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Evaluation of a Public School District Nutrition Education Program in Southern California's San Diego County

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This is to certify that the doctoral dissertation by

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Abstract

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Abstract

The prevalence of obesity among children and adolescents has markedly increased in several developed countries in recent years. Researchers have examined different factors that contribute to overweight and obesity in children and adolescents but have not fully explored the psychological impact of obesity on this population. The effectiveness of nutrition education programs in addressing the effects of obesity is also understudied. The primary purpose of this evaluative case study was to examine the impact of the Harvest of the Month nutritional educational program, which was adopted by San Diego County public schools in 2005, on the nutritional habits and psychosocial well-being of primary school students in the school system. A mixed-methods design was used. The COVID-19 pandemic made it difficult to recruit participants; ultimately, data were collected from a parent/caregiver, a teacher, and a lead kitchen worker in one San Diego area school district. The parent/caregiver and teacher completed a self-administered survey whereas the lead kitchen worker participated in an interview. The findings provide some insight on the value of introducing a variety of fruits and vegetables early in childhood and on involving parents and caregivers in nutrition education programs but are not generalizable due to the small sample size. Despite a limited sample, this study adds to the existing body of knowledge regarding the importance of implementing nutrition education programs in schools to combat childhood obesity. Using the study findings, policy makers may be able to promote positive social change by enhancing programs dedicated to nutrition education to subsequently improve psychological well-being among overweight and obese children and adolescents.

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Chapter 1: Introduction to the Study

The World Health Organization (WHO; 2016) identified childhood obesity as one of the most severe public health challenges of the 21st century, defining it as a global epidemic. Childhood obesity is prevalent in the United States. According to the Centers for Disease Control and Prevention (CDC; 2021a), childhood obesity rates continued an upward trend from 1966–1970 when less than 5% of U.S. children and teens collectively were classified as obese. Since 1999, children meeting the standards for being overweight and obese in the United States tripled to 18% (CDC, 2021a; Ogden et al., 2016). As of 2014, an estimated 41 million children under the age of 5 had been identified as overweight and obese in the nation (WHO, 2016).

The consequences of childhood obesity are concerning. The CDC (2022) noted that overweight and obese children are more susceptible to illness and disease, such as heart disease, type 2 diabetes, asthma, and mental health problems, and are at higher risk of being overweight and obese adults. Similarly, Reece et al. (2016) found that severe obesity was associated with a higher risk of developing psychiatric conditions. Furthermore, a high body mass index (BMI) was associated with lower body image and self-esteem. Kelly et al. (2016) also identified a link between a high BMI and poor psychosocial well-being. Karnik and Kanekar (2011) found that children who were obese had a more inferior self-image, which had the potential to exacerbate psychological health problems that could last well into adulthood. These later mental health comorbidities had the potential to become financially and emotionally burdensome later

in life, particularly when they were compounded with medical expenditures related to obesity-related ailments (Halfon et al., 2013).

Ineffective school-based nutrition programs may be an influencing factor for overweight and obesity rates among children. Gupta et al. (2012) suggested that efforts aimed to combat childhood obesity focus on problem areas, such as (a) sedentary lifestyle, (b) consumption of less nutrient-dense foods, and (c) consumption of sugary beverages. Despite knowledge of problem areas, childhood obesity continues to be a severe problem in the United States, and a gap in the literature exists in evaluating (a) school-based physical education, (b) community support, (c) parental involvement, (d) safe ways for children to walk or bike to school, (e) promotion of resistance training exercise, (f) encouragement of healthy eating at home and school, (g) nutrition education in school, (h) parental modeling of healthy examples, (i) regular health checkups, and (j) long-term campaigns aimed at intervention (Gupta et al., 2012).

The primary purpose of this evaluative case study was to examine the effectiveness of a nutrition education program in San Diego County in improving the nutritional habits and psychosocial well-being of primary school students. In this study, I evaluated the Harvest of the Month (HOTM) nutrition education program. Dissemination of the findings of this study to the California Board of Education might assist officials and other stakeholders in selecting nutrition education policies for improvement and restructuring to influence positive social change. In reviewing the literature, I found limited research available about the impact and efficacy of national nutritional education on U.S. children's psychosocial health and well-being; this study may contribute helpful

knowledge. By addressing the problem of overweight and obesity early with nutrition education programs at school, there is the potential that adverse effects could be avoided altogether later in life.

In this chapter, I provide an overview of the study I conducted to address the research problem. The chapter includes background information, the problem and purpose of the study, the research questions (RQs) and hypotheses, and overviews of the theoretical framework and nature of the study. Definitions of key terms and discussion of the study's assumptions, scope and delimitations, limitations, and significance are also in Chapter 1.

Background

The CDC (2021b) defined childhood obesity as occurring when adolescents had a BMI at or above the 95th percentile for children and teens of the same age and sex. The CDC further stipulated that children were overweight when their BMI fell at or above the 85th percentile of other children of similar sex and age. Other researchers identified that children who were obese had a more inferior self-image than other children, which had the potential to exacerbate psychological health problems that could last well into adulthood (Karnik & Kanekar, 2011). Kulkarni et al. (2015) and Rankin et al. (2016) echoed that the most common mental health comorbidities associated with childhood obesity were depression, anxiety, lower self-esteem, eating disorders, and body image issues.

Although previous researchers have determined that childhood obesity increases the risk of obese children developing mental health comorbidities that linger well into

adulthood, there is a gap in the literature on how to combat the lasting impact of obesity in childhood and adolescence. Rankin et al. (2016) asserted that further research is needed to determine the relationship between eating pathology and symptoms of depression, anxiety, and lower self-esteem. Additionally, Rankin et al. recommended that future researchers focus on the relationships between body image, childhood obesity, and psychosocial functioning. Kulkarni et al. (2015) noted that previous researchers found evidence of a significant relationship between mental health outcomes and childhood obesity. Despite this, Kulkarni et al. noted a need to evaluate further whether dietary and nutritional interventions influenced the development of mental health comorbidities. Finally, Assar (2014) asserted that much of the preexisting research regarding mental health outcomes because of obesity focused on adult perspectives, negating the perspectives of adolescents. To this end, Assar recommended that researchers focus on the mental health of obese adolescents to bridge the gap in understanding within the literature. As such, I attempted to fill the gap in the literature by focusing on the psychological impact of obesity on children and adolescents.

A lack of physical activity, poor diet, and excessive media consumption have contributed to child and adolescent obesity in the United States (National Institutes of Health, 2013). Research shows that access to healthy foods and nutrition education has the most influence on combating childhood obesity (Hard et al., 2014). Nutrition education is considered a cost-effective means to improve health and instill healthy eating habits (Hard et al., 2014). According to the CDC (2021c), parents could also aid in this

effort by reducing the use of media devices and following appropriate nutritional guidelines such as those of the American Academy of Pediatrics.

To combat the factors of childhood obesity, some scholars have also noted the effectiveness of federally mandated programs in curbing the upward trend of childhood obesity (Kristensen et al., 2014). One example of such as program is the Office of Disease Prevention and Health Promotion (2016), which recommended that children have at least 60 minutes of physical activity daily. In another effort, the United States Department of Agriculture (USDA; 2016) introduced MyPlate, which replaced the USDA's MyPyramid Guide. MyPlate focuses on variety, amount, and nutrition using a visual reminder of a plate. MyPlate emphasizes what a person should eat for their age, sex, and level of physical activity, which allows for individuals who are more active to consume more calories while staying within a particular caloric range. Furthermore, school leaders have gotten involved in the efforts against childhood obesity by instituting programs that are aimed at healthy eating and exercise. Specifically, leaders of a public school district within San Diego County began implementing nutrition education aimed at increasing access to fruits and vegetables through school menu programs, increasing consumers' preference for fruits and vegetables, increasing the consumption of locally grown food items, increasing participation in daily physical activity, understanding the importance of daily physical activity, and expanding familiarity with California-grown fruits and vegetables.

In this study, I sought to address the gap in the literature by evaluating an existing program (i.e., HOTM) currently implemented in a public school district within San Diego

County. I sought to expand knowledge on dietary habits of children, their consumption of locally grown food items, their nutritional education, and the components of the HOTM nutritional educational program. Disseminating the findings to the public school district may allow district leaders to examine the effectiveness of the program and make changes as needed. Results may support or refute the need for the continued support of the identified program.

Problem Statement

Policy makers and other stakeholders have instituted nutrition programs at both the federal and local levels to curb the upward trend of childhood obesity in the United States (Kristensen et al., 2014). One such program was implemented within the San Diego County public school district to address the increasing rates of obese and overweight children and decrease risk factors associated with obesity, such as medical and mental health problems. The goal of this evaluative case study was to identify the positive and negative aspects of the HOTM nutritional educational program and its impact on the psychosocial well-being of primary school students. This study may clarify improvements that could be initiated to make nutrition education reform programs more effective in San Diego County. The need for this study was apparent from data collected by the University of California, Los Angeles Center for Health Policy Research (Chaparro et al., 2012), which revealed that 11.1% of children in California aged 2–11 and 30.7% of children aged 12–17 were overweight and obese. Additionally, researchers have found higher rates of psychosocial distress among individuals who are obese (Van Zutven et al., 2015).

