ADOLESCENTS’ SELF-EFFICACY TOWARD HEALTHY LIFESTYLE BEHAVIORS AFTER ATTENDING A SCHOOL-BASED INTERVENTION COURSE FOCUSED ON PHYSICAL ACTIVITY AND HEALTHY EATING

A Thesis

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By

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ABSTRACT

Obesity and overweight have become a serious concern in children and adolescents. The prevalence of overweight is increasing: for children aged 2 to 5 years from 5.0 to 13.9 percent; for those aged 6 to 11 years from 6.5 to 18.8 percent; and for 12 to 19 years from 5.0 to 17.4 percent {1}. Programs that can assist in preventing or decreasing this trend are needed. As more weight loss intervention programs are being implemented in schools, health professionals and teachers need to look at the student’s level of self-efficacy before starting the program. The aim of this study was to assess the high school students’ level of self-efficacy toward healthy lifestyle behaviors before and after the implementation of a school-based intervention program designed to improve physical activity and healthy eating habits through lifestyle modifications.

A summer wellness program was created to be offered at a Central Ohio High School. Of the 93 students aged 13-18 years enrolled in the course, 82 participated in the study by returning signed parental permission forms. A pre- and post-survey instrument was developed and given to the students to measure self-efficacy toward healthy eating and physical activity, and changes in diet and physical activity habits. Twenty-one items were developed to measure self-efficacy toward healthy eating and physical activity. The specific areas of self-efficacy to be measured included physical activity (five items),
nutrition choices (six items), social pressure (five items), and positive activities (four items). Self-efficacy towards physical activity, nutrition choices, social pressure, and positive activities showed a significant increase from the pre- to post-test (p<.05). The first measure of total self-efficacy in physical activity subscale had the highest mean score of 71.9% in the pre-test and 78.9% in the post-test indicating that the students’ have a high level of confidence in their ability to do physical activity. The measure of total self-efficacy in nutrition choices subscale showed the greatest improvement by having a mean of 65.1% in the pre-test and a 78.0% in the post-test showing a 12.9% difference. The measure of total self-efficacy in social pressure had a mean of 61.7% in the pre-test and had a mean of 74.2% in the post-test. The measure of total self-efficacy in positive activities subscale had a mean of 67.3% in the pre-test and had a mean of 74.0% in the post-test.

Results from this study suggest that a wellness-based school program focusing on lifestyle modifications through nutrition education and physical education does increase an adolescent’s level of self-efficacy toward healthy lifestyle behaviors. More specifically, the results showed that the students’ self-efficacy level increased the most from the pre-test to post-test with nutrition choices and social pressures. This means that this program helped the students overcome the barriers of making poor lifestyle choices just because their peers are making these choices because they want to fit in. The data shows that utilizing an intervention technique like this wellness-based program does have positive results in raising an adolescents’ drive to want to make healthier lifestyle choices to help prevent obesity.
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CHAPTER 1
INTRODUCTION

1.1 Background of Problem

*Healthy People 2010* identified overweight and obesity as one of ten leading health indicators and called for a reduction in the proportion of children and adolescents who are overweight or obese, however the United States has made little progress toward the target goal {1}. Obesity results when an adolescent consumes more calories than he or she utilizes. This imbalance can be a result of genetics, behavioral factors, or environmental influences. There have been studies conducted that indicate certain genetic characteristics may increase an individual’s susceptibility to overweight or obesity. This genetic susceptibility may need to happen in occurrence with environmental or behavioral factors to have a significant effect on weight.

Behavioral factors can also lead to obesity in adolescents. One of these behavioral influences is excessive caloric intake. Large portion sizes of food and beverages, eating meals away from home, frequent snacking on energy-dense foods and consuming beverages with added sugar are hypothesized as contributing to excess energy intake of children and teens. Physical inactivity and a sedentary lifestyle may also contribute to obesity in adolescents. Daily participation in school physical education among adolescents dropped 14 percentage points over the previous 13 years — from 42% in 1991 to 28% in 2003. Also, less than one-third (28%) of high school students
currently meet recommended levels of physical activity. Adolescents are reducing their
time spent on physical activity is they have adapted to a sedentary type of lifestyle. One
study found that time spent watching TV, videos, DVDs, and movies averaged slightly
over three hours per day among children aged 8 to 18 years. In addition to decreased
calories expended, these sedentary habits can lead adolescents to consume more calories
if snacking while doing these activities, especially since unhealthier snack choices are
often promoted through food advertisements on the TV.

Environmental factors are also related to obesity and overweight in adolescents.
Parent-adolescent interactions and the home environment can affect the behaviors of
children and youth related to calorie intake and physical activity. Schools provide an
ideal setting for teaching teens to adopt healthy eating behaviors and get involved in
physical activity. The community plays a part in environmental factors because
sidewalks, community recreation centers, and bike paths promote physical activity, where
a lack of these resources can lead to physical inactivity for adolescents. Also, limited
access to healthy food choices at markets in the community can lead to unhealthy
choices. All these factors contribute to possible causes of obesity and overweight in
children and adolescents. It is important to take into consideration these factors to help
prevent obesity in adolescents because it can lead to serious health risks such as heart
disease or metabolic syndrome.

One method of preventing obesity in adolescents is developing school-based
weight loss intervention programs that focus on lifestyle modifications. More research is
finding that settings such as schools and after-school programs are ideal for reaching
children and adolescents in order to promote healthy eating and physical activity {2}. A
number of school-based interventions aimed at promoting healthy eating and physical activity behaviors have been implemented in the past fifteen years, with most having positive influences on moderate and vigorous physical activity and healthy eating. School-based weight loss intervention programs focusing on lifestyle modifications are especially beneficial in high school students as diet and exercise becomes more their choice than the parent’s. Weight loss prevention programs offered through schools provide an environment that encourages support from their peers.

One factor in the success of school-based weight loss intervention programs designed to help children and adolescents improve healthy eating habits and physical activity behaviors is to improve their self-efficacy toward behavioral control of healthy lifestyles. Students must first believe they are capable to achieve a healthy lifestyle or a strong positive self-efficacy in healthy choices. According to Bandura’s theory, self-efficacy is an integrative cognitive-social learning framework that has proved useful in a variety of treatment contexts {3}. It is a person’s judgment of his or her ability to cope effectively in a situation. It can also be defined as the belief in one’s capabilities to achieve a goal or an outcome {4}.

Self-efficacy, a construct of social cognitive theory, has been widely used in studies of dietary behavior change and is generally accepted as a helpful process indicator {5}. Many lifestyle modification programs are now concentrating on one’s self-efficacy as a means to change lifestyle behaviors. Determining one’s self-efficacy can be a useful tool to help with his or her inner desire to want to make a lifestyle change. Adolescents can use their self-efficacy to help them sustain and maintain their lifestyle modification of physical activity and healthy eating as a means to lose weight or prevent overweight.
1.2 Statement of the Problem

As more weight loss intervention programs are being implemented in schools, health professionals and teachers need to know at the student’s level of self-efficacy before starting the program. They need to assess the student’s belief in their capacity to make lifestyle changes to improve their health. A primary concern with regard to performance of health-promoting dietary behaviors is sheer persistence in the face of obstacles including stressful or tempting situations. Persons with a stronger self-efficacy in positive lifestyle modifications will stay on task longer and will give more effort to the change. Therefore it is important to measure self-efficacy pre- and post- all behavior modification activities to determine if students’ belief in their capacity to succeed at lifestyle behavioral changes improves with the program.

1.3 Purpose of Study

The purpose of this study was to determine the change in self-efficacy toward healthy lifestyle behaviors of students enrolled in a summer physical education program aimed at increasing both physical activity and healthy choices.

