

An Examination of Obesity and Activity Rates in Tennessee

High School Students

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Abstract

Obesity rates in the United States as well as the rest of world have been on the rise. These rates do not only include adults, but they include children as well. It was the purpose of this study to determine how significant this rise was within the children of Tennessee. Not only were obesity levels observed in this study, but so was the physical activity, screen time, and attendance in Physical Education classes. Research was gathered on the benefits of physical activity on the body as well as effects that obesity has on the body. The Youth Risk Behavior Surveillance System (YRBSS) was utilized to gather the data for this study. The YRBSS is a study sent home to students that ask questions about their alcohol use, tobacco use, physical activity, and nutritional intake. The participants in this study were selected by the YRBSS, and it was sent to every county in Tennessee. There was one weighted county from the YRBSS and it was Shelby County. The data that was selected for this study was taken from answers to the surveys that were taken in 2007 and 2017. The data that was utilized for this study was a combination of the male and female answers to the questions. An independent sample t-test was used in order to determine if there was a significant difference in the answers from 2007 and 2017.

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Chapter 1

Introduction

Society today seems to be losing ground on the issues of this world. It seems that something new or unheard of shows itself in the news. Although people cannot expect the unexpected, it becomes difficult to fight off one issue right after another. In some cases, issues do not get solved, or they get put on the backburner. Issues such as the fight on obesity, seem to be a never-ending battle despite new trends in diets and physical activities. Stores try to include items in their store with the label “organic” on there, but due to their more expensive nature, people may not be able to afford such items. While diet and food can be an interesting road to observe, this study surrounds around physical activity trends.

While society appears to push being physically active through gym memberships or ads on television, the opposite is occurring. Again, people have the same issues of affordability when it comes to being more physically active. Even though people could go outside and simply take a walk or a hike, businesses tend to push being in an area to lift weights. Obesity is not only affecting adults, but it is affecting children as well. This study in particular looks at data received from the Youth Risk Behavior Surveillance System (YRBSS). The data in this survey includes several different data points such as tobacco use, alcohol use, and dietary behaviors; however, the data that will be reviewed in this study focuses on children’s physical activity both in school and at home.

Statement of the Problem:

Physical activity is something that provides several different benefits. Not only can physical activity help lower a person’s weight, but it can also control hormone levels within the

body. Physical activity can also provide a person with higher energy levels throughout the day (Barton, 2012). Despite some current trends to become more physically active, the obesity levels within the United States of America and the world seem to be increasing (Trnkova, 2019). In today's society, people have the mentality and the lifestyle that they constantly need to be on the go. This lifestyle not only limits the amount of time that someone can be active, but it also limits what people seek in the form of nutrition. Unfortunately, this mentality and lifestyle has extended beyond the lives of adults, and it has reached children. Even now obesity rates of children have started to increase (Barton, Darling, Schultz, Trnkova, Ying-Xiu), and this is being reflected within schools as well. Physical activity has decreased in schools due to the increase of emphasis on achievement levels, and children are seeing the consequences of this. Instead, there should be a push for more physical activity within schools so that there can be a positive trend towards the fight on obesity.

Purpose of the Study:

The purpose of this study is to investigate rates of obesity and activity in high school aged children in Tennessee. Since schools have put such an emphasis on student achievement, it should be shown through research that student achievement levels can be increased through the use of physical activity (Alpkaya, Amis, Ericsson, Gao, Kantomaa, Snyder), and how an increase in physical activity can affect the body. This study will utilize the Youth Risk Behavior Surveillance System (YRBSS) to show that the amount of time and number of PE classes people have in high school has decreased. This study will also use the YRBSS to show that activity at home has decreased. These data points, as well as other research used, will show that schools should be implementing more Physical Education classes in the curriculum.

Significance of the Study:

Obesity is an epidemic in the modern world and it can cause a multitude of health risks for people (Barton, Gunter, Trnkova). By increasing physical activity within school systems, students can begin to fight the war on obesity, and it will extend into their lives as adults. As students continue to practice good physical activity habits, obesity rates can begin to decrease. Not only will students be able to improve their physical nature, but their academic performance will improve as well (Alpkaya, Ericsson, Kantomaa).