I designed this study to examine the positive and negative aspects of the HOTM nutritional educational program and its impact on the nutrition education and psychosocial well-being of primary school students in San Diego County. The findings of this evaluation study could clarify changes for present and future programs that may make it possible to develop a sustainable nutrition education program that would improve the value of nutrition education in San Diego County and subsequently address psychological well-being among obese children and adolescents. I also wanted to contribute to the literature on obesity, nutrition, and psychological well-being.

Researchers have recommended studies of the relationships between body image, childhood obesity, and psychosocial functioning. Kulkarni et al. (2015) noted that previous researchers linked a significant relationship between mental health outcomes and childhood obesity. Despite this, they found a need to further evaluate whether dietary and nutritional interventions influenced the development of mental health comorbidities. Finally, Assar (2014) asserted that much of the preexisting research regarding obesity and mental health outcomes focused on adult perspectives, negating the perspectives of adolescents. To this end, Assar recommended that researchers focus on the mental health of obese adolescents to bridge the gap in understanding within the literature. As such, I attempted to fill the gap in the literature by focusing on the psychological impact of obesity on children and adolescents.

I did so by studying the effectiveness of a school-based nutrition program. Specifically, the leaders of a public school district within San Diego County began implementing nutrition education aimed at increasing access to fruits and vegetables

through school menu programs, increasing consumers' preference for fruits and vegetables, increasing the consumption of locally grown food items, increasing participation in daily physical activity, understanding the importance of daily physical activity, and expanding familiarity with California-grown fruits and vegetables.

This study may further the literature on the dietary habits of children, their consumption of locally grown food items, their nutritional education, and the components of the HOTM nutritional educational program. The findings may also help district leaders to evaluate the effectiveness of the program. Results may support or refute the need for the continued support of the identified program.

Purpose of the Study

The primary purpose of this evaluative case study was to examine the effectiveness of a nutrition education program in San Diego County and its impact on the nutritional habits and psychosocial well-being of primary school students. I sought to highlight the positive and negative aspects of the HOTM nutrition education program and suggest improvements that could be implemented to make nutrition education reform policies more effective. At the statewide level, dissemination of study findings to the California Board of Education might assist policy makers in restructuring California nutrition education policy to influence positive social change through the quality of nutrition education. A tertiary purpose was to contribute to the limited research available on the psychosocial well-being impact and efficacy of national nutritional educational change in the United States.

Research Questions and Hypotheses

The RQs and hypotheses for this study were as follows:

RQ1: To what extent is the HOTM nutritional program in San Diego meeting its objective of influencing the nutritional choices and psychosocial well-being of primary school students through the provision of quality nutrition education?

$H_0$1: The HOTM nutrition education program in San Diego County did not meet its objective of influencing the nutritional choices and psychosocial well-being for primary school students through the provision of a whole person quality nutrition education.

$H_1$1: The HOTM nutrition education program in San Diego County met its objective of influencing the nutritional choices and psychosocial well-being of primary school students through the provision of a whole person quality nutrition education.

RQ2: What follow-up programs and steps can be initiated to assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County?

RQ3: What steps can be taken to make nutritional education reform programs more effective so that the national nutrition educational needs and psychosocial well-being of the United States can be successfully achieved?

Theoretical Framework

The theoretical framework of this study was Engel's (1980) biopsychosocial model. The biopsychosocial model holds that disease and health can be impacted by

biological, psychological, and sociocultural factors (Miles, 2013). This perspective was a shift from examining disease exclusively because of biological factors and placed increased significance on the impact psychological and sociocultural factors had on disease (Engel, 1980). The biopsychosocial model allows researchers to examine disease outcomes from a perspective of biology, psychology, and sociology. Using the model, researchers have studied an array of influences on childhood obesity and identified the need for effective interventions on a biopsychosocial level (Gupta et al., 2012; Keast et al., 2013). This model was applicable to evaluating the HOTM public school district nutrition education program in San Diego County because the literature showed that childhood obesity involved biological (genetics), psychological (well-being), and sociological (nutritional habits, parental influences) factors (Batko et al. (2020). Researchers have suggested further research on interventions from a multifaceted treatment modality (Hard et al., 2014). The biopsychosocial model examines disease outcomes from a multifaceted perspective (genetics, mental health, and environment; Engel, 1980). The model was therefore appropriate for this research.

Nature of the Study

I used a mixed-methods approach for this investigation. A mixed-methods approach was well suited for the study because the research was intended to objectively gauge HOTM's success in achieving the program's intended outcomes by assessing differences in quantifiable variables (Howell, 2013). Additionally, a mixed-methods design was appropriate for the study because it may aid in assessing whether the findings related to the RQs warrant further research (Plonsky & Gass, 2011).

I used an evaluative case study approach because it is typically used within the educational context to assess the effectiveness of initiatives (Zainal, 2007). Stake (1995) posited that researchers typically used evaluative case study questions to explore the effectiveness of a program or its components. I sought to examine the extent to which the HOTM program influenced change in participants, whether program components were effective and how so, and how effectiveness could be increased. For the quantitative portion of the study, I used archival data to examine the results previously collected that evaluated HOTM. Paired sample *t* tests were used to assess differences in knowledge before and after the HOTM nutritional program.

The evaluative case study approach incorporated my feedback regarding the phenomenon of interest (McDonough & McDonough, 1997). I used this approach to bolster the study's findings by exploring program participants' perceptions regarding how the program functioned and its influence. I analyzed these data to develop an assessment of the program's effectiveness. Using the case study as an evaluative approach, I engaged with participants to study the HOTM program through multiple data sources (Yin, 1989). In gathering qualitative and quantitative data, I explored the HOTM program in the realist and relativist paradigms, combining my judgments with participants' perspectives (Yin, 1994).

Definitions

Childhood obesity: As defined by the CDC (2021a), having a BMI at or above the 95th percentile for children and teens of the same age and sex. Childhood obesity is one

of the most severe public health challenges of the 21st century, and the WHO (2016) has declared it to be a global epidemic.

Dietary practice: In this study, current nutrition practices of U.S. children who are obese and overweight. For example, high caloric foods and beverages are associated with unhealthy dietary practices (Gupta et al., 2012).

Dietary preference: Infants and children develop a dietary preference in early childhood. When children are not introduced to various fruits and vegetables, they are less likely to select these items when given a choice (Gupta et al., 2012).

Farm Fresh to School: FFTS engages California local farmers to partner directly with local school districts to provide locally grown produce in season at affordable prices (California Department of Public Health, 2014).

Harvest of the Month (*HOTM*): A nutrition education program in several California school districts. It began as a program focused on low-income students' nutritional needs. In 2005, the California Department of Public Health expanded the program throughout the state, making it standardized, cost-effective, and replicable (California Department of Public Health, 2014).

Let's Move!: A childhood obesity intervention, created by former First Lady Michelle Obama, that was designed to develop a healthier generation of children in the United States (Let's Move!, n.d.). Like other programs, Let's Move focused on early childhood to carry practices into later childhood. Additionally, the program aimed to educate parents, create environments that fostered healthier eating, and provide access to healthy and affordable food while encouraging children to be more physically active.

Locally grown foods: Foods that are grown in California and distributed in local schools as part of the HOTM nutrition education program (California Department of Public Health, 2014).

My Plate: A U.S. government nutrition intervention that reminds individuals to develop a healthy eating style (USDA, 2016). It emphasizes the idea that "everything you eat and drink matters (USDA, 2016, para, 1)." Individuals are encouraged to focus on variety, amount, and nutrition.

Nutrition education: The concerted effort of various organizations to adequately inform the general public about the importance of eating healthy, exercising, and understanding the harmful effects of eating unhealthy foods (Waterlander et al., 2013). Many organizations use nutrition education to combat obesity because nutrition education is rooted in evidence and has been approved as a cost-effective means to improve health and instill healthy eating habits (Hard et al., 2014).

Physical activity: Body movement by skeletal muscles requiring the expenditure of energy (WHO, 2017). Regular and adequate physical activity has been linked to improved physical health and weight control (WHO, 2017).

Psychosocial well-being: Positive social and psychological functioning with others; it includes mastery experiences and personal growth (Burns, 2016).

Assumptions

In conducting this study, I had several assumptions. First, I assumed that the study population has some students who suffer from childhood obesity and that interventions aimed at combating obesity through HOTM are effective. Another assumption was that

children within the school district comprised a specific population subset. According to the WHO (2016), an estimated 41 million children under 5 are obese or overweight globally.

Next, I assumed that participants would be honest when answering questions about the HOTM program and when providing demographic information. Additionally, there was an assumption that data collected through the nutrition education program would be reliable. Last, there was an assumption that the tools for the evaluation of nutrition education and for measuring program participants' quality of life were valid.

Scope and Delimitations

I focused on evaluating an existing nutrition education program. The study was based on a theoretical foundation, and the primary focus was reported data from cafeteria staff, teachers, and parents/guardians.

Limitations

I examined only one public school district nutrition program within San Diego County. The results are not generalizable beyond the population used within this study. I did not consider individual differences within the population of children evaluated; however, they could play an essential role among the sample population. Demographic locations were not considered in the study; however, I recognize that the environment might be an essential factor. Last, the responses were based on self-report data and may be subject to response bias (Althubaiti, 2016).