1.4 Research Objectives

The specific research objective is:

1) To determine students’ self-efficacy toward healthy behavior modification pre- and post-summer physical education program aimed at increasing both physical activity and healthy nutritional choices.

1.5 Significance of the Study

Obesity and overweight have become a serious concern in children and adolescents. The prevalence of overweight is increasing: for children aged 2 to 5 years
from 5.0 to 13.9 percent; for those aged 6 to 11 years from 6.5 to 18.8 percent; and for 12 to 19 years from 5.0 to 17.4 percent {1}. Programs that can assist in preventing or decreasing this trend are needed. The aim of this study was to assess the high school students’ level of self-efficacy toward healthy lifestyle behaviors before and after the implementation of a school-based intervention program designed to improve physical activity and healthy eating habits through lifestyle modifications. Students who develop a good sense of self-efficacy after the implementation of this intervention program will come out with the ability to maintain the lifestyle choices they make toward improving their eating habits and physical activity. Students with a high level of efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated {4}. These students will put forth a high degree of effort in order to meet their commitments, and attribute failure to things which are in their control, rather than blaming external factors. Self-efficacious students also recover quickly from setbacks, and ultimately are likely to achieve their personal goals.
**List of Definitions**

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<td>A set of health objectives for Americans to achieve over the first decade of the new century.</td>
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<td>Obesity</td>
<td>BMI $\geq 30$ in adults and $&gt;95^{th}$ BMI-for-age percentile in children and adolescents</td>
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<td>Self-Efficacy</td>
<td>The belief in one’s capabilities to achieve a goal or an outcome.</td>
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<td>Operational Self-Efficacy</td>
<td>The belief in the students’ capabilities to make healthy lifestyle behavior choices before and after the implementation of a school-based intervention program as measured on a 21 item questionnaire.</td>
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CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

This review of literature will provide background information relating to self-efficacy and its role in various types of intervention methods and programs aimed toward improving quality of life. More specifically, it will focus on four areas of emphasis: (1) definition and role of self-efficacy, (2) self-efficacy in fruit and vegetable consumption, (3) self-efficacy and disease treatment and prevention (4) self-efficacy and anxiety, (5) self-efficacy and school-based intervention programs, and (6) maternal self-efficacy and its role on the child.

2.2 Self-Efficacy

Since Albert Bandura first introduced the construct of self-efficacy in 1977, researchers have been very successful in demonstrating that individuals’ self-efficacy powerfully influences their attainments in diverse fields {6}. Self-efficacy is commonly defined as the belief in one’s capabilities to achieve a goal or an outcome {4}. Self-efficacy provides the foundation for human motivation, well-being, and personal accomplishment {6}. This is because unless people believe that their actions can produce the outcomes they desire, they have little incentive to act or to persevere in the face of difficulties. Much empirical evidence now supports Bandura's contention that self-efficacy touches virtually every aspect of people's lives—whether they think
productively, self-debilitating, pessimistically or optimistically; how well they motivate themselves and persevere in the face of adversities; their vulnerability to stress and depression, and the life choices they make. Bandura's key contention in the role of self-efficacy in human functioning is that "people's level of motivation, affective states, and actions are based more on what they believe than on what is objectively true". For this reason, how people behave can often be better predicted by the beliefs they hold about their capabilities than by what they are actually capable of accomplishing, for these self-efficacy perceptions help determine what individuals do with the knowledge and skills they have.

Self-efficacy beliefs influence the choices people make and the course of action they pursue. Self-efficacy beliefs also help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations {6}. People with a strong sense of personal competence approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Self-efficacy beliefs influence an individual’s thought patterns and emotional reactions. High self-efficacy helps create feelings of serenity in approaching difficult tasks and activities. People with low self-efficacy may believe that things are tougher than they really are, a belief that fosters anxiety, stress, depression, and a narrow vision of how best to solve a problem. They can also influence the level of accomplishment that one ultimately achieves. This function of self-beliefs can also create the type of self-fulfilling prophecy in which one accomplishes what one believes one can accomplish.
The social cognitive theory implicates self-efficacy, the belief in one’s ability to perform a certain task, as pivotal construct in understanding and modifying human behavior [7]. According to Bandura, individuals who doubt their ability in a given domain are more likely to avoid difficult tasks, set low aspirations, and make minimal commitment to goals they set in that area. Persons with strong self-efficacy expectations in a particular domain, however, approach tasks as challenges rather than threats, persist when their efforts fail, feel in control of potential stressors, and maintain commitment to goals.

While multi-component chronic disease prevention programs attempt to establish organizational and environmental changes conducive to health in schools, these programs also strive to influence the beliefs, self-expectancies, and skills required for sustained healthful behavior of individual children. There has been a lot of research conducted on the role of self-efficacy in relationship to lifestyle modifications to improve quality of life for the prevention of the metabolic syndrome and other health concerns. Studies on self-efficacy are on the edge of discovering a new theory on how individuals cope with difficult or high risk situations. Studies have been conducted on self-efficacy as it relates to a child’s fruit and vegetable consumption, disease treatment and prevention, depression, anxiety, school-based intervention programs, and many other health care issues.

2.3 Self-Efficacy in Fruit and Vegetable Consumption

One recent study was conducted on assessing children’s self-efficacy and proxy efficacy for fruit and vegetable consumption (FVC) at after-school programs and at home. Self-efficacy was defined as a child’s belief that they can execute a behavior at a
level necessary to obtain a desired outcome {8}. Proxy efficacy was defined as the belief
that one can get others to act on their behalf to reach desired outcomes. Participants were
fourth-, fifth-, and sixth-grade children recruited from seven after-school programs. They
completed a self-efficacy questionnaire relevant to FVC. The questionnaire assessed four
constructs: self-efficacy expectations for fruit consumption, self-efficacy expectations for
vegetable consumption, proxy efficacy to influence parents to make fruits and vegetables
(FV) available, and proxy efficacy to influence after-school staff to make FV available.
The results showed that children perceiving FV opportunities in after-school had greater
self-efficacy expectations for FVC and greater proxy efficacy to influence after-school
staff compared to students who did not perceive FV opportunities. Children attending
schools of higher socioeconomic status (SES) and less diversity were more confident they
could influence their parents to make FV available than students attending lower
socioeconomic status and less diverse schools. The results from this study illuminate
four valid constructs within the FV context, contributing to a better understanding of the
separate influences of self-efficacy and proxy efficacy. Interventions targeting self-
efficacy expectations and proxy efficacy skills can examine whether the central variables
of the causal process determining changes in children’s FVC mediate effectiveness of the
intervention.

The role of self-efficacy has also been used among the Stages of Change for fruit
and vegetable consumption in adolescents. One particular study looked at whether
psychosocial, weight satisfaction, and dietary pattern variables discriminate between the
Stages of Change for fruit and vegetable intakes among young men and women {9}.
Young adults are at risk for developing chronic diseases due to an insufficient fruit and
vegetable intake that leads to nutritional deficiencies. Their dietary patterns influenced by breakfast skipping, fast food consumption, and weight satisfaction issues are barriers to adequate fruit and vegetable intakes. The Transtheoretical Model (TTM) has been applied to fruit and vegetable intakes collectively; however, one can consume an inadequate amount of either fruits or vegetables with distinct factors possibly determining a person’s readiness for increasing intake of either. Identifying relationships such as whether dietary patterns, weight satisfaction, or psychosocial variables can discriminate among Stages of Change in the same way for both fruits and vegetable intakes could help determine effective methods to assist young adults’ progression through the stages. This study included a random sample of 18 to 24 year olds and they returned 1,438 surveys. Three psychological variables were assessed: self-efficacy via 5 survey items and 8 pro and 10 con items for decisional balance. Demographics, dietary pattern, and weight satisfaction were also assessed. The results showed that young men and women were at different places in the Stage of Change process and few were meeting the vegetable guidelines. Dietary interventions can be most effective if specifically tailored to food group, stage, and gender. This study found that increasing subjects’ perception of the benefits of increasing intake of either fruits or vegetables was more important than decreasing the barriers of making such a change, a finding consistent with previous results.