Chapter 2

Introduction

The world, along with the United States of America, has seen a dramatic rise in obesity throughout recent years. Even with all the craze of becoming healthier and exercising more, obesity rates have continued to rise. More frightening than this is the fact that childhood obesity rates have risen as well. What can be done about the epidemic of obesity? One thing that can happen is for our schools to take obesity rates more seriously. Schools have reduced a student's time in Physical Education despite these numbers being on the rise, and this needs to change. If student's habits of exercise are changed from the beginning, they will be much more likely to continue this path as they get older. While reviewing literature related to the topic of increased Physical Education classes in schools, four main themes continued to present themselves that can help schools along the way. These four themes involve raising school awareness of the growing obesity rate, awareness of the effects of physical activity on the body, academic benefits of physical activity, and the importance of collaborative efforts in lesson planning and school administration.

Increased Childhood Obesity Rates

Obesity is known as being a disease that includes eating too many calories and not exercising enough (Barton, 2012). Due to this excessive eating and lack of exercise in the United States and around the world, obesity has continuously risen over the past several decades (Barton, 2012; Ying-Xiu, 2012). Researchers have investigated the issues surrounding obesity in general, but they have started to focus on childhood obesity as a whole. In their research, it was found that many adults that currently struggle with obesity used to struggle with obesity in their childhood as well. Many adults currently struggle with diabetes and heart issues because of their childhood obesity (Barton, 2012; Trnkova, 2019; Ying-Xiu, 2012).

Researchers have investigated several different options as to why obesity has risen over the years. Yes, the term “obesity” refers to the increase in eating and decrease in physical activity, but researchers have attempted to look beyond this (Barton, 2012; Schultz, 2018). According to Schultz, it could mean that the community that a person lives in will direct what that person does for food and exercise (Schultz, 2018). Another researcher attributed the rise of obesity to increased stress in the home or added stressors from parents in the household. Since children deal with added stress in different ways, one of those ways in particular is an increase in unhealthy foods (Darling, 2019). According to Darling (2019, pg. 66), “*Assessing and intervening with parent-adolescent conflict to facilitate positive parent adolescent interactions may decrease adolescent restrained eating*”.

Since obesity has risen around the world due to a variety of reasons, several cities and regions around the world have made it a priority to fight the epidemic. As such, plans have been made or suggested within communities of various levels in order to aid in the fight against obesity (Darling, 2019; Schultz, 2018; Trnkova, 2019; Ying-Xiu, 2012). Darling (2019) used

research of the home as a set community to focus on the epidemic of obesity. When the research was done, it was found that when stressors or conflicts in the home increased, children within the household tended to eat randomly (Darling, 2019). Based upon other research on communities as a whole, it was found that there was not a real distinction as to whether rural or urban communities had worse eating habits. This same researcher found that when communities were further north in the country that there were more health programs for communities to be a part of (Schultz, 2018). According to Schultz (2018, pg. 100), “*Preventing childhood obesity may require different levels of capacity building and funding for rural and suburban communities, in different regions of the country and in different ethnic and racial groups*”. Research was also conducted in the Slovak Republic where childhood obesity was on the rise, and it was suggested that schools should put on emphasis on ways to be active outside of school grounds (Trnkova, 2019). China was also a focal point of community change when it was suggested that teenagers should be active for at least an hour every day. When the suggested time was given for teenagers to do, there was a decrease in overall weight (Ying-Xiu, 2012).

Effects of Physical Activity on the Body

Obesity can cause a lot of different health problems for individuals. It has been researched that health problems can extend beyond the physical attributes (Barton, 2012; Gunter, 2012; Kliziene, 2018; Trnkova, 2019; Vittrup, 2018; Ying-Xiu, 2012) and into mental health issues as well (Alpkaya, 2019; Darling, 2019; Ericsson, 2017; Olive, 2019; Piche, 2019). The lack of physical activity can cause obesity, but it affects much more than the outward appearance of a person. Instead, the lack of physical activity can cause things such as diabetes, atherosclerosis, osteoporosis, kidney disease, and even cancer (Barton, 2012; Gunter, 2012). Research has also found that they decrease in physical activity can even cause things as serious

as a stroke (Kliziene, 2018). Also, according to Kliziene (2018, pg. 725), “*Poor scoring in physical fitness is an important factor for cardiovascular disease, type 2 diabetes, hypertension, stroke*”.