Significance

Gupta et al. (2012) suggested that to combat childhood obesity, policy makers and other stakeholders need to focus their efforts on the following problem areas: (a) sedentary lifestyles, (b) consumption of less nutrient-dense foods, and (c) consumption of sugary beverages. However, a gap in the literature exists in understanding the current programs that have been implemented and ascertaining their effectiveness. Specifically, knowledge is needed on the effectiveness of these programs in promoting better school-based physical education, community support, parental involvement, safe ways for children to walk or bike to school, resistance training exercise, encouragement of healthy eating at home and school, nutrition education at school, parental modeling of healthy behaviors, regular health checkups, and long-term campaigns aimed at intervention (Gupta et al., 2012). This study is also significant because it provides insight on psychological issues, especially those relating to mental health implications of childhood obesity. Karnik and Kanekar (2011) found that children who were obese had a more inferior self-image, which had the potential to exacerbate psychological health problems that could last well into adulthood. Having a poorer self-image gives rise to mental health comorbidities that have the potential to become financially burdensome later in life, particularly when they are compounded with medical expenditures related to obesity-related ailments (Halfon et al., 2013). By addressing these issues early on with nutrition education programs at school, there is the potential that these adverse effects could be avoided altogether later in life.

Summary

The background information in Chapter 1 established the childhood obesity problem within the United States, with nearly 18% of children meeting the standards for being overweight or obese (CDC, 2021a; Ogden et al., 2016). Policy makers have established federally mandated and local programs to curb the upward trend of childhood obesity (Kristensen et al., 2014). One such program is the HOTM initiative. School leaders implemented HOTM within the public school district in San Diego County to address that school's obesity rates wherein 11.1% of children aged 2–11 and 30.7% of children aged 12–17 were reported as overweight, respectively (Gee et al., 2013). Although school leaders had implemented the program, they had not yet evaluated it. Therefore, the purpose of this quantitative study was to determine the effectiveness of HOTM. Specifically, I examined the dietary habits of children, their consumption of locally grown food items, their nutritional education, and the components of the HOTM nutritional educational program.

In Chapter 2, I review the literature supporting the need for this study. In addition, I examine the essential variables within the study. Chapter 3 provides an extensive overview of the design of the study, the rationale for choosing such a design, and the validity and reliability of the instrumentation and design. Chapter 4 includes a presentation of the findings, with discussions and recommendations presented in Chapter 5.

Chapter 2: Literature Review

Introduction

Childhood obesity is a growing problem within the United States, with nearly 18% of children meeting the standards for being overweight or obese (CDC, 2021a; Ogden et al., 2016). This number has tripled since the 1980s, continuing an upward trend from 1966–1970. During these years, less than 5% of children and teenagers met the criteria for classification as obese (CDC, 2021a). By 1976, the number rose to nearly 10% of children and teenagers, reaching 15% by 1999. Leaders of both the federal and local governments have implemented programs to curb the upward trend of childhood obesity (Kristensen et al., 2014). In San Diego County, policy makers implemented a program within the public school district to address the high rate of overweight and obesity in the system; data indicated that in 2005, 11.1% of children aged 2–11 and 30.7% of children aged 12–17, respectively, were overweight (Gee et al., 2013). Although the school approved the program, the program itself needed an evaluation for it to begin. The purpose of this mixed-methods study was to determine the effectiveness of the nutrition program. To do so, I examined children's dietary habits, physical activity, level of parental involvement, and the effect of longer-term nutrition intervention programs.

In this chapter, I outline the critical variables associated with the research. I surveyed a cafeteria staff member, a teacher, and a parent/guardian to glean answers regarding the program's influence in changing the children's eating habits relative to the

program's goals. Additionally, I examined records and data collected through the nutrition education program to contribute to the findings.

Literature Search Strategy

I obtained the literature for this review by searching library databases. Among the databases and search engines searched, those that generated the most applicable results included Google Scholar, EBSCOhost, ProQuest, Education Resources Information Center, and ProQuest Dissertations & Theses Global. Preference was given to articles that were published within the last 5 years. The search included the following keywords: *childhood obesity*, *childhood obesity interventions*, *nutrition education and childhood obesity*, *psychological effects of childhood obesity*, *psychosocial well-being and childhood obesity*, *childhood nutrition education funding*, *childhood dietary patterns in the United States*, and *childhood socioeconomic status and nutrition education*. I accessed a multitude of other databases in the search process. To find scholarly articles, I selected the peer review feature before performing my database searches.

I reviewed current literature that appeared in many publications, such as the *American Journal Preventive Medicine*, *American Journal of Clinical Nutrition*, *American Journal of Psychiatry*, *International Journal of Preventive Medicine*, and *Journal of the American Medical Association*. Additionally, after identifying principal authors, I reviewed the corpus of their work for other relevant research and works cited by those authors. I also reviewed identified journals with a particular focus on themed issues to identify other relevant work.

Theoretical Foundation

I used Engel's (1980) biopsychosocial model as the study's theoretical framework. Rooted in the scientific method, this model examines disease from a multidimensional perspective to better understand the treatment of disease in individuals. Specifically, the biopsychosocial model (Engel, 1977) was relevant to examining the role of biology, psychology, and sociology in the treatment and intervention of childhood obesity.

Engel (1977, 1980) developed the biopsychosocial model by combining the biomedical and psychosomatic models (the previous treatment models) to understand diseases better. Each model relates to treating disease; however, neither model could capture treatment of disease collaboratively. The previous models of treatment, biomedical and psychosomatic, did not capture the interaction of biology and psychology with intervention and treatment of disease collaboratively. McLaren (1998) argued that both models, biomedical and psychosomatic, "were not amenable to analysis using the methodology of modern science and second empirical research failed to validate crucial elements such as the disease specificity model" (p. 87). Schmidt (2012) reported that the biomedical model treated the disease (biology), while the psychosomatic model treated the psychology (mental) symptoms. However, the models did not overlap and did not consider the sociology (environment) of the person (Engel, 2009).

Engel (2012) sought to treat the person, the disease, and the environment in which the afflicted individual existed, finding that all such factors existed within a continuum of natural systems. The beginning of intervention and treatment of disease emerged through

the work of Engel, who determined people were a byproduct of multiple dimensions: biological, psychological, and sociological. The continuum of natural systems Engel (1980) examined was the hierarchy of natural systems. Examination of the hierarchy implied that individuals are part of multiple systems. In understanding, treating, and relating to individuals, researchers must consider the influence of these systems on the individual (Engel, 1980). Using the hierarchy of natural systems, researchers recognized people as organisms that coexist in multiple systems, and the level of interaction among the systems was not known. However, Engel (1980, 2012) argued that the systems interacted and influenced one another, which was significant to the treatment of a person. The use of the biopsychosocial model broadens the breadth of understanding and the treatment of the individual and the related disease (Borrell-Carrió et al., 2004).

The biopsychosocial model recognizes the individual, emotional, familial, and communal, and biological factors involved in treating disease within a scientific framework (Smith, 2002). Examining causation from this perspective indicated a pathway for practitioners to evaluate disease with a broader lens (Evans et al., 2015). For example, in the case of childhood obesity, the disorder of obesity has persisted despite ongoing biomedical and psychosomatic treatment interventions. In current literature, researchers hailed the biopsychosocial model as the preferred model of treatment to address childhood obesity (Borrell-Carrió et al., 2004; Evans et al., 2015).

Literature Review Related to Key Variables and/or Concepts

Childhood Obesity

During the last 2 decades, global incidences of childhood weight gain and obesity have markedly grown (Halfon et al., 2013; Russell-Mayhew et al., 2012). In 2014, 41 million children under the age of 5 were overweight or obese (WHO, 2016). This number nearly doubled from 21 million children under the age of 5 who were overweight and obese at the beginning of the 21st century (Deckelbaum & Williams, 2001). According to the CDC (2021a), the doubling in the number of children under age 5 with obesity represents a threefold increase in the rate of change in childhood obesity when compared to the CDC's predicted rates in the early 1990s (Deckelbaum & Williams, 2001).

The Obesity Action Coalition reported that obesity is a growing epidemic in the United States, affecting more than 30% of children. It is now the most common chronic disease in childhood, tripling since 1980 (Obesity Action Coalition, 2016). The problem of obesity has led to the development of comorbidities, such as diabetes and hypertension. The CDC (2000a, 2000b) developed growth charts to track the height and weight of girls and boys ages 2–20 (see Appendices A and B).

Obesity in children is determined by BMI, which is based on height and weight according to age group (National Institutes of Health, 2013). Percentiles based on weight-for-age are the current standard measure for tracking growth compared to same-aged peers (Wang & Lim, 2012). Parents and doctors could utilize this method to track and monitor changes in children's weight-for-age. For example, if a child fell into the 65th percentile, this meant that the child's weight-for-age was higher than 65% of children the

same age (Wang & Lim, 2012). The child's doctor may recommend interventions to create a potential upward trend with this known information. If the higher weight-for-age persists over time, the child may classify as overweight or obese. A BMI level at or above the 85th percentile but under the 95th percentile means that a child is overweight, and a BMI level at or above the 95th percentile defines a child as obese (CDC, 2021b). Health care professionals use BMI as a tool to measure adult obesity. Pediatric health care professionals are beginning to utilize BMI in conjunction with weight-for-age percentile charts with children.

