→DV_1**: 5/11 studies: Δ=-0.08, CI (-0.13, -0.03), I^2=79%	**Level of Evidence**: I **Strengths**: SR, MA design, straightforward search design **Weakness**: High heterogeneity of studies, inclusion criteria includes

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disclosed **Bias**: Selection bias: single author selected the majority of included articles **Country**: Undetermined			treatment for obese and overweight children 3-8 years and including a variable of body weight, articles in English, Spanish, German, and Dutch, studies published before April 2012. **Exclusion**: Non-relevant studies based on title search, then based on abstract review	Multicomponent treatment program – Included components of PA, nutritional education, and behavioral therapy. Very low intensity- total treatment intervention duration <10 hours Moderate intensity – total treatment intervention duration 26-75 hours High intensity – total treatment intervention duration >75 hours			**$IV_2 \rightarrow DV_1$**: 2/11 studies: Δ=-0.46, CI (-0.53, -0.39), I^2=0%	some ages less than 6. **Conclusions:** Multicomponent treatment programs showed a higher degree of improvement in BMIz scores. **Utility to PICOT**: Supports the idea that HPP including multiple components PA, nutritional education, and psychosocial components have a more significant effect on participants.
Citation	**Conceptual/Theoretical Framework**	**Design/Method**	**Sample Description**	**Major Variables & Definitions**	**Measurement**	**Data Analysis**	**Study Findings/Results**	**Worth of Study**

Key: **AA**- African American; **ACT**- Action; **ANCOVA**- Analysis of Covariance; **ANOVA**- Analysis of Variance; **ATR**- Attrition Rate; **BGCA**- Boys and Girls Club of America; **BHC**- Building Healthy Communities; **BMI**- Body Mass Index; **BMIz**- Body Mass Index z-score; **C**- Contemplation; **CG**- Control Group; **CI**- 95% Confidence Interval; **CRT**- Cluster-randomized Trial; **CV**- Cardiovascular; **d**= Cohen's *d*; **DV_1**- Dependent Variable 1; **DV_2**- Dependent Variable 2; **DV_3**- Dependent Variable 3; **DV_4**- Dependent Variable 4; **DV_5**- Dependent Variable 5; **DV_6**- Dependent Variable 6; **EBSESC**- Exercise Barriers Self-efficacy Scale for Children; **EG**-Experimental group; **EM4L**- EmpowerMe4Life 9-item scale; **F**= *F* Statistic; **f**- Female; **F2P**- Fit-2-Play; **H**- Hispanic; **HHP**- Healthy Habits Program; **HPP**- Health Promotion Program; **HPS**- Health Promoting School; **IV**- Independent variable; **kg**- Kilogram; **LSD**- Longitudinal Study Design; **M**- Mean; **m**- Male; **MA**- Meta-analysis; **MANT**- Maintenance; **MDPROS**- Miami Dade County Parks, Recreation, and Open Spaces; **mn**- month; **N**- Number of studies in SR or participants in study; **n**- number of participants in SR or number of study participants in subgroup; **NK**- Nutrition Knowledge; **p**- p-value; **PA**- Physical activity; **PACER**- Progressive aerobic cardiovascular endurance run; **PC**- Pre-contemplation; **POMS-A**- Profile of Mood States-Adolescents; **PREP**- Preparation; **QED**- Quasi-Experimental Design; **R^2**- Coefficient of determination; **RCT**- Randomized Control Trials; **RR**- Relative Risk; **SA**- Statistical Analysis; **SaR**- Sit and Reach test; **SASE**- Student Attitudes and Self-Efficacy scale; **SBP**- Systolic Blood Pressure; **SD**- Standard Deviation; **SE**- Standard Error; **SHCP**- Shaping Healthy Choices Program **SHEI**- School Physical Activity and Nutrition Healthy Eating Index; **SR**- Systematic Review; **TPP**- Triple Play Program; **TRTR**- Test-retest reliability; **USA** – United States of America; **VS**- Versus; **W**- White; **WHO**- World Health Organization; **YF4L**- Youth Fit 4 Life; **α**- Cronbach's alpha; **Δ**- Change in; **η^2_p**- Partial eta-square; **χ^2**– Chi-squared