Another study looked at Transtheoretical Model (TTM) stages and processes of change in increasing fruit and vegetable consumption. The purpose of this study was to examine the efficacy of an intervention based on the TTM for increasing fruit and vegetable consumption among economically disadvantaged African-American
adolescents {10}. African-Americans low fruit and vegetable intake and high cancer incidence suggest that economically disadvantaged African-American adolescents would benefit from intervention to increase fruit and vegetable consumption. The TTM provides a theoretical framework for developing interventions to modify a variety of health behaviors. The model comprises of four constructs: stages of change, the temporal readiness to modify health behavior; decisional balance, the relative importance of the perceived pros and cons of change; situational self-efficacy, confidence in one’s ability to modify the behavior across positive social, negative affect, and difficult situations; and processes of change, the experiential and behavioral strategies individuals use to progress through the Stages of Change. The study included a total of 507 African-American adolescents aged 11 to 14 years. This study showed that a TTM-based intervention can increase fruit and vegetable intake and affect positive changes in TTM variables related to intake among economically disadvantaged African-American adolescents. These findings show that youths can benefit from exposure to intervention strategies matched to their motivational readiness to modify dietary behavior. Youths who are consuming five daily servings of fruits and vegetables can also benefit from intervention to help them sustain this behavior. Health professionals designing programs to promote fruit and vegetable consumption with adolescents should address the differential needs of youths who may not yet be ready to increase their intake, youths who are considering modifying their intake in the near future, and those who face the day-to-day challenges of maintaining recommended intake levels.
2.4 Self-Efficacy and Disease Treatment and Prevention

Self-efficacy is an important mediating mechanism in advancing an understanding of the treatment of obesity. There is clearly a need for a theoretical model to help advance knowledge of mediating mechanisms and to improve treatment of obesity, especially in adolescents where rates of obesity and overweight are increasing. Treatment studies of obese individuals in the past have reported high attrition rates and poor long-term results [11]. One study was developed to validate the Weight Efficacy Life-Style Questionnaire (WEL). This study improved on previous studies by the use of clinical populations, cross-validation of the initial factor analysis, exploration of the best fitting theoretical model of self-efficacy, and examination of change in treatment. The 20-item WEL questionnaire consisted of five situational factors: Negative Emotions, Availability, Social Pressure, Physical Discomfort, and Positive Activities. Results from two separate clinical treatment studies using 382 subjects show that the WEL is sensitive to changes in global scores as well as to a subset of the five situational factor scores. This indicates that treatment programs may be incomplete if they change only a subset of the situation dimensions of self-efficacy.

Self-efficacy has also been used as a tool for osteoporosis preventative behaviors among adolescents and children. In adult populations, converging evidence suggests that self-efficacy may function as a mediator between social influences and healthy eating habits [12]. Additionally, knowledge mediates between social influences and self-efficacy in the prediction of health-related behaviors such as eating habits. As both perceived self-efficacy and knowledge function as mediators in studies of the healthy lifestyle behaviors of adults, one of the goals of a study was to determine if these
relationships also pertain to children. This study examined a model to predict healthy lifestyle behaviors for the prevention of osteoporosis among preadolescent girls. The relationships between social influences, self-efficacy, knowledge, and healthy lifestyle behaviors were examined with analyses based on Bandura’s social cognitive theory’s predictions and findings with children and adults. Participants in the study were 354 girls, ages 8-11 years. Measures of social support, knowledge, self-efficacy, dietary calcium intake, and weight-bearing physical activity (WBPA) were obtained through interviews and self-administered questionnaires. Family social support, perceived self-efficacy for eating a calcium-rich diet, and knowledge of WBPA significantly predicted calcium intake. Self-efficacy partially mediated the relationship between family support and calcium intake. Preadolescent girls who reported higher perceived self-efficacy reported healthier eating habits. The mediating role of self-efficacy has previously been illustrated in studies of adult lifestyle behaviors. This study provided additional evidence for self-efficacy as a mediator with a different population, children, and a specific aspect of eating behavior, calcium intake.

2.5 Self-Efficacy and Anxiety

Research has been conducted on the relationship between self-efficacy and anxiety disorders and depression in adolescents. A study was conducted that looked at this relationship in a large sample of 596 healthy adolescents aged 12 to 19 years. {13}. There seem to be three important pathways along which a low sense of self-efficacy may give rise to feelings of depression and anxiety. First of all, when people face a situation in which they have to meet highly valued standards, a low sense of self-efficacy may produce a despondent mood and anticipatory apprehension. Second, a low sense of
social self-efficacy may hinder the formation of positive social relationships that bring satisfaction to peoples’ lives and enable them to manage stressful experiences, and thereby may promote depressed feelings. Finally, low self-efficacy about the exercise of control over negative thoughts may also boost anxiety and depression. Past research on the contribution of perceived self-efficacy to depression and anxiety has been predominately confined to adults. These disorders also occur frequently in adolescents so it is beneficial to look at this population as well. Participants in this study completed the Self-Efficacy Questionnaire for Children with scales measuring trait anxiety/neuroticism, and symptoms of anxiety disorders and depression by assessing adolescents’ sense of self-efficacy in three domains: academic, social, and emotional. Results showed that low levels of self-efficacy generally were accompanied by high levels of trait anxiety/neuroticism, anxiety disorder, and depressive symptoms. Some support was found for the notion that specific domains of self-efficacy are especially associated with particular types of anxiety problems. Social self-efficacy was most strongly connected to social phobia, academic self-efficacy to school phobia, and emotional self-efficacy to generalized anxiety and panic. Also, when controlling for trait anxiety/neuroticism, self-efficacy still accounted for a small but significant proportion of the variance of symptoms of anxiety disorders and depression. Previous studies on self-efficacy in childhood affective disorders have predominately focused on social and academic self-efficacy. The findings in this study suggest that it might be worthwhile to include the role of emotional self-efficacy in this research because it was highly connected to high levels of anxiety and depression. This research shows that there are strong indications that a focus on increasing self-efficacy should be considered as an important target of psychotherapy.
2.6 Self-Efficacy and School-Based Intervention Programs

Self-efficacy has recently been discovered as a theoretical model to help students in the classroom believe in themselves. Students with a strong sense of efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated \cite{4}. They recover quickly from setbacks and are likely to achieve their personal goals. Students with low self-efficacy believe they cannot be successful, and are less likely to make a concerted, extended effort and may consider challenging tasks as threats that are to be avoided. Research has shown that the type of learning environment and teaching method can improve self-efficacy in the classroom. The research used a nonmajors’ physics course where the effects of different teaching methods on the classroom climate and self-efficacy were measured. The students’ response indicated that a question and answer format, inquiry-based lab activities, and conceptual (rather than quantitative) problems had a significant effect on creating a positive climate in the classroom. In addition to these strategies, collaborative learning and the use of electronic applications showed a positive correlation with increased self-efficacy in the student sample. The teaching methods that showed a measurable positive effect share the common feature of engaging students in a comfortable or creative manner. Cooperative learning strategies have the dual outcome of improving both self-efficacy and academic achievement. It is important to incorporate learning and teaching strategies that utilize self-efficacy into the classroom because it creates a more positive learning environment.