Childhood obesity is correlated with a significant number of health problems. Several comorbidities are associated with obesity, such as heart disease, high cholesterol, high blood pressure, diabetes, sleep apnea, poor dental health, and cancer (Obesity Action Coalition, 2016). Chi et al. (2014) examined oral health in children, specifically dental caries, and identified a correlation between obesity and poor oral health. Chi et al. determined that the correlation stemmed from the consumption of sugary beverages, which also led to poor dental hygiene and weight gain among children.

Gupta et al. (2012) determined that the dietary practices and sedentary lifestyles of most children with childhood obesity predisposed the children to obesity-related noncommunicable diseases. Additionally, the researchers found that obesity-related noncommunicable diseases were rising in developing counties. The medical consequences of obesity were insulin resistance, metabolic syndrome, type 2 diabetes mellitus, and raised markers for inflammation. Gupta et al.'s results showed a correlation between obesity and physical and mental health problems. Mental health problems

included poor body image, low self-esteem, social isolation, and stress leading to depression and anxiety.

Gupta et al. (2012) conducted a literature search including the following search terms: childhood obesity, abdominal obesity in children, developing countries, prevalence, and nutritional education. I used CDC (2000a, 2000b) growth charts (see Appendices A and B), International Obesity Task Force cutoffs, and WHO growth charts to identify inclusion criteria for obesity in the study. Gupta et al. identified a high prevalence of obesity in preschool-aged children in developing countries, specifically Uzbekistan (14.4%), Algeria (9.2%), Egypt (8.6%), Argentina (7.3%), and Chile (7.0%). In school-aged children and adolescents, the global prevalence of obesity was 10%. The findings varied among countries from 5.7% in Pakistan to higher than 40% in Mexico (Gupta et al., 2012). Additionally, Gupta et al. found that the prevalence of obesity increased from 4.2% to 6.7% from 1990–2010 and was expected to reach 9.1% in 2020. These rates were universal, applying to both developing and developed countries. In Brazil, rates increased from 4.1% to 13.9%, whereas Thailand increased from 12.2% to 15.6%. One of the most substantial increases was in China, which witnessed an increase from 0.93% to 19.9%. The reasons for this increase consisted of reduced physical activity, increased caloric intake, high socioeconomic status (SES), urbanization, and sociocultural factors, including age, gender, and school meal programs.

Gupta et al. (2012) suggested increases in the following areas: (a) monitoring and surveillance, (b) education, (c) community involvement, (d) monitoring during perinatal and neonatal period, (e) implementation of home and school-based programs, (f) national

health authority oversight, and (g) legislative calls to action could help combat obesity in developing countries. Immediate suggestions for change included encouraging increased physical activity to 45–60 minutes of moderate-intensity daily, better school-based physical education, community support, parental involvement, safe ways for children to walk or bike to school, resistance training exercise, encouraging healthy eating at home, and school, nutrition education in schools, encouragement of parents to set a good example, receiving regular health checkups, and long-term campaign intervention efforts aimed at obesity.

Halfon et al. (2013) had similar findings to those of Gupta et al. (2012) in examining obesity with health problems. Performing a cross-sectional analysis with data from the 2017 National Survey of Children's Health (Child and Adolescent Health Measurement Initiative, 2018), Halfon et al. included results from 43,297 children aged 10–17. Halfon et al. examined the association between weight, general health indicators, psychosocial functioning, and specific health disorders by utilizing a logistic regression model to adjust for sociodemographic factors. The researchers identified that 15% of children in the United States were considered overweight, while 16% were obese. Additionally, obesity rates were 3 times higher for children from lower SES families. Furthermore, rates were twice as high for Black and Hispanic children compared to White children. Children from single-mother families, families with lower levels of educational attainment, younger children, and boys also had higher rates of obesity. Halfon et al. found that type 2 diabetes, hypertension, and various mental health problems were associated with being overweight or obese. Halfon et al.'s findings confirmed

previous studies (Keast et al., 2013; Mayhew et al. (2012) on general health indicators and health-related quality of life. Specific conditions included attention deficit hyperactivity disorder, behavioral problems, asthma, respiratory infection, orthopedic problems, headaches, and ear infections (Halfon et al., 2013).

In 2007–2008, 31.7 % of U.S. children ages 2–19 were overweight, and 16.9 % were obese (Wang & Lim, 2012). Childhood obesity is correlated with health and behavioral health issues that could follow children into adulthood (Keast et al., 2013). According to Keast et al. (2013), children in the United States often lack essential nutrients in their diets, such as dietary fiber, Vitamin D, calcium, and potassium. Additionally, food preference is developed early in childhood, and the establishment of healthier habits earlier on may decrease diet-related chronic disease. Specific vital nutrients are essential in decreasing physical health problems that are comorbid with children being overweight or obese. In their research, Keast et al. were concerned that children were eating too many modest energy foods. The researchers defined modest energy foods as significant sources of energy in children's diets that were not rich in nutrients. Keast et al. examined the dietary practices of children 2–18 during a 24-hour recall collection period utilizing secondary data from the National Health and Nutrition Examination Survey 2003–2006. The researchers examined dietary intake data from 18,7332 participants collected in-person via an automated multiple-pass method.

The USDA (2016) grouped food into 51 categories. Researchers used statistical software for weighing, imputing, and analyzing data. Researchers evaluated the following factors: (a) adjustment for oversampling of selected groups, (b) nonresponse, and (c) day

of the week the interview was conducted (Keast et al., 2013). Keast et al. (2013) identified more than 20 food groups as primary sources of energy for participants. Milk and carbohydrates (e.g., cake, cookies, bread, pie, and pastries) were the highest sources of food intake. Milk was identified as the highest source of protein. Soft drinks or sodas were the highest-ranked carbohydrates and accounted for the top source of sugar in participants' diets. The fruit was the highest-ranked dietary fiber in participants' diets.

Keast et al. (2013) recommended that future researchers examine current dietary trends rich in nutrients. The researchers found that children were consuming foods that were not rich in nutrients and could contribute to obesity. Keast et al. pointed out that several other studies had identified a clear imbalance in dietary preferences despite knowledge of programs such as My Plate and Dietary Guidelines. Additionally, milk is a significant part of U.S. diets and is not as high in calcium and protein as cheese. Keast et al. suggested that this study promotes knowledge of food and beverage sources to reduce energy consumption and increase nutrient density in diets.

Causes of Childhood Obesity

Causes of childhood obesity are widespread; thus, there has been a substantial amount of research dedicated to identifying factors. Because of its international prevalence, childhood obesity became a global epidemic and the most widespread childhood disease. Researchers identified varying facets such as the environment, lack of physical activity, heredity, genetics, dietary patterns, and SES as potential causes for childhood obesity (Obesity Action Coalition, 2016). These factors all contributed to the biopsychosocial model, with heredity and genetics considered biological; environment,

lack of physical activity, dietary patterns, and SES identified as sociological factors; and dietary patterns associated with psychological factors such as anxiety, depression, and low self-esteem (Black et al., 2013; CDC, 2022; Guerra et al., 2019).

Biological Factors. Garver et al. (2013) examined results from several studies and found that biological factors accounted for more than 50% of factors related to childhood obesity and suggested that this may be a more significant factor than environmental contributors. Additionally, childhood obesity was a predictive factor for obesity in adulthood (Simmonds et al., 2015). Obese children and adolescents were five times more likely to be obese adults. Furthermore, 55% of obese children became obese adolescents, and 80% of obese adolescents went on to be obese adults. This finding supported a biological component to the issues of identifying, examining, treating, and preventing obesity.

Psychological Factors. Dalen et al. (2015) examined the influence of psychosocial factors on eating behavior. The researchers discussed the relationship between psychosocial factors and eating behaviors of overweight and obese children, finding a link between psychological distress in obese populations and the inability to maintain behavior change over time. Dalen et al. identified psychological distress, body dissatisfaction (BD), and physiological distress as the three primary psychosocial factors contributing to obesity in children and adolescents. Dalen et al. argued that traditional overweight and obesity intervention for children or adolescents might not adequately address psychological factors, resulting in decreased understanding regarding the causes of sustained overweight and obesity despite treatment or intervention.

Russell-Mayhew et al. (2012) examined the psychological factors of childhood obesity to identify resiliency factors, determine why some obese individuals were psychosocially healthy, and evaluate issues of wellness. In their meta-analysis, Russell-Mayhew et al. found depression, anxiety, self-esteem, and BD were key contributors to the psychological states of children who were overweight or obese. Russell-Mayhew et al. determined that despite the abundance of research citing psychological problems associated with obesity, much of the pre-existing research did not elaborate on whether a specific origin of obesity existed. This study indicated the need to research systemic factors that affect obesity and develop interventions addressing systemic and biological factors. Similarly, Gupta et al. (2012) identified psychosocial consequences of obesity that included poor body image, low self-esteem, social isolation, and stress, leading to depression, anxiety, and emotional fallout.