Dudley et al., (2015). Teaching approaches and strategies that promote healthy eating in primary school children: a systematic review and meta-analysis. **Funding**: Sax Institute for the New South Wales Department of Education and Communities and the New South Wales Ministry of Health. **Bias**: None **Country**: Wales	Social Cognitive and behavioral theory	**Design**: SR and MA **Purpose**: To determine the effectiveness of school-based intervention programs on healthy eating outcomes.	**N**: 49 **Setting**: PubMed, MEDLINE, the Cochrane Central Register of Controlled Trials, PsycINFO, ERIC, ScienceDirect, and A+ Education **Inclusion**: School-based interventions taught by teachers/substitutes, CRT, QED, RCTs, published before May 2014 **Exclusion**: Intervention programs delivered outside of the school or immediate community settings	**IV_1**: Experiential learning approach **IV_2**: Cross-curricular approach **IV_3**: Quality curriculum approach **DV_1**: Fruit/Vegetable preference **DV_2**: Nutritional Knowledge Experiential learning approach-included use of school/community gardens and/or cooking and food preparation lessons. Cross-curricular approach – learning experiences taught across 2+ subjects Quality curriculum approach – techniques based	10-item quality assessment scale, Hattie's Zone of Desired Effects	Descriptive statistics (M, SD, SE), d,	**IV_1-→DV_1**: 8/49 studies: 75% of studies improved with $p< 0.05$, 45% with large effect sizes, 55% with minimal effect sizes. $M_d=0.68$ **IV_2-→DV_1**: 10/49 studies: 90% of studies improved with $p<0.05$, 50% large effect sizes, 50% small/medium effect sizes. $M_d=0.63$ **IV_3-→DV_2**: 13/49 studies: 100% of studies achieved improvement with $p<0.05$, $M_d=0.75$ **IV_1-→DV_2**: 4/49 studies: 100% showed improvement with $p<0.05$, 85% with large effect sizes, 15% with minimal effect sizes,	**Level of Evidence**: I **Strengths**: SR and MA design, use of a validated assessment tool **Weakness**: Limited to studies regarding nutritional education, heterogeneity calculations not included but mentioned as high, **Conclusions:** Experiential learning, cross-curricular, and quality curriculum approaches to nutritional education are found to be effective **Utility to PICOT**: The results support the

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				upon behavioral and social cognitive learning theories			M_d=1.35	inclusion of nutritional education via a variety of techniques is a useful component to be included in effective HPPs.

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Appendix B

Table 1

Synthesis Table

Author	Annesi	Messiah	YDSI	Ribeiro	Kulik	Scherr	Pablos	Lee	Hoek	Dudley
Study Characteristics										
Year	2017	2017	2009	2013	2019	2017	2017	2014	2014	2015
Design	CRT	QED	CRT	CRT	QED	CRT	CRT	CRT	SR/MA	SR/MA
N	141	1546	727	2038	628	872	158	106	27	49
Age (yr)	9-12	6-14	9-14	6-11	M=10	9-10	10-12	M=10	na	na
Gender (%m)	55	55	52	50	45	53	48	71	na	na
Ethnicity (%W/%AA/%H)	31/65/na	3/44/51	32/38/10	na	50/15/na	23/8/14	na	na	na	na
Intervention &Tools										
HPP	YF4L	F2P	TPP	TIRE 10!	BHC	SHCP	HHP	HPS	Multiple	Multiple
Tools										
Calibrated scale	x	x				x	x			
Stadiometer	x	x				x	x	x		
Sphygmomanometer	x	x					x			
Endurance test	x	x					x			
Likert-type questionnaire	x	x	x	x	x		x	x		
Multiple choice knowledge exams	x		x	x	x	x	x			
Outcomes										
DV										
BMI/BMIz	↑ (+)	(+)				↓ (+)	↓ (+)	↓ (+)	↓ (+)	
Endurance	↑ (+)	↑ (+)					↑ (+)			
SBP		↓ (+)					↓ (+)			
Nutrition Knowledge		↑ (+)	↑ (+)		↑(+)	↑ (+)				↑ (+)
Healthy eating			↑ (+)	(+)	(+)			(+)		↑ (+)
Physical Activity	(+)		↑ (+)	(+)	(+)			(+)		
Psychosocial health factors	(+)		↑ (+)		(+)		↑ (+)	↑ (+)		