Researchers such as Alpkaya, Darling, Ericsson, Olive, and Piche have suggested that mental health should also be taken into account when discussing physical activity. One main facet of mental health to understand is social anxiety. Students go to schools where image is very important, and there have been situations where students have been ridiculed due to obesity and lack of exercise. It is because of this ridicule that students feel less than others at school, and they can even go as far as changing their lifestyle because of this ridicule (Alpkaya, 2019). Another facet of mental health to understand is stress, and this can be particularly in the home. According to Darling (2019), stress within the home can cause children to have odd and sporadic eating habits, which can then lead to obesity.

One facet of mental health is depression. Depression is viewed as a serious attribute among children. According to Piche (2019, pg. 114), “*Depressive symptoms and disorders in children are associated with a lower quality of life and with global functioning difficulties and disabilities, and they are an important risk factor for suicidal behaviors*”. When Physical Education classes are implemented within a school, it allows for children to remain more active. As children become more active, it can help girls become more satisfied with their bodies, but it also allows for boys to become less depressed (Olive, 2019).

Many researchers have focused on the negative aspects of physical inactivity (Barton, 2012; Gunter, 2012; Kliziene, 2018; Trnkova, 2019; Vittrup, 2018; Ying-Xiu, 2012). Other researchers, however, have focused on the good of what can come from being physically active (Gunter, 2012; Kliziene, 2018; Olive, 2019; Ying-Xiu, 2012). Gunter, for instance, focuses her

research on the effects physical activity can have on the skeletal system. Her work consists of putting children on high impact programs as well what kind of load a child's body can handle. *"We have found that exercise-induced bone mass gains and structural adaptations in early childhood are maintained through puberty and into adulthood"* (Gunter, 2012). Kliziene focused on the implementation of an eight-month long program for first graders to participate in, and she found that their fitness levels were increased (Kliziene, 2018).

Physical Activity Improves Student Achievement

Researchers tend to spend a lot of their time discussing what happens to both the brain and the body when obesity is a factor (Barton, 2012; Gunter, 2012; Kliziene, 2018; Olive, 2019; Piche, 2019; Trnkova, 2019; Vittrup, 2018; Ying-Xiu, 2012). Academic achievement is something else that researchers observe when discussing obesity and physical activity. All of these same researchers looked at the cognitive abilities of students that are more physically active as well. Programs were implemented by these researchers in order to determine whether academic achievement was influenced both on a state scale but also on a simple classroom scale as well (Alpkaya, 2019; Amis, 2012; Ericsson, 2017; Gao, 2017; Kantomaa, 2016; Snyder, 2017).

One program that was implemented in a classroom was the school integrated video games within their lessons. It was viewed that video games cause children to be more sedentary, but by applying something that they like to do, their physical activity was increased as well. This same study found that students wanted to participate more due to the increase in technology, and therefore their grades rose (Gao, 2017). As previously viewed in the study regarding social anxiety, academic achievement was studied as well. In this same study, it was found that when students' social anxiety decreased, their academic achievement rose as well (Alpkaya, 2019).

According to Alpkaya (2019, pg. 710), *“Under the light of these findings of literature, it can be said that an increase in the participation of children and adolescents in physical activities will positively affect their academic achievement”*.

In other studies done with in the classroom, the focus was on skills used within physical activity that might affect a student’s academic achievement (Ericsson, 2017; Kantomaa, 2016). One of these studies used several facets of academic achievement, but it mainly focused on a student’s cognitive capabilities. It was found in this same study that students that were more physically active in and out of school had higher cognitive abilities and scored higher on achievement tests (Ericsson, 2017). In the other study, the same findings showed up, but the researchers mainly focused on using questionnaires to determine a student’s physical activity levels. Once the activity levels were found, they were cross-referenced with academic achievement levels for the same students (Kantomaa, 2016). *“A high level of physical activity, with a reasonable amount of time spent in sedentary behavior, such as media use, was associated with good academic achievement, whereas a high level of sedentary behavior, especially TV viewing, was associated with lower levels of academic achievement in adolescence”* (Kantomaa, pg. 438). On the opposite spectrum, it was found that students who lived more sedentary lives had lower achievement scores (Kantomaa, 2016).

The larger-scale research across the states of Mississippi and Tennessee was used to determine whether policy was being utilized for physical activity programs. These states found that the implementation of policy became difficult when there was pushback from the administration at a particular school (Amis, 2012). There were schools, however, that Amis (2012) observed that did implement policy. The schools that implemented more physical education courses had higher academic achievement scores (Amis, 2012). According to Amis

(2012), “*increased activity time in general and instructional time spent in PE in particular does not diminish, and can even enhance, academic performances*”, and he determined with his fellow researchers that despite difficulties for implementation, that schools should still attempt to have more physical education classes.