In contrast, Gall et al. (2016) reported a weak or inconsistent relationship between obesity and emotional well-being. Gall et al. examined the specific factors of BD, loss of control eating, and self-rated health. Utilizing moderated mediation analysis, Gall et al. examined the influence of psychosocial factors. The researchers found BD was strongly associated with body weight in adolescents and higher BD among female participants compared to male participants. Loss of control eating was higher among female participants, leading the authors to conclude that "eating may play a comparatively minor role in mediating the association between obesity and impairment in emotional well-being when compared with BD" (Gall et al., 2016, p. 838). In both female and male participants, BD and self-rated health mediated the relationship between obesity and

impairment in emotional well-being; however, loss of control eating did not. Additionally, BD mediating effects were higher than self-rated health. There were no significant differences based on sex.

Van Zutven et al. (2015) supported findings similar to Gall et al. (2016) in that a weak or inconsistent relationship existed between obesity and emotional well-being in their work. The researchers found a distinct impairment in some obese individuals (Van Zutven et al., 2015). Poor physical health emerged as a factor relating to psychosocial impairment and obesity. Van Zutven et al. identified physical health, BD, and binge eating as three prominent mediators between obesity and psychosocial impairment. The researchers measured psychosocial functioning using three factors of functioning: general psychological distress, life satisfaction, and social support. Obese participants reported lower social support and life satisfaction than the nonobese participants. Obese participants had higher levels of general psychological distress than nonobese participants; however, differences were not clinically significant. Additionally, obese participants reported higher rates of binge eating than nonobese participants. Similar to Gall et al., Van Zutven et al. found BD was a significant mediator in obesity and psychosocial well-being along with previous research in need of address. The researchers suggested that future researchers further examine BD and binge eating in relation to obesity and psychosocial stressors.

According to Lopresti and Drummond (2013), psychiatric disorders and obesity are also associated with neuroprogression, as evidenced by decreased neurogenesis and changes in brain structure, particularly in the hypothalamus. Lopresti and Drummond

asserted, “Rates of obesity are higher than normal across a range of psychiatric disorders, including major depressive disorder, bipolar disorder, schizophrenia, and anxiety disorders” (p. 93). The researchers reported commonalities between biological and psychological factors of obesity, such as lower rates of physical activity and sedentary lifestyle. Additionally, rates of sleep disorders increased in obesity and psychiatric disorders as well as cardiovascular diseases, metabolic disorders, and autoimmune conditions.

Assar (2014) found that the relationship between mental health and obesity was complex. For example, individual (e.g., age, gender, race, ethnicity, and culture) and structural (e.g., nationality and region) characteristics influence mental health and obesity. In a review of the literature, Assar analyzed data from the Childhood and Adolescence Surveillance and Prevention of Adult Non-Communicable Disease, which is part of a global school-based health survey designed to provide information on risk factors such as tobacco use, sexual activity, violence, and dietary habit among children and adolescents aged 13–17 years. Assar utilized 5,528 participants who were adolescents aged 10–18, with 50% being females. Assar specifically examined Iranian adolescents and found that 8–9% were obese; however, 59–63% of them had high anxiety and depression symptoms. The study showed no link between obesity and mental health; however, the author speculated that this might be because of ethnicity and positive body image identity. Assar encouraged future research to examine other contextual factors that contributed to the link between obesity and mental health.

Small and Aplasia (2015) described the interaction between childhood obesity and mental health as complex. Small and Aplasia identified a broad link from psychiatric diagnosis to psychological and psychosocial effects on children. Furthermore, they found that psychological and psychosocial effects could influence body image, esteem, and social stigma. Small and Aplasia noted that not all children met the criteria for a psychiatric disorder, but more had some sort of psychosocial impairment. Obesity showed a correlation with behavioral problems, negative body image, and peer bullying, factors that had a significant influence on mental health. In one of the studies examined by Small and Aplasia, 40% of obese adolescents seeking treatment for weight management had a diagnosed psychiatric disorder. Small and Aplasia suggested the need for increased prevention and treatment for obesity. The researchers also suggested a change in treating environmental factors of obesity. Small and Aplasia recommended more focused efforts at prevention at multiple levels and encouraged behavioral changes, such as increased physical activity in schools, homes, and communities.

Sociological Factors. Wang and Lim (2012) found that countries with higher SES had a higher prevalence of childhood obesity. Wang and Lim noted that non-Hispanic African Americans had a higher incidence of obesity than non-Hispanic Whites. Additionally, overall rates nearly tripled in affluent areas from the 1970s to the 1990s. Wang and Lim discovered that older children (6–11 years) had higher occurrences of obesity in contrast to younger children (2–5 years). They also observed that factors such as gender, age, and county of origin influenced the incidence of obesity. Low SES and high SES groups in developing countries were at higher risk, indicating a concern of an

upward trend in overweight and obesity in lower-SES countries. However, the rate of childhood obesity was higher in high SES countries than lower SES developing countries. Energy-rich diets in developed countries were a significant contributor to prevalence. Both Wang et al. and Needham et al. (2013) confirmed that the relationship between SES and obesity was complex, as there may be several contributing and extraneous factors. Additionally, Wang et al. found greater prevalence among specific ethnic groups and low-income populations. Specifically, African Americans, Hispanics, Native Americans, and low-income groups were at higher risk of obesity (Needham et al., 2013). Despite these findings, little was still known about underlying biological factors between SES, age, education, race, and health.

Schreier and Chen (2013) conducted a study to examine the relationship between SES and obesity. The researchers studied the environment in relation to access to resources and the overall quality of the environment. Typically, lower-SES environments had fewer supermarkets and increased access to fast-food restaurants. Additionally, the cost of healthy versus unhealthy foods tended to drive residents of lower-SES environments toward less healthy but more affordable food. The aforementioned factors contributed to childhood obesity, with additional factors including "quality of family relationships, mealtime routines, and parents' psychological states" (Schreier & Chen, 2013, p. 12). Foods available, foods presented, and parent food preferences influenced access and choices children made. Overall, Schreier and Chen identified numerous environmental factors that affected childhood obesity, such as the physical and social neighborhood in which a child lived in relation to health and SES. Future researchers

should examine the complex reciprocal interactions between SES and the prevalence of obesity.

Sahoo et al. (2015) reported that childhood obesity was a problem with multiple causes. One specific cause identified by the researchers was environmental factors such as lifestyle preference and culture. After a review of the literature, Sahoo et al. found that extensive television watching and the use of electronic devices contributed to a sedentary lifestyle and decreased physical activity in children. Additionally, children had decreased access to engage in physical activity because of less safe environments to be physically active. Sahoo et al. also found food often used as a behavior reinforcer for children as a means to control others and an ongoing part of socialization. Family was a contributing factor regarding the types of food available in the home. The food preferences of family members influenced the preferences of children in the household. Family influenced the type and amount of food consumed, and familial habits regarding physical activity influenced children in the home.

Primary Care Physicians

Vine et al. (2013) examined the role primary care providers had in reducing childhood obesity. The researchers analyzed the influence of prenatal care, maternal pregnancy weight gain, and breastfeeding, finding that primary care providers did not identify a role in health education but saw themselves as clinic-based practitioners. Vine et al. argued that if primary care providers played a more significant role in health education, childhood obesity might decrease. Because little research was available

regarding primary care providers' role in education, a shift from exclusive clinic-based practitioners may be an area for future study.

Altman and Wilfley (2017) emphasized a push for effective psychological treatment of overweight and obesity in children and adolescents. The researchers identified current established treatments of family-based behavioral treatment (FBT) and parent-only behavioral treatment for children and adolescents. Altman and Wilfley supported multiple level interventions, such as dietary and physical activity modification, using behavioral strategies, which they found most effective in treating overweight and obesity. Researchers conducted a literature search of studies using the keywords *obesity*, *overweight*, *child*, *adolescent*, *pediatric*, *treatment*, and *intervention*. Additionally, Altman and Wilfley reviewed current meta-analyses regarding childhood obesity and classified studies not previously tested using randomized clinical trials as experimental and have had questionable efficacy. The researchers (a) tested for interventions or treatments for childhood obesity, (b) conducted in a defined population of toddlers (ages 2–5), children (ages 6–12), or adolescents (ages 13–18) who were overweight or obese, (c) provided a description of the intervention, (d) included weight change as an outcome measure, (e) compared the intervention to another intervention or control group in a randomized trial, and (f) used clearly defined study inclusion and exclusion criteria.

Altman and Wilfley (2017) measured weight loss by "BMI, percent overweight/percent over BMI, BMI, absolute weight, waist circumference, and direct measure of adiposity" (p. 522). The researchers identified current psychological treatment as (a) modifying and improving dietary intake, (b) increased physical activity, and (c) the

use of behavioral strategies and interventions that involve family. The findings showed that FBT had a significant effect on targeting overweight and obese children and adolescents than child- or adolescent-alone intervention. Furthermore, specific parent training about child management and parent problem-solving training increased positive treatment outcomes.