There have been a number of studies conducted on the measure of self-efficacy in school-based intervention programs designed to increase physical activity and healthy eating behaviors in adolescents. One particular study looked at one’s confidence to
participate in vigorous physical activity when confronted with specific perceived barriers \cite{14}. They defined vigorous activity as activity that lasts for 20 minutes or more, increases heart rate, and increases rapidity of breathing. There is substantial indication in the research literature that self-efficacy is an important correlate of physical activity participation. This study expanded on a pilot study in which 200 high school students completed a self-efficacy questionnaire and other measures such as a social desirability scale. The data for this study were derived from a sample of 1,041 students, aged 20 years or less. Based on the findings from this study, levels of self-efficacy differed according to whether potential obstacles to physical activity participation are attached more too external circumstances and influences or to internal issues or motivation. The analysis indicated that self-efficacy for vigorous physical activity in high school students is a multidimensional construct comprised of two factors, self-efficacy regarding participation despite external barriers and self-efficacy to participate despite internal barriers.

Another study was conducted on the relationship between self-efficacy and school-based intervention programs. This particular study focused on a pilot school-based healthy eating and physical activity intervention for improving diet, food knowledge, and self-efficacy for Native Canadian children \cite{15}. The goal of the school-based program was to demonstrate that after one year, a culturally appropriate school-based intervention would increase the students’ knowledge, skills, and self-efficacy and positively change behaviors related to diet and physical activity. This study describes the effect of the intervention on the knowledge and psychosocial factors related to healthy eating and the effect of the intervention on dietary fiber intake and the percentage of
energy from dietary fat. A total of 122 students (ages 7-14) participated in the study and completed four measurements of anthropometry, a 24-hour dietary recall, and two questionnaires. The two questionnaires measured change in psychosocial constructs and self-reported behaviors related to diet, physical activity, and knowledge about diabetes. Questions measured dietary intention, dietary fat knowledge, behavioral capabilities, dietary self-efficacy, and outcome expectancies. There were significant increases in dietary intention, dietary preference, knowledge, and dietary self-efficacy, and in the curriculum knowledge scale between baseline and follow-up. Intervention exposure was significantly associated with being in the highest category for knowledge about foods that were low in dietary fat, being in the highest category for dietary self-efficacy, being in the highest category for knowledge about curriculum concepts, and for having met the recommended dietary fiber intake of +5 grams/day for age. The results of this study provide evidence that an increased exposure to a culturally adapted one-year school-based intervention with environmental components is associated with an increase in knowledge about foods low in fat, overall health knowledge, dietary self-efficacy, and meeting recommended dietary fiber intake. This is a positive finding for school-based studies targeting modifiable dietary intake risk factors for prevention of diabetes or another type of health concern among adolescents.

2.7 Maternal Self-Efficacy and Its Role on the Child

Self-efficacy has been used as a way to understand and influence behavior. Although self-efficacy has been well studied in adult populations, less is known about how a mother’s self-efficacy influences how she cares for her child’s health condition. Type 1 diabetes is the most common metabolic disorder of childhood {16}. The peak
incidence occurs during puberty, around 10 to 12 years of age in girls and 12 to 14 years of age in boys. A recent study indicated that parents of preadolescents (8-11 years) performed much of their children’s diabetes care. The purpose of one study was to examine the relationships between maternal environment (child behavior and coping resources), diabetes self-efficacy, diabetes management behaviors, and child glycemic control. This study included 41 mothers of children with type 1 diabetes, ages 6 to 10. The results from this study showed that coping resources contributed significantly to mothers’ diabetes self-efficacy. Self-efficacy did not predict maternal diabetes management behaviors. Mothers with coping resources felt more confident in managing their children’s diabetes. Child behavior did not influence a mother’s diabetes management behaviors. Mothers who were consistent in their diabetes management behaviors had children in better metabolic control. Health professionals need to determine what a mother perceives as barriers when providing care to her child. It is important for future studies to continue to explore both perceived maternal barriers as well as concepts such as parenting efficacy to assist families in caring for children with serious health conditions, such as diabetes.

2.8 Summary of Literature Review

More research is being conducted on the role of self-efficacy in relation to lifestyle modifications to improve quality of life for many different health problems. Specifically targeting obesity and overweight in adolescents is a major concern because obesity has been shown to lead to serious health conditions such as metabolic syndrome. Utilizing the role of self-efficacy as a tool to prevent these conditions from occurring and implementing healthy lifestyle behaviors into an individual’s life has become a huge area
of research. Self-efficacy is one’s inner confidence and capability to achieve various tasks and deal with different situations. So targeting one’s inner motivation and drive will increase the likelihood that they will make changes toward a healthier lifestyle for a longer amount of time. It is the goal of this study to examine the effectiveness of self-efficacy in relation to physical activity and healthy eating to improve the quality of life in adolescents through a school-based intervention program.
CHAPTER 3

METHODOLOGY

3.1 Introduction

The purpose of this study was to determine the change in self-efficacy toward healthy lifestyle behaviors of students enrolled in a summer physical education program aimed at increasing both physical activity and healthy choices. The specific research objective is to determine students’ self-efficacy toward healthy behavior modification pre- and post-summer physical education program aimed at increasing both physical activity and healthy nutritional choices.

3.2 Research Design

The research was a descriptive study regarding self-efficacy toward healthy lifestyle behaviors and a student’s willingness to improve their physical activity and nutrition after the implementation of a school-based intervention program focusing on making lifestyle modifications involving increasing physical activity and making healthy nutritional choices.

3.3 Instrumentation

A pre- and post-survey instrument was developed to measure self-efficacy toward healthy eating and physical activity, and changes in diet and physical activity habits.

Twenty-one items were developed to measure self-efficacy toward healthy eating and physical activity. The subscales of self-efficacy to be measured included
physical activity (five items), nutrition choices (six items), social pressure (five items), and positive activities (four items). Please see Table 1 for the measurement items.

Items relating to physical activity were chosen because it was one of the major components of the course. Also, improving physical activity was one area that was emphasized as being a lifestyle modification that the students could make towards living a healthier, more full-filling life so it was beneficial to assess each student’s self-efficacy in that area.

Items relating to nutrition choices were chosen because it was also a major component of the course. Nutrition choices are one of the lifestyle modifications being taught that students could make improving their overall quality of life. Therefore, it was important to determine if the students’ self-efficacy changed before and after the implementation of this course.

Items relating to self-efficacy toward social pressures were important to include because adolescents at this age have many outside forces such as friends and the media that could influence their decisions and choices towards making the effort to improve their well-being. It was beneficial to evaluate their self-efficacy toward these pressures to see if this course really improved their self-efficacy toward physical activity and eating habits through lifestyle modifications.

Items on self-efficacy toward positive activities were significant to this study because it was important to see if the students were willing to make positive choices towards living a healthier lifestyle and to see if they could overcome difficult obstacles that could get in the way.
Each individual item had a scale determining self-efficacy ranging from 0 to 100% with 0% meaning no chance at all that they felt confident doing the activity, 25% indicating a slight chance, 50% indicating a 50/50 chance, 75% indicating a good chance, and 100% indicating completely certain they felt confident accomplishing the goal. Each student rated the item based on their own confidence level.

3.4 Subjects and Setting

A summer wellness program was created to be offered at a Central Ohio High School, and a partnership was created with the School of Health Sciences in a Midwestern University and the School District. The faculty joined with the Wellness Initiative Committee to collaborate on developing a pilot physical education course emphasizing a commitment and plan to a healthy lifestyle. The initial pilot course was offered to high school students as a summer physical education course to emphasize physical activity, healthy eating and emotional well-being. The number of students enrolled in the course was 93, ages 13-18 years. Of the 93 students enrolled in the course, 82 participated in the study by returning signed parental permission forms.