Collaborative Efforts

One way that schools can be helpful in regards to pushing physical activity as well as Physical Education classes, is by working as a part of a team. This can mean working with integrating lessons as well as working with students with special needs. As observed previously, childhood obesity rates are on the rise (Trnkoya, 2019), and schools need to find ways in which to fight this increase by including every student in physical activity both within physical education class and the general classroom. Some of the things that Physical Education teachers can do to assist this would be to reach out to teachers of the general classroom, special education teachers, and administration for help (Klein, 2015; Nihiser, 2013; Sluijs, 2010; Snyder, 2017).

Physical activity has a misconception that it can only be utilized within a gym setting, but there are benefits to using it within the general classroom as well. As such, Physical Education teachers should reach out to these teachers in order to help them implement physical activities into their work (Snyder, 2017). The same can be said for general classroom teachers reaching out to Physical Education teachers in order to incorporate their material within the gym. For example, if a mathematics teacher were to implement some form of physical activity within their classroom, then “*Purposeful movement may be an effective teaching strategy for improving on-task behavior and increasing PA resulting in satisfactory learning*” (Snyder, pg. 82). As such, physical activity will not only help prevent obesity, but it will also help students be more successful within the general classroom.

Physical Education teachers should also reach out to special education teachers (Klein, 2015). In an attempt to include everyone within a school environment, teachers need to be open to having students with disabilities within the classroom, and gym class is no exception to this. Students with disabilities already struggle with things besides physical activity, and they should not need to feel like they cannot accomplish something in the gym (Klein, 2015). As such, Physical Education teachers should reach out to special education teachers so that they can learn about the students, and in doing so they can come up with activities specifically for them. *“Physical Education has holistic benefits for all students, including those with disabilities, as it supports the development of three critical learning areas: cognitive, psychomotor, and affective”* (Klein, 2015).

Finally, reaching out to administration can help Physical Education teachers accomplish their goal of more physical activity within a school (Sluijs, 2010). There can be difficulties in a school system when something new is trying to be implemented, but through the help of administration, new forms of physical activity programs can be put into place. Since childhood obesity is on the rise and Physical Education is decreasing (Nihiser, 2013), PE teachers need all the help they can get in order for students to stay physically active. When things get difficult in regards to implementation (Sluijs, 2010), PE teachers cannot be the only ones that push for a healthier school, and it is for this reason that they should reach out to administration to help them. As PE teachers begin to ask for help from classroom teachers, special education teachers, and administration, schools can become more active one class session at a time.

Conclusion

There are several factors to think about when attempting to implement more Physical Education classes into a curriculum. The path may be difficult due to county, state, or school

policies already set in place, but the benefits of physical activity outweigh the negatives of obesity. Schools must also think about ways in which to include everyone within the Physical Education classes, but children with disabilities will also benefit from being physically active. When schools are able to see the implications of childhood obesity, they will notice that students will not only be affected now but into their adulthood as well. When used on a large-scale, physical activity can not only benefit our students, but also our society.

Chapter 3

Methods

Population:

The population for my research will include High School students that live in the state of Tennessee. The ages of these students will range anywhere from 15-18 years old, and these students will be between 9th and 12th grade. The areas in which this study will take place vary, and they will include rural and urban areas across Tennessee. In regards to the students taking the survey, there was only one county that was weighted towards a large urban school district, and this was Shelby County in West Tennessee.

Data Collection:

The data for my research has already been collected with the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS was created in the early 90s in order to follow different risk behaviors that can lead to death or disability in a teen's future. There are multiple behaviors observed in the YRBSS, and they include alcohol or drug use, tobacco use, sexual behaviors and violent behaviors. Other behaviors included in the YRBSS that will be the focus of this research study are unhealthy dietary behaviors and inadequate physical activity. The YRBSS

has been revised throughout the years, and the most recent survey was reported in 2017. An important aspect of the YRBSS is that there were surveys included within it that came from the CDC to measure physical activity.

Research Questions:

RQ1: Is there a significant difference between 2007 and 2017 in Tennessee childhood obesity rates?

RQ2: Is there a significant difference between 2007 and 2017 in the rate of Tennessee children that are in the category of “overweight”?

RQ3: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that have more than 3 hours of screen time (not including television) per day?