In a few of the studies, Altman and Wilfley (2017) examined that involved use of FBT in comparison to no treatment and child only treatment, and the FBT treatment intervention group had a higher percentage of weight loss. In parent-only treatment, outcomes were higher than with no treatment and child-focused treatment. However, results for adolescents were not significant, potentially because of less parental influence on adolescents. Guided self-help treatment, overseen by primary care physicians and community settings, was less effective than the more-intensive FBT treatment. A combination of newer interventions, Child Appetite Awareness Training, and Cue Exposure Treatment led to a single treatment called Regulation of Cues. Using the Regulation of Cues, Altman and Wilfley determined the difference in BMI Z-scores and BMI within groups. However, there were no significant changes 6 months posttreatment. Motivational interviewing, when added to FBT, in comparison to standard FBT, also showed no significant results.

Altman and Wilfley (2017) studied BMI use for a woman, infant, and child. Nutritional counseling indicated changes in physical activity outcomes compared to standard cognitive-behavioral interventions. Executive function training in a trial of obese children demonstrated improved weight loss in comparison to the control group.

Altman and Wilfley found that 12 weeks poststudy, a significant difference no longer existed. When examining treatment settings, Altman and Wilfley noted that physician-only intervention was less effective than the standard cognitive-behavioral intervention. In a study on children receiving inpatient intervention, the children showed significant weight changes, which they maintained 14-months poststudy. In another study, Altman and Wilfley found the medium of delivery had an effect on treatment, and internet intervention was significant. However, results were not maintained poststudy. Multifaceted intervention delivered by telephone showed promising results. Altman and Wilfley ultimately endorsed multilevel intervention with FBT and parent-only treatment as effective treatment interventions and joined the push for early intervention. The researchers suggested further identification of predictors of obesity, moderators of obesity, and mediators (doctors, social services, schools, and other community organizations) of treatment outcomes along with increased treatment acceptability of treatment aimed at tackling childhood obesity.

Physical Activity

Seabra et al. (2014) evaluated a physical intervention of a 5-month football program on perceived psychological status and body composition of overweight boys. The 12 boys ages 8–12 who participated in the program had a BMI higher than or equal to the 85th percentile. The boys took part in four weekly 60- to 90-minute sessions, and the control group included eight boys of the same age from an obesity clinic near the school. Seabra et al. found the intervention was effective at improving psychological status but not body composition, with psychological factors measured through perceived

and desired self-image. The researchers measured the difference between perceived and ideal body image and labeled that difference BD. Seabra et al. used Rosenberg's self-esteem scale to measure self-esteem, the Children's Attraction to Physical Activity Questionnaire (CAPA) to assess physical activity, and 3-day dietary records kept by participants to determine dietary intake. Despite observing typical biological changes in both groups, the researchers found no significant changes in the boys' BMI based on intervention or no intervention. The intervention group had increased psychological status, body image, self-esteem, physical competence, and satisfaction with physical activity. Implications of the study were that physical activity had a positive influence on psychological factors, such as body image, self-esteem, and physical competence. Limitations included the narrow focus on physical activity (restricted to football) and the length of the study, which was sufficient to alter perceptions of body image but not actual body composition. Future researchers should examine other physical activity interventions using a larger sample size and a longer intervention period.

Health Problems Related to Childhood Obesity

Physical Health Problems

Childhood obesity has been linked to numerous physical health problems. Children who were overweight or obese were at a higher risk of having comorbid disorders, such as adverse lipid levels, blood glucose derangements, elevated blood pressure, and adult atherosclerosis (Keast et al., 2013). Keast et al. (2013) examined comorbid health conditions by weight status and found that obese children more often had activity restrictions limiting their ability to engage in physical activities than their

counterparts. Additionally, obese children had poorer oral health, asthma, and allergies. Overall, obese children had "twice the risk of having three or more comorbid mental health, developmental, and or physical health conditions" (p. 8).

Researchers have examined the health conditions associated with obesity. Wang et al. (2013) reported obese children were more likely to have serious health conditions, such as "cardiovascular, metabolic, and psychosocial illnesses; type 2 diabetes, hypertension, high cholesterol, stroke, heart disease, nonalcoholic fatty liver disease, certain cancers, and arthritis" (p. ES1). Gupta et al. (2012) identified the medical consequences of obesity, which included insulin resistance and metabolic syndrome, type 2 diabetes, raised markers for inflammation, and other conditions. Sahoo et al. (2015) found obesity linked to numerous medical conditions, such as fatty liver disease, sleep apnea, type 2 diabetes, asthma, hepatic steatosis, cardiovascular disease, high cholesterol, cholelithiasis, glucose intolerance and insulin resistance, skin conditions, menstrual abnormalities, impaired balance, and orthopedic problems.

Mental Health Concerns

Childhood overweight or obesity has been linked to numerous mental health problems. Children who were overweight or obese were at a higher risk of having comorbid disorders, such as behavioral and psychological disorders (Keast et al., 2013). Wang et al. (2013) found childhood obesity associated with depression and low self-esteem. Sahoo et al. (2105) identified multiple psychological factors correlated with obesity, such as depression and anxiety, lower self-esteem, BD, eating disorder syndrome, and emotional problems. Overall, researchers identified several factors that

might have contributed to childhood obesity. Future researchers should examine the complex reciprocal interactions with SES that influenced the prevalence of obesity.

Prevention of Childhood Obesity

Early Childhood

Saavedra et al. (2013) suggested conducting research into obesity in infancy. Of concern were diets high in calories, low in fruits and vegetables, high in sugar and saturated fats, and sugary beverages. To determine early infant feeding habits and how they affect childhood obesity, Saavedra et al. utilized data from the Feeding Infants and Toddlers Study (FITS). According to Saavedra et al.,

> The FITS is a cross-sectional dietary intake survey of a national random sample of parents and caregivers of infants and young children living in the US. The FITS was designed to obtain information on the diets and feeding practices of US infants, toddlers, and preschoolers from birth to 47 months, i.e., up to age four years. The FITS 2008 consisted of up to three telephone interviews between June 2008 and January 2009. (p. 28)

Saavedra et al. (2013) found that children could learn dietary practices from older siblings and parents. The researchers believed early intervention and education—specifically addressing bottle-feeding practices, attending to hunger and satiety cues, and food size and proportion—could prepare infants for healthier preferences earlier on. The implications of this study were two-fold: education for parents of young children leading to the prevention of childhood obesity and increasing healthy eating habits of the family unit.

Ford et al. (2013) analyzed childhood obesity from a different perspective and examined the difference among age groups 2–5 years, 6–11 years, and 12–18 years. Because a parent or caregiver reported data for children ages 2–5, results could be skewed because of parents' or caregivers' heightened awareness of obesity, leading to underreporting of intake. Ford et al. expressed concern for this age group, as it was a vulnerable population, and argued that targeting interventions at this age was likely to have a lasting effect on obesity efforts.

Ford et al. (2013) asserted that diet played a significant role in contributing to and maintaining obesity. Factors examined were SES for demographical purposes, total energy intake, and total solid fats and added sugars. Additionally, the researchers found that despite the historical decrease in the consumption of total solid fats and added sugars from 1994–1998 to 2009–2010, the mean consumption of fats and sugars exceeded recommended amounts by 18–28% of overall energy intake. Limitations of the study included the accuracy of self-reported dietary recall and examination of factors that contributed to a decline in total solid fats and added sugars during 1994–1998 and 2009–2010.

School-Based Interventions

Silveira et al. (2013) examined the effectiveness of school-based nutrition education interventions. Following a literature search of 14 databases, the researchers reviewed 14 articles with sufficient data for their study regarding the use of BMI and dietary practices. Silveira et al. found that intervention was significant in that it influenced BMI. Silveria et al. also found evidence to support using a longer-term (1-

year) intervention. Weight reduction correlated with increased fruit and vegetable consumption. The studies Silveira et al. examined were evaluations of differing interventions; however, despite those differences, they found interventions linked to a reduction in childhood obesity in school-based nutrition education programs. Similar to other scholars, Silveira et al. suggested more research in this area to examine individual differences among programs.

In contrast, Sbruzzi et al. (2013) conducted a meta-analysis of 26 articles and found mixed results. Although some studies suggested that school-based educational interventions had a small effect size, others indicated no significance. However, it was not clear that the effect was attributable to the intervention. In Analysis 1, the researchers identified five studies with an evaluation of waist circumference, 15 with an evaluation of BMI, and six with an evaluation of BMI Z-score. The researchers found a nonsignificant reduction in waist circumference, BMI, and BMI Z-score when comparing results with educational interventions, usual care, and no care interventions. An examination of intervention length, showed longer interventions (more than 12 months) had a significant effect on waist circumference, BMI, and BMI Z-score. Sbruzzi et al. examined blood pressure in four studies, finding a nonsignificant relationship with waist circumference, BMI, and BMI Z-score and educational interventions, usual care, and no care interventions. When examining lipid profiles in four studies, the intervention was nonsignificant compared to usual care and no care interventions. In Analysis 2, Sbruzzi et al. reviewed three studies evaluating waist circumference, BMI, and BMI Z-score and educational interventions, finding intervention associated with a reduction in waist

circumference and BMI compared to usual care and no care intervention. Two studies of blood pressure showed a nonsignificant relationship with nutrition education and waist circumference, BMI, and BMI Z-score compared to usual care and no care intervention.