Key: **BHC**- Building Healthy Communities; **BMI**- Body Mass Index; **BMIz**- Body Mass Index z-score;**CRT**- Cluster-randomized Trial;**DV**- Dependent Variable; **f**- Female;**F2P**- Fit-2-Play; **HHP**- Healthy Habits Program;**HPP**- Health Promotion Program;**HPS**- Health Promoting School; **m**- Male; **M**- Mean; **MA**- Meta-analysis; **N**- Number of participants in study or studies in review; **na**- Not Applicable;**PA**- Physical Activty;**QED**- Quasi-Experimental Design; **SHCP**- Shaping Healthy Choices Program;**SBP**- Systolic Blood Pressure;**SR**- Systematic Review;**TPP**- Triple Play Program;**x**- Included/Utilized**YDSI**- Youth Development Strategies Incorporated; **YF4L**- Youth Fit 4 Life;**yr**- Years; **%**- Percent;↑- Increase; ↓- Decrease;
(+)- Beneficial change;

Appendix C

Conceptual/Theoretical Framework

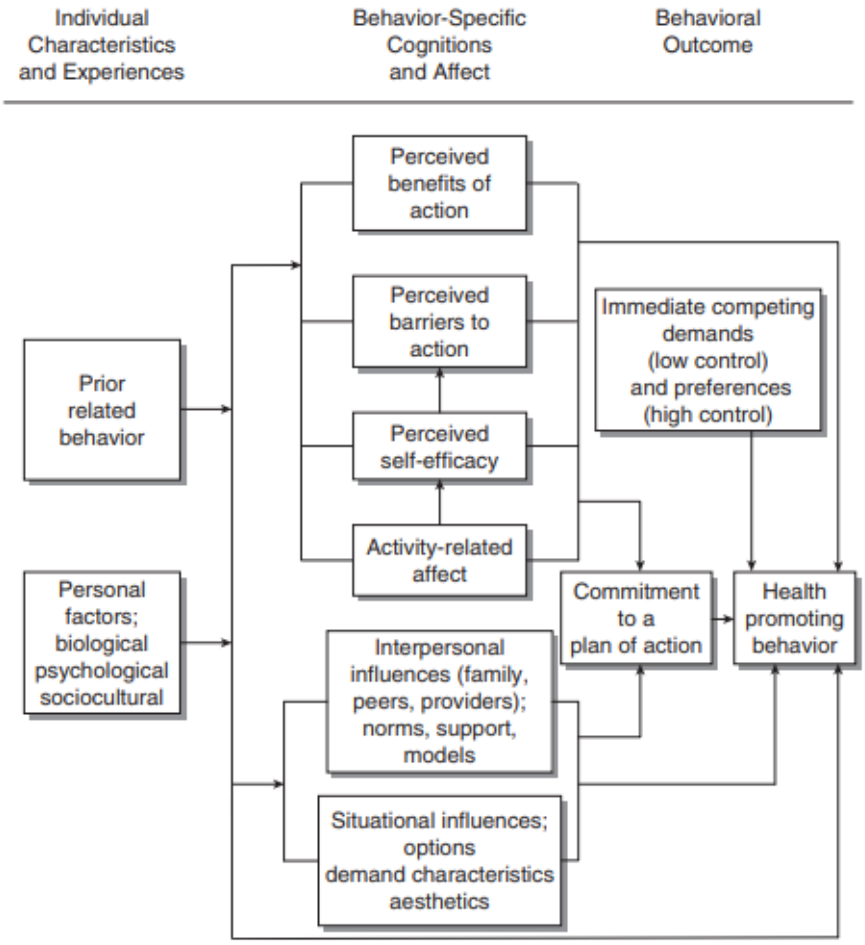

Figure 1. Pender's Health Promotion Model (Srof & Velsor-Friedrich, 2006).