3.5 Data Collection

The Institutional Review Board (IRB) of human subjects approved the data collection. The pilot course was conducted as a four hour, summer physical education course held five days a week for three weeks in June. Each day was comprised of two main components – physical activity including strength and conditioning, aerobics, and stretching; and nutrition including cooking demonstrations, grocery store tours, and
various in-class activities. At the end of the program, students developed a personal contract and stated his or her nutrition and physical activity goals to help them lead a healthier lifestyle.

Three dietetics graduate students taught the nutrition education component of the course. The physical activity component was taught by three physical education instructors. Undergraduate health sciences students were also a part of the course by participating in a summer service-learning project to assist the high school faculty with the class.

The education lessons taught in the course were adapted from the United States Department of Agriculture (USDA) Team Nutrition. The lesson plans were developed so that each class would learn about two components: physical activity and nutrition education. The lesson plans focused on various aspects of nutrition education and physical activity that benefited the students with their lifestyle changes. Community partnerships were identified during this time to determine options for wellness activities during class. For example, Wal-Mart was used for a grocery store scavenger hunt for the students to learn more about nutrition fact label reading and healthy foods. Also, a partnership was made with a local chef to perform a cooking demonstration and taste testing for the students. Partnerships were made with local fitness clubs and an ice skating rink as part of the physical activity component of the course.

Students were presented with the opportunity to utilize MyPyramid to create a personalized plan to help them improve lifestyle behaviors. Also, the students kept a
food log of the foods and amounts they ate for one day. They then made modifications of their food logs to create a more healthy diet utilizing concepts they had learned in class. Students also kept a fitness log throughout the course as well.

During this time frame, measurements of self-efficacy were utilized to be used for evaluation of the effectiveness of the course. The self-efficacy instruments were given to the students on the first day of the program and on the last day of the program to determine if any change was made after the implementation of the program. Each student included the last four digits of his or her home phone number on both questionnaires so the researchers could match the pre-test with the post-test to compare the results. Also, this method was used to keep responses confidential and the results were used for research purposes only. All identifying marks were removed once instruments were matched.

3.6 Statistical Analysis

After the questionnaires on self-efficacy were completed and collected, the responses were coded and entered into SPSS 15.0 for statistical analysis. There were 93 students aged 13-18 years who were enrolled in the course and 82 participated in the study by returning signed permission slips from their parents. The data analyzed allowed the students and faculty to see any barriers and influences in the adolescents’ life that could affect their self-efficacy. Identifying these trends was a way to find areas of improvement in the course to better connect with changing lifestyle behaviors in terms of nutrition and physical activity in adolescents. The data was tested for reliability by utilizing Cronbach’s alpha for internal consistency. The data was also analyzed using a Paired T-test to determine the mean score on the pre-test compared with that on the post-

25
test. This was a means to determine if the course showed any improvement in changing students’ self-efficacy or desire to change. These statistical analysis tests all served the purpose of identifying positive attributes and any barriers or areas of improvement needed for the course.
CHAPTER 4

ADOLESCENTS’ SELF-EFFICACY TOWARD HEALTHY LIFESTYLE BEHAVIORS AFTER ATTENDING A SCHOOL-BASED INTERVENTION COURSE FOCUSED ON PHYSICAL ACTIVITY AND HEALTHY EATING

4.1 Abstract

Introduction: School-based intervention programs focusing on teaching students how to make lifestyle modifications to increase their physical activity and make better diet choices may prevent the continuing growth in numbers of adolescents with obesity. Students in these programs must have a high positive self-efficacy toward adhering to healthy lifestyle behavior choices for the programs to be successful. Students who develop a good sense of self-efficacy after the implementation of this intervention program will have the ability to maintain the lifestyle choices they make toward improving their eating habits and physical activity.

Purpose: To determine the change in self-efficacy toward healthy lifestyle behaviors of students enrolled in a summer physical education program aimed at increasing both physical activity and healthy choices.

Methods: Subjects included 82 high school students, ages 13-18, living within the Central Ohio city limits. Students were given pre- and post-tests on self-efficacy toward healthy lifestyle behaviors at the beginning and end of the course.
**Results:** Self-efficacy towards physical activity, nutrition choices, social pressure, and positive activities showed a significant increase from the pre- to post-test (p<.05). The first measure of total self-efficacy in physical activity subscale had the highest mean score of 71.9% in the pre-test and 78.9% in the post-test indicating that the students’ have a high level of confidence in their ability to do physical activity. The second measure of total self-efficacy in nutrition choices subscale showed the greatest improvement by having a mean of 65.1% in the pre-test and a 78.0% in the post-test showing a 12.9% difference. The third measure of total self-efficacy in social pressure had a mean of 61.7% in the pre-test and had a mean of 74.2% in the post-test. The fourth measure of total self-efficacy in positive activities subscale had a mean of 67.3% in the pre-test and had a mean of 74.0% in the post-test.

**Conclusions:** The results of this study showed that a student’s self-efficacy toward healthy lifestyle behaviors increases in relation to nutrition, physical activity, social pressure, and positive activities with the implementation of a wellness-based school program.

**4.2 Introduction**

Obesity and overweight have become serious health concerns in children and adolescents. *Healthy People 2010* identified overweight and obesity as one of ten leading health indicators and called for a reduction in the proportion of children and adolescents who are overweight or obese; however, the United States has made little progress toward the target goal \{1\}.

School-based weight loss intervention programs are a proven site for obesity prevention programming for adolescents that focus on lifestyle modifications. More
research has shown that settings such as schools and after-school programs are ideal for reaching children and adolescents to promote healthy eating and physical activity \(^2\).

School-based weight loss intervention programs focusing on lifestyle modifications are especially beneficial in high school students, as diet and exercise becomes more their choice than the parents’. Weight loss prevention programs offered through schools also provide an environment that encourages support from their peers, which is an important predictor of how capable students feel about learning.

One factor in the success of school-based weight loss intervention programs to improve healthy behaviors is to improve their self-efficacy toward behavioral control of healthy lifestyles. Students must first believe they are capable to achieve a healthy lifestyle, or a strong positive self-efficacy in healthy choices. According to Bandura’s theory \(^3\), self-efficacy is a person’s judgment of his or her ability to cope effectively in a situation, which, as an integrative cognitive-social learning framework, has been proven effective in a variety of treatment contexts. It can also be defined as the belief in one’s capabilities to achieve a goal or an outcome \(^4\).

As more weight loss intervention programs are being implemented in schools, health professionals and teachers need to consider the student’s level of self-efficacy as a predictor of successful outcomes. Students can better apply their knowledge when they feel capable about learning and achieving goals. Persons with a good sense of self-efficacy in positive lifestyle modifications will stay on task longer and will give more effort to the change. Self-efficacy can be improved by providing the opportunity to allow students to make healthy lifestyle choices on their own. A primary concern with regard to performance of health-promoting dietary behaviors is sheer persistence in the face of
obstacles including stressful or tempting situations. Persons with a stronger self-efficacy in positive lifestyle modification will stay on task longer and will give more effort to the change. Therefore, it is important to measure self-efficacy pre- and post- all behavior modification activities to determine if students’ belief in their capacity to succeed at lifestyle behavioral changes improves with the program. Thus, the purpose of this study was to determine the change in self-efficacy toward healthy lifestyle behaviors of students enrolled in a summer physical education program aimed at increasing both physical activity and healthy dietary choices.