Sbruzzi et al. (2013) found that educational interventions implemented to treat childhood obesity resulted in a reduction of anthropometric measurements and diastolic blood pressure. Moreover, the researchers supported that longer-term (6 months or more) interventions were more effective. The results indicated that education was significant for treatment but not prevention. However, limitations of the study included the structure of studies examined and limited data to analyze. Sbruzzi et al. encouraged future research that adds to the body of literature.

Obesity Prevention Programs

Wang et al. (2013) assessed the effectiveness of childhood obesity prevention programs. The researchers examined programs aimed at diet and physical activity across multiple settings to evaluate school-based, home-based, childcare-based, community-based, environment-level, and consumer health informatics-based interventions. Wang et al. evaluated 124 interventional studies that met the selected criteria. The interventions assessed in the studies were school-based (n = 104), home-based (n = 6), primary care-based (n = 1), childcare-based (n = 4), and community-based (n = 9).

Wang et al. (2013) found school-based interventions were more effective when based on diet or physical activity exclusively, whereas a combination of interventions specific to diet and physical activity had less effect on childhood obesity. Another significant factor in preventing childhood obesity in school-based interventions was the

length of intervention: The longer it was, whether physical or diet, the more influential it was. Additional data were insufficient for school-based diet interventions with a home component at preventing obesity. However, school-based physical activity interventions with a home component were effective. Despite the body of literature that supported dual intervention aimed at school and home, Wang et al. did not find significant data to support school-based intervention with a home and community component. This finding is significant, as it could assist in evaluating interventions in future studies. In contrast, Wang and Lim (2012) found that studies focused on both diet and physical activity that included an educational component showed improvement in weight outcomes, but not specifically obesity.

The review of data conducted by Wang et al. (2013) did not support the view that school-based interventions with a community component had a significant influence on childhood obesity. More specifically, insufficient evidence existed in relation to diet and physical activity with self-management. The evidence did not support previous research that a combination of diet and physical activity utilizing home-based interventions was more effective in improving childhood obesity outcomes. Additionally, diet-only interventions did not yield significant results. None of the studies showed that diet interventions or a combination of diet and physical activity interventions in the home yielded significant results. The researchers had small sample sizes, and the use of larger samples might have generated different results. Additionally, this gap in the literature may be an area for future exploration of intervention within the population. Researchers

could consider longer-term interventions across multiple settings, such as schools and homes, utilizing a combination of diet and exercise.

Similar results emerged from home-based interventions with a school and community component. Wang et al. (2013) could make no conclusions in relation to the effectiveness of combined intervention efforts and found no significant difference between the control and intervention groups. Wang et al. also drew no conclusions about the effectiveness of a combined intervention in the home-based intervention with primary care and consumer health informatics. Results of the study showed long-term diet and physical activity (combination) interventions (6 months to 6 years) in a school-based setting with a home component or a school-based setting with a community component had the most significant effect on obesity. Similar results emerged when examining either diet or physical activity interventions in a school-based setting with a home component or a school-based setting with a community component. Wang et al. found that students in either condition consumed significantly more fruits and vegetables and had increased physical activity than students not exposed to these intervention settings. Some evidence also indicated lower blood pressure in students following the intervention.

Similarly, Moss et al. (2013) conducted a quantitative study with a quasi-experimental design to examine the effects of the Coordinated Approach to Child Health nutrition program, a farm-to-school program to assess the nutritional knowledge of third-grade students. The researchers analyzed 65 third graders and found the children increased their knowledge of vitamins and minerals and understood fiber after the program. Moss et al. identified a limitation of their study as its short 4-week duration,

suggesting that researchers consider a longer intervention period. Even so, Moss et al.'s result supported earlier interventions, as the younger children were able to conceptualize the materials; previous scholars had examined only older children (11- and 12-year-olds).

Summary and Conclusions

More research is needed to understand further barriers in implementing effective interventions to lower the rates of childhood obesity. BMI is one standard measure for calculating body fat, comparing weight to height to determine the body percentage. Based on the percentage, a person can be underweight to obese. Research showed a rise in rates of obesity in children, and rates steadily increased over the last 2 decades.

The literature showed that current interventions failed at addressing the globally identified problem. A problem identified when attempting to tackle childhood obesity was that reducing obesity requires more than just children, families, schools, and community agencies making changes. The problem of childhood obesity has gained enough attention to become an international concern. Childhood obesity does not discriminate and can impact children from various socioeconomic statuses, ethnicities, neighborhoods, and backgrounds. Obese children have weight-associated physical health, mental health, academic, and social problems.

Numerous agencies from local, state, and federal governments implemented programs aimed at lowering the rates of childhood obesity but have been unsuccessful. The literature showed that multifaceted interventions were the most effective at treating and preventing childhood obesity. California implemented the HOTM program in local schools to target obesity. However, there has been insufficient research to evaluate the

effectiveness of HOTM. This study was an opportunity to fill the knowledge gap and understand factors that contributed to obesity and the interventions that were most effective.

Chapter 3 presents an overview of the mixed-methods approach using the biopsychosocial model for the data. Chapter 3 includes an outline of the methodology used to determine the effectiveness of a nutrition program implemented within a public school district in San Diego County by examining the dietary habits of children, their consumption of locally grown food items, their nutritional education, and the components of the HOTM nutritional educational program. Chapter 3 also presents the data analysis, data sources, and data collection methods.

Chapter 3: Research Method

Introduction

In Chapter 1, I discussed the importance of evaluating the HOTM nutrition education program. The purpose of the study was to evaluate whether the program accomplished its goals. The California Department of Public Health (2014) identified several program goals, including increasing access to fruits and vegetables through school programs, farmers' markets, grocery stores, and community-based locations. Also, the goals included increasing consumers' preference for fruits and vegetables, increasing consumption of locally grown food items by connecting growers to their communities, and increasing understanding of the importance of daily physical activity.

I assessed the success of the HOTM program in meeting program objectives. I did not disseminate findings within the district in San Diego County; however, the results support the need for continued support for the identified program. In this section, I provide an overview of the methodology I used to conduct the investigation, including the mixed-methods research design and the data analysis techniques. Last, I discuss threats to validity and issues of trustworthiness, including the ethical procedures for protecting the rights of the participants.

Setting

The study took place in Escondido, San Diego County, California, a public school district. Escondido is located 30 miles northeast of downtown San Diego, 18 miles inland, and 100 miles south of Los Angeles (Visit Escondido, 2021). Escondido is 37.45 square miles, with a population of 151,115 and a median age of 33.8 years as of 2018

(American Community Survey 5-Year Estimates, as cited in City of Escondido, 2021). The city was incorporated in 1888.

Escondido comprises two public school districts, Escondido Unified School District (EUSD) and San Pasqual Union School District. EUSD was the identified San Diego County public school district that was investigated in this study. EUSD comprised 26 schools in the 2020–2021 school year. The school composition for the district was 17 elementary schools, consisting of one intermediate school, five middle schools, two comprehensive high schools, and one alternative school. Approximately 18,695 students attended school in EUSD in 2020-2021. The racial/ethnic breakdown was 72% Hispanic, 19% White, 1% African American, 4% Asian, 4%, and 4% other. The student-to-teacher ratio for kindergarten through 12th grade was 23:1, and the district had 1,800 employees (certified staff, classified staff, and administrators).

Research Design and Rationale

I used a mixed-methods approach. A mixed-methods approach was well suited for the study because the research was intended to objectively gauge whether the HOTM program was successful in achieving its intended outcomes by assessing differences in quantifiable variables (see Howell, 2013). Additionally, a mixed-methods design was appropriate to assess the findings related to the research questions and identify areas in need of further research (Plonsky & Gass, 2011).

I used an evaluative case study approach because it is typically used within educational contexts to assess the effectiveness of initiatives (Zainal, 2007). Stake (1995) posited that evaluative case study questions typically concern the effectiveness of a

program or component of a program. I examined the extent to which the HOTM program influenced change in participants, how the program components were practical, and how effectiveness could be increased. The evaluative case study approach allows for researcher feedback regarding the phenomenon of interest (McDonough & McDonough, 1997). I used this approach to bolster the study's findings by exploring program participants' perceptions regarding how the program functioned and its influence. I analyzed the findings to assess the program's effectiveness. By conducting a case study as an evaluative approach, I engaged with participants to study the HOTM program through multiple data sources in its real-world context (Yin, 1994). In gathering both qualitative and quantitative data, I explored the HOTM program in the realist and relativist paradigms, combining my judgments with participants' perspectives (Yin, 1989).

For the study, I identified three sources of data to address the RQs. I conducted primary data collection to gather information from a kitchen lead worker, a teacher, and a parent/guardian. I interviewed a kitchen lead worker to explore program components and implementation, psychosocial well-being, and the program's influence on students' well-being through nutritional awareness. The kitchen lead survey can be found in Appendix C. In addition, I interviewed a teacher (see survey in Appendix D), and I surveyed a parent/guardian to explore program effects that influenced home settings (see Appendix E). These data sources were used to evaluate the program's effectiveness. I sought to answer the following RQs and hypotheses:

RQ1: To what extent is the HOTM nutritional program in San Diego meeting its objective of influencing the nutritional choices and psychosocial well-being of primary school students through the provision of quality nutrition education?