Appendix D

Evidence-based Practice Model

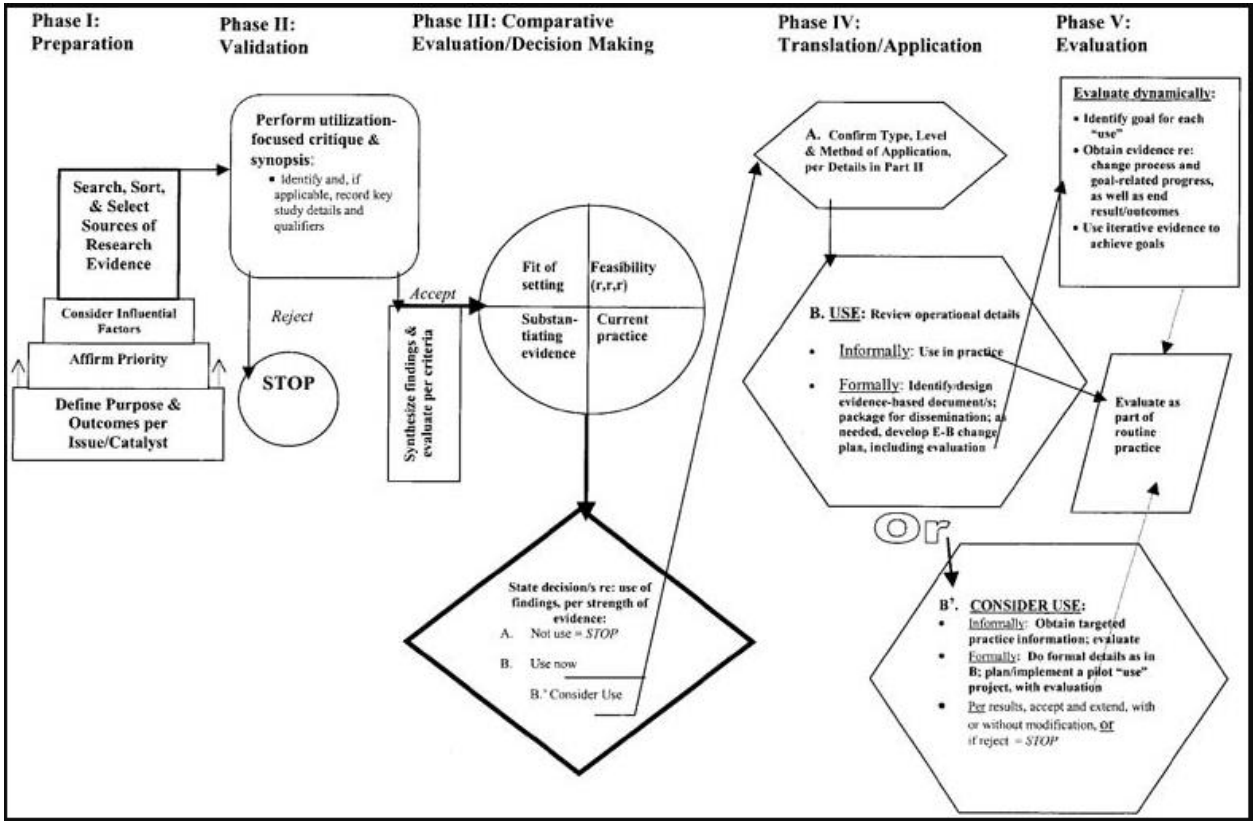

Figure 1. Stetler's Model of Evidence-based Practice (Stetler, 2001).