4.3 Methods

Background

A wellness-based healthy lifestyle course was designed to focus on the key dietary and physical activity habits targeted in the prevention and management of metabolic syndrome. The goal of this program was to provide adolescents with an opportunity to enroll in a school-based summer physical education course that promotes a healthy lifestyle. The summer wellness program was created to be offered at a Central Ohio High School, and a partnership was created with the School of Health Sciences at a Midwestern University and the School District. The school district included over 4.000 students across all high schools in the district, with approximately 600 students that participate in the summer physical education program.

The course was developed to include activities that would increase a student’s self-efficacy toward healthy lifestyle behaviors. The four approaches used to develop self-efficacy include enactive mastery (practice), modeling, social persuasion, and physiological arousal. Table 4.1 provides examples of classroom activities that
demonstrate these four principles of self-efficacy improvement techniques. For example, enactive mastery occurred through a grocery store tour. Students were given the opportunity to go out on their own in a social atmosphere to utilize their capabilities of making healthy lifestyle behaviors by choosing nutritious options. Also, an example of physiological arousal was the cooking demonstration on quick ways to make a healthy snack and a taste test comparing healthier snacks with the unhealthier options.

Subjects

The initial pilot course was offered to any high school student living in the city limits as a summer physical education course to emphasize physical activity, healthy eating, and emotional well-being. The number of students enrolled in the course was 93, ages 13-18 years. Of the 93 students enrolled in the course, 82 participated in the study and returned signed parental permission forms.

<table>
<thead>
<tr>
<th>Self-Efficacy Principle</th>
<th>Classroom Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enactive Mastery</td>
<td>Grocery Store Tour</td>
</tr>
<tr>
<td>Modeling</td>
<td>Group activities. Example: making a poster as a group on ways to help prevent chronic health conditions through diet choices and physical activity.</td>
</tr>
<tr>
<td>Social Persuasion</td>
<td>Made learning environment fun by having taste testing and various interactive group activities. Students worked together and provided encouragement. They saw each other succeeding so they knew they could as well.</td>
</tr>
<tr>
<td>Physiological Arousal</td>
<td>Focus groups discussing students’ peer pressures and how they can overcome those barriers.</td>
</tr>
</tbody>
</table>

Table 4.1: Approaches Used to Develop Self-Efficacy
The project included three studies: students’ knowledge of nutrition before and after the implementation of this course, students’ self-efficacy toward healthy lifestyle behaviors before and after the implementation of this course, and the parents’ perception of healthy lifestyle behaviors. This manuscript will describe the research regarding self-efficacy toward healthy lifestyle behaviors.

Course Implementation

The pilot course was conducted as a four hour, summer physical education course held five days a week for three weeks in June. Each day was comprised of two main components – physical activities including strength and conditioning, aerobics, and stretching; and nutrition exercises including cooking demonstrations, grocery store tours, and various in-class activities. At the end of the program, students developed a personal contract and stated his or her nutrition and physical activity goals to help them lead a healthier lifestyle.

Three dietetics graduate students taught the nutrition education component of the course. The physical activity component was taught by three physical education instructors. Undergraduate health sciences students were also a part of the course by participating in a summer service-learning project to assist the School District faculty with the class.

Instrumentation

A pre- and post-survey instrument was developed to measure self-efficacy toward healthy eating and physical activity, and changes in diet and physical activity habits before and after the implementation of this course.
Twenty-one items were developed to measure self-efficacy toward healthy eating and physical activity (Table 4.2). The specific areas of self-efficacy to be measured included physical activity (six items), nutrition choices (six items), social pressure (five items), and positive activities (four items). Items relating to physical activity were matched to the educational components of the course. Also, improving physical activity was one area that was emphasized by the instructors as being a lifestyle modification that the students could make towards living a healthier, more full-filling life so it was beneficial to assess each student’s self-efficacy in that area. Nutrition choices are one of the lifestyle modifications being taught that students could make towards improving their overall quality of life. Therefore, it was important to determine if the students’ self-efficacy changed before and after the implementation of this course.

Items relating to self-efficacy toward social pressures were important to include because adolescents at this age have many outside forces such as friends and the media that could influence their decisions and choices towards making the effort to improve their well-being. It was beneficial to evaluate their self-efficacy toward these pressures to see if this course really improved their self-efficacy toward physical activity and eating habits through lifestyle modifications.

Items on self-efficacy toward positive activities were significant to this study because it was important to see if the students were willing to make positive choices towards living a healthier lifestyle and to see if they could overcome difficult obstacles that could get in the way.

Each individual item had a scale determining self-efficacy ranging from 0 to 100% with 0% meaning no chance at all that they felt confident doing the activity, 25%
indicating a slight chance, 50% indicating a 50/50 chance, 75% indicating a good chance, and 100% indicating completely certain they felt confident accomplishing the goal. Each student rated the item based on their own self-efficacy level.

After the questionnaires on self-efficacy were completed and collected, the responses were coded and entered into SPSS 15.0 for statistical analysis. The instrument was tested for reliability by utilizing Chronbach’s Alpha for internal consistency. This test determined how well each subscale measures a single construct. The higher the Chronbach’s Alpha value indicates that subscale has more consistency.

A paired samples t-test was used to assess the mean percentages between the subscales in the pre- and post-tests. All the subscales showed a statistical significance of <.05 indicating that there was a significant difference between the subscales in the pre- and post-tests.

4.4 Results

The results included 82 high school students with ages ranging from 13 to 18 years. Chronbach’s Alpha was used to test for internal consistency in each subscale. The physical activity subscale had a Chronbach’s Alpha of .82, the nutrition choices subscale had one of .69, the social pressure subscale had one of .71, and the positive activities subscale had one of .68. The physical activity subscale showed the most consistency in the responses to the questions.

The first measure was the mean total self-efficacy in physical activity. From the sample (n=82), the mean score was 71.9% in the pre-test and 78.9% in the post-test.
indicating that the students’ self-efficacy increased from the pre to post-test. Item mean scores ranged from 58.8% to 77.7% in the pre-test, and they ranged from 68.0% to 86.3% in the post-test.

The second measure was the mean total self-efficacy in nutrition choices. From the sample (n=82), this subscale showed the greatest improvement by having a mean of 65.1% in the pre-test and a 78.0% in the post-test showing a 12.9% difference. Item mean scores ranged from 54.3% to 75.0% in the pre-test, and they ranged from 65.3% to 93.5% in the post-test.

The third measure was the mean total self-efficacy in social pressures. From the sample (n=81), this subscale had a mean of 61.7% in the pre-test and had a mean of 74.2% in the post-test. Item means scores ranged from 48.4% to 72.3% in the pre-test, and they ranged from 59.7% to 81.7% in the post-test.

The fourth measure was the mean total self-efficacy in positive activities. From the sample (n=81), this subscale had a mean of 67.3% in the pre-test and had a mean of 74.0% in the post-test. Item scores ranged from 52.4% to 79.6% in the pre-test, and they ranged from 61.0% to 86.4% in the post-test. The results also showed that physical activity had the highest mean score of 71.9% and 78.9%.

A paired samples t-test was also calculated to determine the mean percentages of each question between the pre- and post-tests in the areas of physical activity, nutrition choices, social pressures, and positive activities. Each individual question showed an increase in the mean score from the pre-test to the post-test indicating that overall each student’s confidence level increased with each question. The questions in the social
pressure and nutrition choices subscales showed a higher increase in the mean score between the pre- and post-test going along with the higher difference in mean percentages when analyzed as a group.