RQ4: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that watch more than 3 hours of television per day?

RQ5: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children who were not physically active at least 60 minutes per day on all 7 days of a week?

RQ6: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that did not go to a PE class on all 5 days of an average school week?

Data Analysis:

Since a great deal of this research involves changes in obesity rates as well as the decrease in physical exercise, a longitudinal data analysis will need to be done. The information found from the YRBSS will provide opportunities to compare data from previous years to the most recent survey completed in 2017. When a longitudinal data analysis is utilized, trends can

be observed from the previous years, and the research will either show a positive or negative trend towards physical inactivity and unhealthy eating habits.

Data will be input into SPSS (Grad Pack 26) for analysis. An independent samples t-test will be used to test for significance in the above research questions. Results will be provided in Chapter 4.

Chapter 4

Data Analysis and Findings

The purpose of this quantitative study was to determine whether rates of obesity and time spent in different physical/non-physical activities have changed significantly over time between the years 2007 and 2017. In order to research this, data was pulled from the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS is a survey that started in the early 90s and has been kept up to date. The last survey that was taken was in 2017. Several factors are taken into account by this survey including alcohol use, nutritional information, drug use, and physical activity. In regards to the research in this paper, six factors were observed to determine whether there was a relationship between obesity rates and physical activity. Those factors are listed below:

Research Question 1: Is there a significant difference between 2007 and 2017 in Tennessee childhood obesity rates?

Research Question 2: Is there a significant difference between 2007 and 2017 in the rate of Tennessee children that are in the category of “overweight?”

Research Question 3: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that have more than 3 hours of screen time (not including television) per day?

Research Question 4: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that watch more than 3 hours of television per day?

Research Question 5: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children who were not physically active at least 60 minutes per day on all 7 days of a week?

Research Question 6: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that did not go to a PE class on all 5 days of an average school week?

Demographic Data

The population for this study was determined by the information that was available from YRBSS. The survey that was done by YRBSS spanned from 1997 to 2017, but the information that was available for this study will span from 2007 to 2017. The survey was sent out across the entire country, but for this research, data were observed for the state of Tennessee. The sample sizes will be discussed in detail when the research questions are answered due to the variety of students that answered each question. The YRBSS survey was sent out to both middle school and high school, but for this research, data is observed at the high school level.

Findings

Research Question 1

Research Question 1: Is there a significant difference between 2007 and 2017 in Tennessee childhood obesity rates?

H₀1: There is no significant difference between 2007 and 2017 in Tennessee childhood obesity rates.

An independent-samples t-test was conducted to evaluate whether the average response to the question of obesity differed significantly between students who responded to the survey in 2007 and those that responded in 2017. The average response to obesity was the test variable and the grouping variable was the year of the response. The test was significant, $t(3811) = 2.39$, $p = .017$. Therefore, the null hypothesis was rejected. The number of students who responded that they were obese differed significantly between 2007 ($M = 16.8$, $SD = 0.93$) and 2017 ($M = 20.5$, $SD = 1.24$).

Table 1.

Summary of YRBSS answer to the question of obesity

Variable	Year	M	SD	df	t-value	Sig. (2-tailed)
Obesity Rates	2007	16.8	.93	3811	2.39	.017*
	2017	20.5	1.24			

***indicates significance at $p < .05$**

Research Question 2

Research Question 2: Is there a significant difference between 2007 and 2017 in the rate of Tennessee children that are in the category of “overweight?”

H₀2: There is no significant difference between 2007 and 2017 in Tennessee children who reported themselves as being “overweight”.

An independent-samples t-test was conducted to evaluate whether the average response to the question of being overweight differed significantly between students who responded to the survey in 2007 and those that responded in 2017. The average response to being overweight was the test variable and the grouping variable was the year of the response. The test was not significant, $t(3811) = .53$, $p = .597$. Therefore, the null hypothesis was not rejected. The number of children who responded that they were “overweight” did not differ significantly between 2007 ($M = 18.1$, $SD = .98$) and 2017 ($M = 17.4$, $SD = .89$).

Table 2.

Summary of YRBSS answer to being overweight

Variable	Year	M	SD	df	t-value	Sig. (2-tailed)
Overweight	2007	18.1	.98	3811	.53	.597
	2017	17.4	.89			

***indicates significance at *p<.05**

Research Question 3

Research Question 3: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that have more than 3 hours of screen time (not including television) per day?