Appendix E

Direct Cost		
Item	Itemized Cost	Sub Total
Refreshments Total		27.75$
2 Dozen Bosa Doughnuts	19.18$	
1 Gallon 2% Milk	1.99$	
Disposable Cups	2.88$	
Napkins	1.88$	
7% Tax	1.82$	
Materials		16.74$
Paper	3.72$	
Pens	4.92$	
Printing cost X 30 (0.25$/page)	7.50$	
7% Tax	0.60$	
Equipment		
Projector	0.00$	0.00$
Computer	0.00$	0.00$
Total:		44.49$

Budget Justification

Printing cost include 20 pages of printing for pre- and post-test data collection, 10 pages for example tracking tools used during training. Projector, computers, and room available at site, otherwise costs of 64.99$, 350$, and 75$, respectively.

Indirect Cost	
Item	Estimated Cost
1.5 hour of regularly scheduled staff meeting and follow-up	300$

Budget Justification

Estimated 10$/hr/person X 10 persons in attendance, 1 hour for training and pre-test, 30 minutes for post-test data collection.

Potential Revenue

The potential revenue from the implementation of this project will be gained via the retention of youth members and acquisition of additional youth. It is projected that the youths' improvement in various facets of health will facilitate membership retention and attract additional members by word of mouth advertising. Furthermore, the utilization of the Triple Play Program will justify the continued reception of grant money from the national sources. Therefore, it is proposed that the implementation cost will be miminal and the potential gains noteworthy.

Funding

Funding for the project implementation may be sourced from the project site as part of the Triple Play Program annual grant. However, on this small scale, the incured direct costs will be paid for by the student. The indirect costs will be incorporated into the budget of scheduled staff meetings.

Figure 1. Budget Plan

Appendix F

Table 1

Wilcoxon-Signed Rank Test Results

Variable	*Mdn*	*SD*	*z*	*p*
Pre_participate_previous_week	1.5	1.41		
Post_participate_previous_week	4	1.91	-1.07	.285
Pre_participate_previous_month	2.5	2.06		
Post_participate_previous_month	4.5	1.89	-1	.317
Pre_teach_previous_week	1	0.5		
Post_teach_previous_week	3	2.31	-1.34	.180
Pre_teach_previous_month	1	2		
Post_teach_previous_month	4.5	1.89	-1.34	.180

Appendix G

Table 1

Friedman Test Results

Variable	*Mdn*	*SD*	χ^2	*df*	*p*
Pre_Importance	2.5	2.062			
Post_1_Importance	4.5	0.577	5	2	.082*
Post_2_Importance	4	0.816			
Pre_Benefits	2.5	1.708			
Post_1_Benefits	4	0.816	5.6	2	.061*
Post_2_Benefits	4	1.258			
Pre_Motivation	3.5	1.708			
Post_1_Motivation	4	0.816	4	2	.135
Post_2_Motivation	4	0.816			
Pre_Confidence	5	0.5			
Post_1_Confidence	4.5	1.414	3.71	2	.156
Post_2_Confidence	4	2.082			
Pre_Knowledge	1.5	0.957			
Post_1_Knowledge	3.5	0.957	5.69	2	.058*
Post_2_Knowledge	4	1.5			
Pre_Skills	2.5	0.957			
Post_1_Skills	4	1	5.69	2	.058*
Post_2_Skills	4	1.732			
Pre_Comfort	2	0.816			
Post_1_Comfort	3.5	0.957	5.29	2	.071*
Post_2_Comfort	4	1.732			
Pre_Effective	1.5	0.957			
Post_1_Effective	3.5	0.577	5.69	2	.058*
Post_2_Effective	4	1.5			
Pre_Help	1.5	1.414			
Post_1_Help	4	0.5	5.69	2	.058*
Post_2_Help	3.5	1.291			
Pre_Support	1.5	1.414			
Post_1_Support	3.5	1.291	6	2	.05*
Post_2_Support	3	1.826			