4.5 Discussion

The purpose of the study was to analyze if an adolescent’s self-efficacy or attitude towards healthy eating and physical activity changed with the implementation of a school-based summer physical education program targeted at lifestyle changes through nutrition education and physical activity. The results of this study showed that a student’s level of confidence increases in relation to nutrition, physical activity, social pressure, and positive activities with the implementation of a wellness-based school program.

The results of this study indicated that the students taking this course felt most confident with questions relating to physical activity. The reason for this could be because they are most familiar with physical activity. They have been exposed to it all their life through physical education classes beginning in grade school. Also, many high school students are involved with sports. The results also showed that there was a change from pre- to post-test. The students’ self-efficacy increased from before the implementation of this course to after in relationship to increasing their physical activity, making healthier food choices, not feeling pressured to perform the same activities as their peers, and doing positive activities that lead to a healthier lifestyle.

The questions relating to nutrition choices had a lower mean score in comparison to physical activity and positive activities as the students may not have had as much
exposure to nutrition knowledge in school or their choice of nutritious foods was limited at home. Also, it may be that the students did not control what they ate because their parents determined their diet choices.

The lowest scores related to social pressures. The reason for this could be that peer pressure is a big issue with adolescents of this age. Often times, adolescents are trying to adjust to high school and are trying to make new friends so they are doing everything they can to fit in with their peers.

The nutrition choices and social pressure subscales showed the greatest improvement between the mean scores from the pre-test to the post-test. One reason for the nutrition choices subscale to increase so much could be that this course allowed the students to learn that healthy eating can be a realistic lifestyle change that they can easily do on their own. The social pressure subscale may have significantly increased because the students learned that making healthy lifestyle decisions can benefit them in the long run and make them a healthier person so peer or social pressure should not be the barrier. This course stressed making realistic lifestyle behavior changes that are accustomed to a teenager’s way of life and that could have raised the students’ attitude about a healthy lifestyle and their ability to overcome barriers. The grocery store tour helped the students overcome the barrier of making healthy food choices by having them go out on their own and pick out foods that are healthier. Also, the cooking demonstration showed that the students could make a tasty healthy snack on their own.

Previous research has shown self-efficacy as a theoretical model to help students in the classroom believe in themselves. Students with a strong sense of efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated {4}. To
have long-term results, students need inner motivation and confidence to overcome barriers. The students enrolled in this course had their self-efficacy level increase indicating that what they learned in the course will hopefully have long-term effects.

Previous research suggests self-efficacy as a tool for preventative behaviors relating to other health concerns among adolescents and children. One study showed that preadolescent girls who reported higher perceived self-efficacy reported healthier eating habits {12}. The results from this study showed that nutrition education on healthier eating habits did increase the students’ self-efficacy level. Both studies show that self-efficacy is highly related to how adolescents learn and maintain behavior changes. Knowledge mediates between social influences and self-efficacy in the prediction of health-related behaviors such as eating habits.

Health professionals and clinicians can use this data and apply it in their practice. Many professionals are teaching new behavior modifications or theories to individuals and are not getting desirable results. They need to start looking at one’s self-efficacy and incorporating it into the knowledge that he or she is teaching. Determining an individual’s inner confidence to want to change or overcome obstacles is the first step in making lifestyle modifications or learning new concepts. More research is showing that the theoretical model of self-efficacy is being introduced in teaching strategies. Self-efficacy should also be introduced in health care practices. In order for an individual to make a lifestyle modification to help prevent the metabolic syndrome, self-efficacy should first be established to allow the individual to feel he or she can commit to the lifestyle modification. Health professionals and clinicians need to increase the opportunities for enactive mastery, modeling, social persuasion, and physiological
arousal to establish strong self-efficacy in their students and patients. There are many intervention programs available to help prevent health conditions such as obesity and the metabolic syndrome, but they need to start utilizing the theory of self-efficacy as a tool in implementing the program in order to produce desirable long-term results.

There were some limitations to this study. First of all, in order to produce even more reliable and valid results, a bigger sample size needs to be used. This sample size was only 82 participants. Including students from different locations of schools would be beneficial. For example, include a school from an inner-city area and a school located in a rural area. It would help to identify if any trends and relationships with the different locations had an affect on the results. Also, a post-test was only conducted immediately after the pilot program. It would be beneficial to conduct a post-test after three months or even six months from the start of the course. Also, demographics were not included in this study. It would have been helpful to see if the results had any correlation to the demographic data of the subjects.
<table>
<thead>
<tr>
<th></th>
<th>Mean %</th>
<th>N</th>
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<tbody>
<tr>
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<td>82</td>
<td>21.8</td>
<td></td>
</tr>
<tr>
<td>Physical activity 2</td>
<td>78.9</td>
<td>82</td>
<td>14.6</td>
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<td>82</td>
<td>17.7</td>
<td></td>
</tr>
<tr>
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<td>82</td>
<td>14.1</td>
<td>-8.6</td>
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<tr>
<td>Social pressure 1</td>
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<td>81</td>
<td>20.2</td>
<td></td>
</tr>
<tr>
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<td>74.2</td>
<td>81</td>
<td>16.3</td>
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<td>Positive activities 1</td>
<td>67.3</td>
<td>81</td>
<td>22.3</td>
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</tr>
<tr>
<td>Positive activities 2</td>
<td>74.0</td>
<td>81</td>
<td>20.0</td>
<td>-3.4</td>
</tr>
</tbody>
</table>

1= Pre-test  
2= Post-test  
Scale: 0% No Chance At All, 25% A Slight Chance, 50% A 50/50 Chance, 75% A Good Chance, 100% Completely Certain  
*Std. Deviation= a measure of the variability of a population. A low standard deviation indicates that the data points tend to be very close to the same value (the mean); while high standard deviation indicates that the data are spread out over a large range of values.  
*t= used to test the null hypothesis that the average of the differences between the series of paired observations is zero

Table 4.2: Mean Self-Efficacy in Physical Activity, Nutrition Choices, Social Pressures, and Positive Activities Between Pre-and Post-Test
CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

5.1 Recommendations

With the prevalence of obesity and the metabolic syndrome steadily increasing in the adolescent population, many approaches have been examined in helping combat this epidemic. The approach that this study explored was a wellness-based school program focusing on lifestyle modifications through physical activity and nutrition education. More specifically, it examined whether an adolescent’s self-efficacy would increase in relation to physical activity, nutrition, social pressure, and positive activities with the implementation of this wellness-based course. The results showed that the students’ self-efficacy levels increased from the pre-test to the post-test. From this data, it is reasonable to recommend that creating an intervention program designed to be offered in school and targeted towards making healthy lifestyle changes is appropriate in raising adolescents’ confidence to overcome barriers dealing with physical activity and nutrition choices.

Health professionals and clinicians can use this data and apply it in their practice. Many professionals are teaching new behavior modifications or theories to individuals and are not getting desirable results. They need to start looking at one’s self-efficacy and incorporating it into the programs that they are teaching. Many times, clinicians and
health professionals go immediately into teaching a new concept without really evaluating where the adolescent is in terms of their motivation and attitude to want to learn the new concept.

Research shows that the type of learning environment and teaching method can improve self-efficacy in the classroom \cite{4}. One study showed that collaborative learning showed a positive correlation with increased self-efficacy in a student sample. Cooperative learning structures, in which students work together and help one another, also tend to promote more positive self-evaluations of capability and higher academic attainments than do individualistic or competitive ones. Students who learn with a peer group will also show increased self-efficacy because as they see each other succeeding, they know they can. Another method teachers can utilize is to make the learning environment in their classroom fun so students are not fearful and their anxiety about their capabilities decreases. This will allow them to feel more capable about learning. It is helpful to include variety with lessons and to include interactive activities. This study included a grocery store tour to help students learn how to look at nutrition labels and make healthy decisions on their own. Also, the students were able to track their own food intake and exercise at home which allowed them to feel more capable about making healthy lifestyle behaviors independently. This study succeeded at improving students’ self-efficacy toward healthy lifestyle behaviors because it included a realistic approach. Each nutrition education and physical activity lesson had specific, attainable goals that the students could accomplish towards a healthier lifestyle. Also, this program allowed
the students to work together as a team to help them learn about healthy eating and physical activity which increased their self-efficacy due to the collaborative learning approach.