H₀3: There is no significant difference between 2007 and 2017 in Tennessee children who reported as having more than 3 hours of screen time (not including television) per day.

An independent-samples t-test was conducted to evaluate whether the average response to the question of having more than 3 hours of screen time (not including television) per day differed significantly between students who responded to the survey in 2007 and those that responded in 2017. The average response to having more than 3 hours of screen time (not including television) per day was the test variable, and the grouping variable was the year of response. The test was significant, $t(4022) = 10.84$, $p = <.001$. Therefore, the null hypothesis was rejected. The number of students who responded that they had more than 3 hours of screen time (not including television) per day differed significantly between 2007 ($M = 23.1$, $SD = 1.08$) and 2017 ($M = 44.4$, $SD = 1.66$).

Table 3.

Summary of YRBSS question of screen time (not including television)

Variable	Year	M	SD	df	t-value	Sig. (2-Tailed)
3 hours of screen time (not including television)	2007	23.1	1.08	4022	10.84	<.001*
	2017	44.4	1.66			

*indicates significance at $*p < .05$

Research Question 4

Research Question 4: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that watch more than 3 hours of television per day?

H₀4: There is not significant difference between 2007 and 2017 in Tennessee children who reported as having more than 3 hours of television per day.

An independent-samples t-test was conducted to evaluate whether the average response to the question of having more than 3 hours of television time per day differed significantly between students who responded to the survey in 2007 and those that responded in 2017. The average response to having more than 3 hours of television time per day was the test variable and the grouping variable was the year of the response. The test was significant, $t(4035) = 6.05$, $p = <.001$. Therefore, the null hypothesis is rejected. The number of children who responded that they had more than 3 hours of television time differed significantly between 2007 ($M = 38.3$, $SD = 2.03$) and 2017 ($M = 23.7$, $SD = 1.27$).

Table 4.

Summary of YRBSS question of Television time

Variable	Year	M	SD	df	t-value	Sig. (2-tailed)
3 hours of television	2007	38.3	2.03	4035	6.05	<.001*
	2017	23.7	1.27			

*indicates significance at $*p<.05$

Research Question 5

Research Question 5: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children who were not physically active at least 60 minutes per day on all 7 days of a week?

H₀5: There is no significant difference between 2007 and 2017 in the percent of Tennessee children who were not physically active for at least 60 minutes per day on all 7 days of a week.

An independent-samples t-test was conducted to evaluate whether the average response for the survey question of daily physical activity differed significantly between students who responded to the survey in 2007 and those that responded in 2017. The average response to the question of daily physical activity was the test variable and the grouping variable was the year of the response. The test was not significant, $t(4031) = 0.74$, $p = .460$. Therefore, the null hypothesis was not rejected. The number of students who responded that they were physically active on all 7 days did not differ significantly between 2007 ($M = 75.7$, $SD = 1.22$) and 2017 ($M = 74.4$, $SD = 1.27$).

Table 5.

Summary of YRBSS question of physical activity on all 7 days of the week

Variable	Year	M	SD	df	t-value	Sig. (2-tailed)
Not physically active for At least 60 minutes On all 7 days of the week	2007	75.7	1.22	4031	0.74	.460
	2017	74.4	1.27			

***indicates significance at *p<.05**

Research Question 6

Research Question 6: Is there a significant difference between 2007 and 2017 in the percent of Tennessee children that did not go to a PE class on all 5 days of an average school week?

H₀6: There is no significant difference between 2007 and 2017 in the percent of Tennessee children that did not go to PE class on all 5 days of an average school week.

An independent-samples t-test was conducted to evaluate whether the average response for the survey question of daily PE class attendance differed significantly between students who responded to the survey in 2007 and those that responded in 2017. The average response to the question of daily PE class attendance was the test variable and the grouping variable was the year of the response. The test was not significant, $t(4022) = 1.04, p = .300$. Therefore, the null hypothesis was not rejected. The number of students who responded to daily PE class attendance did not differ significantly between 2007 ($M = 69.6, SD = 3.65$) and 2017 ($M = 73.8, SD = 1.65$).

Table 6.