* Indicates statistical significance at $p \leq .1$

Appendix H

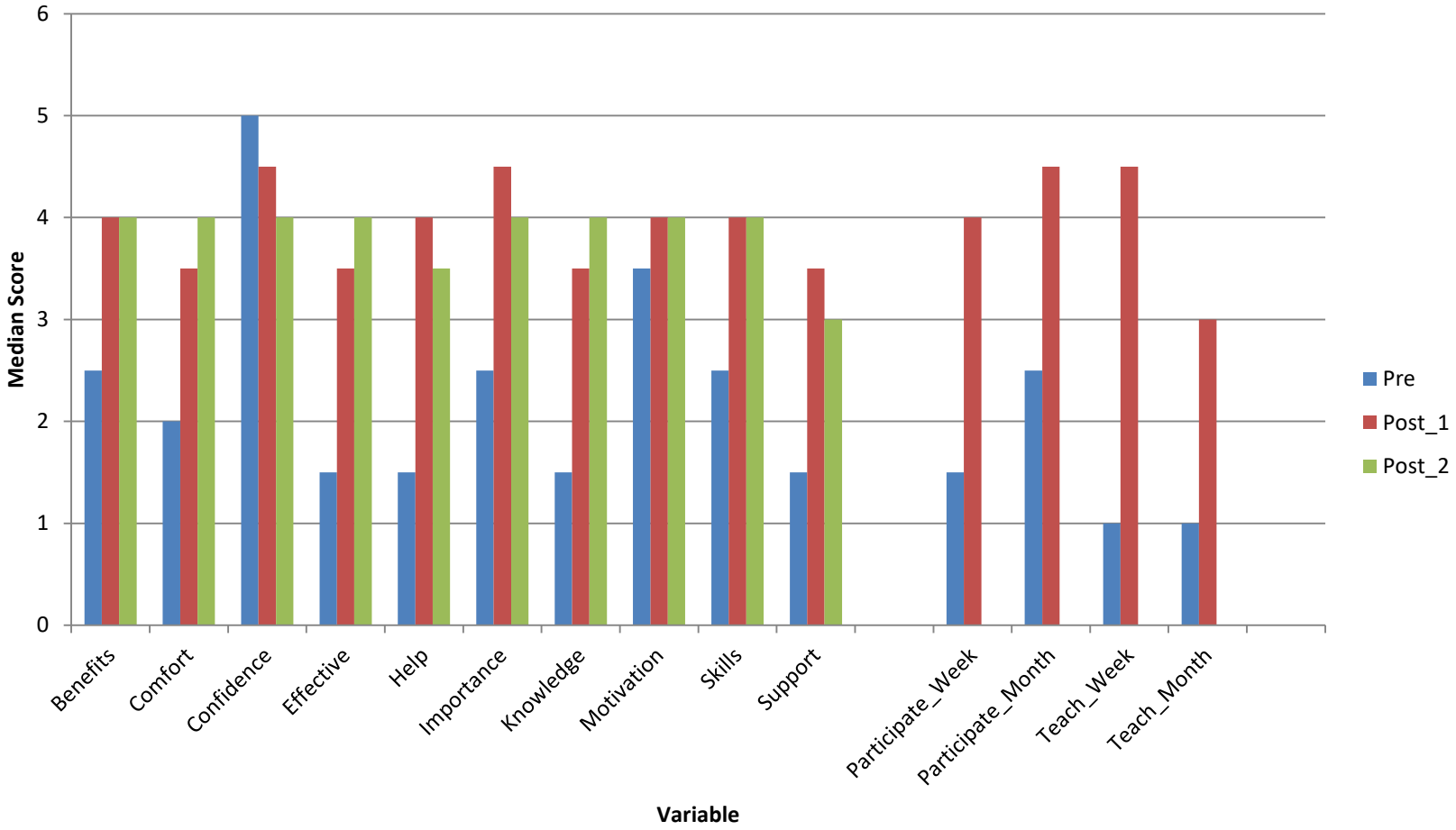

Figure 1. Changes in Median Scores