It is recommended that the concept of self-efficacy should be improved by the activities planned in a clinical setting and community-based setting such as the classroom. Both of these areas can greatly benefit from the theory of self-efficacy as a tool in making modifications towards a healthier lifestyle.

5.2 Conclusions

Results from this study suggest that a wellness-based school program focusing on lifestyle modifications through nutrition education and physical education does increase an adolescent’s level of self-efficacy toward healthy lifestyle behaviors. More specifically, the results showed that the students’ self-efficacy level increased the most from the pre-test to post-test with nutrition choices and social pressures. This means that this program helped the students overcome the barriers of making poor lifestyle choices just because their peers are making these choices because they want to fit in. The data shows that utilizing an intervention technique like this wellness-based program does have positive results in raising an adolescents’ drive to want to make healthier lifestyle choices to help prevent obesity.

Adolescents who are learning new lifestyle modifications and learning to incorporate them into their lives need to assess their inner drive to accomplish these tasks. In order for the modifications to have any long-term effect, adolescents need to have an inner confidence or desire to want to make the change. They need to have the ability to overcome obstacles that get in their way and not let these setbacks prevent them
from accomplishing their goal. Students with a strong sense of efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated [4]. This strong self-efficacy will allow them to increase their physical activity and make better nutrition choices. Not only will they be able to make wiser choices, but also they will be able to maintain these goals for a long amount of time. The students enrolled in this course had their self-efficacy level increase indicating that what they learned in the course will hopefully have long-term effects.

5.3 Future Research

Future research conducted in this area should include assessments on more categories relating to self-efficacy. The questionnaire should have more subscales on more dimensions of self-efficacy. These dimensions could include items relating to chronic disease prevention, pressures from society such as the media, and long-term behaviors. Adolescents deal with a multitude of issues relating to lifestyle behaviors and future studies should focus on evaluating more dimensions. Also, future research should implement this program over the course of a whole semester instead of just three weeks. It would be beneficial to see the results of this type of program over a longer time period. Also, it would be helpful to see if the trends would be the same over a whole semester as compared to three weeks, and if the students would be able to maintain the effort put in to making lifestyle modifications over a longer period of time.

Another possibility for future studies would be to offer a wellness-based program focusing on lifestyle modifications through nutrition education and physical activity in different settings. This course was offered as a high school summer physical education option, but it might be beneficial to offer it in other settings. It could be offered to
adolescents at a community recreation center, a hospital, or even at a health clinic. Maybe offering this program as a completely voluntary option could mean adolescents really want to change their lifestyle behaviors so they might produce different results as compared to an involuntary option where maybe their parents made them take it.

Future studies could also include an adult population compared to an adolescent population with the implementation of this program. Overweight and obesity are also highly prevalent in adults so the implementation of this course could help adults prevent this condition from occurring. It would be interesting to identify the trends with self-efficacy in adults compared to adolescents after the implementation of this wellness-based course. Also, it would be beneficial to see if an adult’s inner confidence to want to change would increase after this course or if it would decrease or stay the same.

5.4 Limitations

There were some limitations to this study. First of all, in order to produce even more reliable and valid results, a bigger sample size needs to be used. The sample size included in this study was 82 participants. More adolescents need to be included in this study to allow for possibly less error. Including students from different locations of schools would be beneficial. For example, include a school from an inner-city area and a school located in a rural area. It would help to identify if any trends and relationships with the different locations had an affect on the results. It might also be beneficial to include a wider range of adolescents. Including adolescents in junior high school is important because metabolic syndrome is also increasing in youth of this age. It would be helpful to evaluate trends in self-efficacy relating to lifestyle modifications with this population as well as those in high school.
One limitation of this study is that demographic data on the subjects was not included. Identifying the demographics of the subjects might have led to a correlation or trend in the results. Also, including demographic data allows the researchers to get a clearer picture of the results because it provides them with the ability to relate specific results with certain demographic characteristics of the subjects.

Another limitation to this study was a post-test was only completed at the end of the course. It would be beneficial to conduct a post-test six weeks after the implementation of the program and three months after the program. By doing this, researchers would be able to see if this type of program has any long-term effects. It is important in this type of research to see if adolescents are able to maintain their lifestyle modifications. Also, it is important to evaluate to see if their level of self-efficacy has changed at all since the end of the program. Determining if their self-efficacy level has decreased at all might mean that they do not have the drive to want to make the changes anymore. Identifying these trends at an extended time period instead of just at the end of the program could help future programs modify their techniques to allow for extended positive results.
LIST OF REFERENCES


The purpose of this questionnaire is to help evaluate and gain insight into how confident you feel in each of the following situations relating to nutrition and physical activity.

**Instructions:**
Using the **KEY** provided below, please respond to each item by circling the appropriate percent provided under each statement. When reading each statement, think of your own confidence and ability in each of the situations.

**KEY:**
No chance at all – 0%
A slight chance – 25%
A 50/50 chance – 50%
A good chance – 75%
Completely certain – 100%

How confident do you feel that you could:

1. Walk 30 minutes every day?
   0%  25%  50%  75%  100%
2. Eat at least 5 fruits and vegetables a day?
   0%  25%  50%  75%  100%
3. Choose an item off the menu at a restaurant your friends would not choose?
   0%  25%  50%  75%  100%
4. Order a side salad, fruit cup, or baked potato if they are available instead of french fries or onion rings?
   0%  25%  50%  75%  100%
5. Do 30 minutes of continuous activity 5 times a week?
   0%  25%  50%  75%  100%
6. Read a nutrition label and understand what it means?
   0%  25%  50%  75%  100%
7. Ride a bike for 30 minutes every other day of the week?
   0%  25%  50%  75%  100%
8. Resist eating when reading?
   0%  25%  50%  75%  100%
9. Order a smaller, healthier portion at a fast food restaurant even though the larger portion is the same price or only 10 cents more?
   0%  25%  50%  75%  100%
10. Run with a friend or a dog around the block 3 times a week?
   0%  25%  50%  75%  100%
11. Resist eating when there are many different kinds of food available?
   0%  25%  50%  75%  100%
12. Resist eating when playing video games?
   0%  25%  50%  75%  100%
13. Follow the recommendations and portions of MyPyramid?
   0%  25%  50%  75%  100%
14. Resist eating just before going to bed?
   0%  25%  50%  75%  100%
15. Play soccer, volleyball, or any outdoor sport after school?
   0%  25%  50%  75%  100%
16. Drink a non-caloric drink (water, diet soda) instead of a high calorie drink (regular soda, slushy, Frappucino or Mocha Latte from Starbucks)?
   0%  25%  50%  75%  100%
17. Resist eating even when you feel it’s impolite to refuse a second helping?
   0%  25%  50%  75%  100%
18. Know what foods contain a lot of cholesterol, fat, and sodium?
   0%  25%  50%  75%  100%
19. Choose not to eat when you are not hungry, but all your friends are choosing to eat?
   0%  25%  50%  75%  100%
20. Do 15 minutes of vigorous activity 3 times a week?
   0%  25%  50%  75%  100%
21. Resist eating when watching tv?
   0%  25%  50%  75%  100%