Summary of YRBSS question of daily PE attendance

Variable	Year	M	SD	df	t-value	Sig. (2-tailed)
Did not go to PE on all 5 Days of the school week	2007	69.6	3.65	4022	1.04	.300
	2017	73.8	1.65			.300

***indicates significance at *p<.05**

Summary

In this chapter, the Youth Risk Behavior Surveillance System (YRBSS) data from across the state of Tennessee was analyzed. The YRBSS has sent out a survey and collected data since 1997 that covers various topics from alcohol use, drug use, physical activity, obesity, and nutritional intake. For this particular research study, data were analyzed from 2007 to 2017. Six questions from this survey were analyzed to determine whether there was a significant difference in responses from 2007 to 2017. Based upon the research questions, there was a significant difference in childhood obesity rates from 2007 to 2017, screen time of more than 3 hours (not including television) per day from 2007 to 2017, and television time of more than 3 hours per day from 2007 to 2017. Therefore, there was not a significant difference in the percentage of students that said they were overweight from 2007 to 2017, students that were not active for 60 minutes per day from 2007 to 2017, and students that did not attend PE class every day of the school week from 2007 to 2017.

Chapter 5

Findings, Recommendations, and Implications

The purpose of this study was to determine whether there was a relationship between obesity and physical activity between the years 2007 and 2017. The data from this study was taken from the Youth Risk Behavior Surveillance System (YRBSS), and there were six research questions associated with the YRBSS. The research questions were to determine differences in obesity rates, “overweight” rates, screen time (excluding television), television time, daily physical activity, and Physical Education attendance between 2007 and 2017. The results were analyzed and examined using independent samples t-test. This chapter contains a summary of the findings, interpretation of the findings, limitations of the study, and recommendations moving forward.

Interpretations of the Findings

As previously discussed in Chapter 2, obesity rates are on the rise in the entire world both in adults and in children, and there are ways in which to fight this growth. Based upon the data analyzed from the YRBSS, this study shows that this is true in the state of Tennessee. The data also showed that there was not a significant difference in the attendance of PE classes or the daily activity of Tennessee children, but there is still a rise in obesity. As discussed in Chapter 2, obesity can lead to a multitude of adult diseases, and can even lead to diseases while they are still youths. Diseases are not the only issues though. A student's mental health can also be affected by obesity. All in all, if childhood obesity is not discussed as an issue, then it can lead to adult obesity as well as a lingering issue.

While the data of this study did not show a significant difference in the daily physical activity or the daily attendance of PE classes, obesity levels are still on the rise. Although this data did not prove to be significant, screen time proved to be a significant issue. As mentioned in Chapter 2, whenever sedentary practices were up, obesity climbed and student achievement fell. Since there was such a significant difference in screen time usage between 2007 and 2017, there may be ways to incorporate screen time into PE classes. Students are attached to their screens, and if this is something that they enjoy doing, then attaching it into their curriculum will cause more excitement for their class. This will be discussed later in this chapter, but one of the limitations about this data was that it did not look into the participation of the students in PE class. The data collected only observed their attendance, but if their participation is low, then screen time being incorporated into lesson could help see this participation number go up. When participation goes up, there is a potential for obesity levels to fall.

Limitations of the Study

As mentioned earlier in this chapter, one of the limitations of this study was the fact that data was not observed or collected by the YRBSS for the students' participation in PE classes. Another factor that was not collected for this research was nutritional factors. Obesity has many factors, and one of them happens to be nutrition. The YRBSS has data about nutritional meals that the Tennessee children consume, but this research did not include that information.

Recommendations for Further Research

Future research can focus on the nutritional affects on obesity. While this research explored physical activity issues in Tennessee children, nutrition is a big factor to a child's health, and further research can show trends in what Tennessee children consume. Future research can also factor in a child's participation in PE class. Students may go to class, but there could be research that explores how active they are while they are in class. I could have expanded my own research to explore this data. I could have done some qualitative research to local schools and find out their participation levels.

Conclusion

Obesity is on the rise in the nation. This has been shown through past research and this current study. Adults are being affected as well as children, and something should be done about it. Obesity not only affects children now, but it can affect them into their adult lives. It can cause future diseases along with mental issues as well. The purpose of this study was to find answers to the problem via past research, but also to look at current data to see any noticeable trends. Obesity has shown a rise as has the number of students that have more than 3 hours of screen time per day. There has been a noticeable trend away from television and toward tablets, phones,

and video games. This has led to more sedentary lives even though they have remained active every day of the week and are going to PE class as well. Teachers need to find ways to incorporate more movement into the classroom to help fight childhood obesity. They cannot control what they do once they leave school grounds, but if they can have them more active in the classroom, then it can be the first step in the fight against obesity.