$H_0$1: The HOTM nutrition education program in San Diego County did not meet its objective of influencing the nutritional choices and psychosocial well-being of primary school students through providing whole person quality nutrition education.

$H_1$1: The HOTM nutrition education program in San Diego County did meet its objective of influencing the nutritional choices and psychosocial well-being of primary school students through the provision of a whole person quality nutrition education.

RQ2: What follow-up programs and steps can be initiated to assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County?

RQ3: What steps can be taken to make nutritional education reform programs more effective so that the national nutrition educational needs and psychosocial well-being of the United States can be successfully achieved?

Methodology

Participant Selection Logic

I recruited study participants via email after receiving Walden University Institutional Review Board (IRB) approval (Approval No. 01-27-21-0239087). There is one district lead who oversees HOTM with EUSD. I contacted the district lead via email

to request permission to conduct the study. The EUSD Nutrition Services webpage identifies nutrition services staff, cafeteria lead, and the associated contact information. The participants provided informed consent before the interviews, which occurred by telephone after I obtained approval. I intended to audio record the interviews and sought permission to record them before recording; however, participants declined permission for recording. Data collected are securely maintained on an encrypted, password-protected thumb drive, and only I have access to this data. Study data will be maintained for 5 years after the conclusion of this study, at which point they will be destroyed.

Instrumentation

Qualitative Components

I conducted semistructured interviews with the district representatives (kitchen leads) for the HOTM program. University of California San Diego (UCSD) developed an interview guide containing 11 questions to collect data related to the past progress of the program, the future direction of the program, and the key challenges and successes of the program. UCSD developed the survey in conjunction with California HOTM. UCSD previously utilized the surveys at the end of the 2015–2016 school year. The permission letter to use these surveys is in Appendix F.

Quantitative Components

I used SurveyMonkey to survey teachers. The teacher survey (see Appendix D) aimed to examine the participating teachers' perceptions of student behaviors in relation to the HOTM program. The teachers were to rate students' perceived behaviors on a 5-point Likert-type scale, where 1 = *very likely* and 2 = *very unlikely*. I also used

SurveyMonkey to survey parents/guardians. The parent/guardian survey was a means to examine the parents/guardians' awareness of the program (see Appendix E).

Procedures for Recruitment, Participation, and Data Collection

Based on the literature review, I identified a need for interventions aimed at younger children. Establishing early dietary practices in younger children was imperative and likely to impact changing behaviors longer-term. I focused on elementary schools within the identified school district. EUSD has 16 elementary schools. Participants were a lead kitchen worker, a parent/guardian, and a teacher within EUSD elementary school. The district administrator selected participants. Participants all knew HOTM and were willing to participate to be included in the sampling. Lead kitchen workers, parents/guardians, and teachers with no knowledge of HOTM were excluded from participation to protect the integrity of the data collected.

Data Analysis Plan

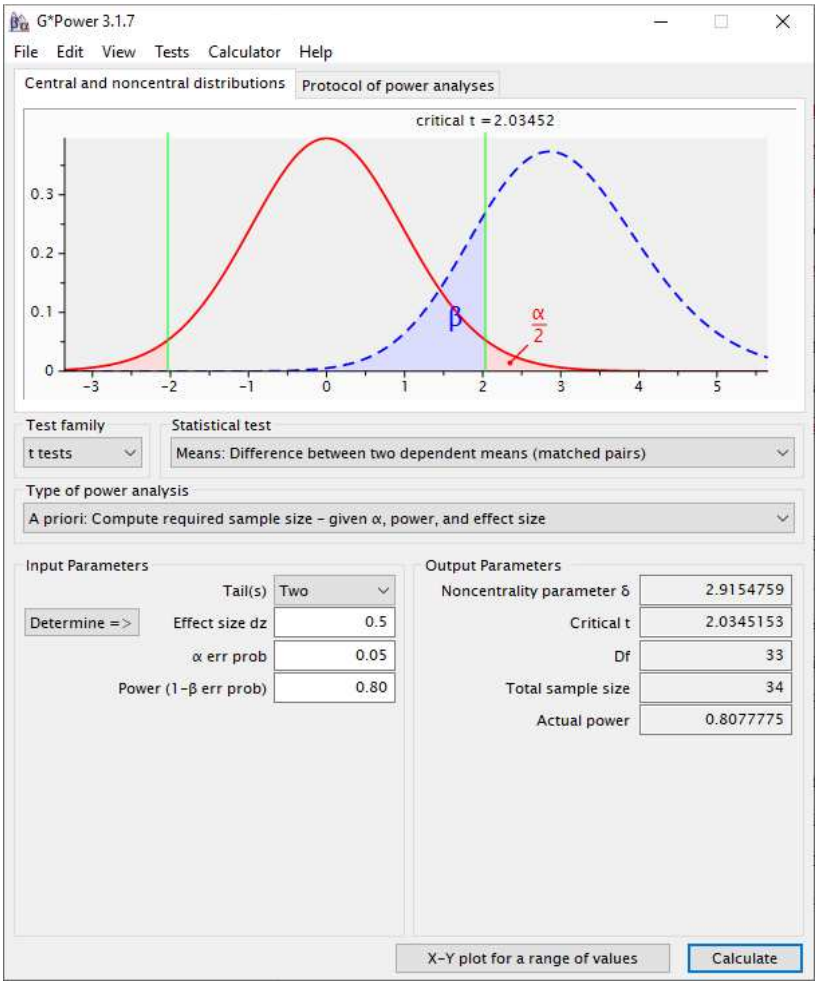
I did not enter the quantitative data into the Statistical Package for the Social Sciences Version 23 (SPSS 23) for data management and analysis because there was not a large enough sample. I had planned to use frequencies and percentages to examine the trends of nominal and ordinal demographics and means and standard deviations to examine the trends of the continuous level variables. However, the sample was not large enough to compute these statistics.

I intended to conduct paired sample *t* tests to assess differences in data before and after the nutrition education program; however, the sample was large enough. I conducted a power analysis to determine the minimum sample size requirement for the quantitative

analysis. The analyses occurred using a power of .80, medium effect size, two-tailed, and an alpha level of .05. I used G*Power 3.1.9.2 to identify the minimum sample size necessary for statistical validity, finding a minimum sample size for the paired *t* test was 34 participants (Faul et al., 2013; see Figure 1).

Figure 1

*G*Power Output for Paired Sample t-Test*



I had intended to analyze the qualitative data using Braun and Clarke's (2006) framework for thematic analysis; however, the sample size was insufficient. The plan was to import the data into NVivo Version 11 for data management and organization before

the analysis. NVivo allows for the organization of the data and preliminary coding (Braun & Clarke, 2006). Braun and Clarke's framework for thematic analysis involves six steps in producing the codes ultimately used to generate themes. Although I had planned to use those themes to report trends in participant data related to the nutrition education program, this study's sample size was not large enough. I analyzed data using a framework that included familiarization with the data, coding, identifying themes, reviewing themes, defining themes, and reporting the themes (Braun & Clarke, 2006). Theme identification should not occur a priori to allow the themes to emerge organically through the data analysis. I compiled the findings and presented them at the aggregate level.

Threats to Validity

The threats to validity were population validity, data collection, time, and history. Regarding population validity, the sample size of the data sample was inadequate, and thus the results cannot be generalized to the general population (Ihantola & Kihn, 2011). There were no identified threats to the external validity; however, the result might not apply to another population. It is necessary to consider the time frame of data collection and whether the results are applicable to other periods. For example, poststudy HOTM data cannot be applied to a prestudy HOTM population, who would have no prior knowledge. Data collected must be compared in a similar time to be generalizable. In addition, there may be unmeasured, confounding variables that affected the relationships established among the variables of interest. Finally, an examination of historical factors at the time of data collection is needed to compare the findings to the current time. For

example, it is important to determine whether an excessive amount of rainfall led to an increase in crops or a drought led to a decrease. I plan to report the results within the current context. They will be considered applicable only to a similar historical period.

Issues of Trustworthiness

Establishing trustworthiness in qualitative research occurs through credibility, transferability, confirmability, and dependability. Credibility refers to the extent to which the results aligned with participants' insights (Lincoln & Guba, 1985); in this study, triangulation was an approach to ensure credibility. Triangulation occurs when researchers use multiple data sources to develop a detailed view of the phenomenon (Padgett, 2008). In this study, I achieved triangulation by comparing interview and survey data.

Additionally, I used iterative questioning to establish credibility. Iterative questioning is a means to maintain the consistency of participants' responses (Padgett, 2008). I addressed inconsistent responses in the final project and offered possible solutions, as Shenton (2004) suggested. Finally, I used peer scrutiny to enhance credibility, offering a fresh perspective by others who were not related to the research study. I sought peer scrutiny from the dissertation committee (chair, committee member, and university research reviewer).

Transferability relates to the extent to which the study's results are generalizable to a broader population (Lincoln & Guba, 1985; Merriam, 2009). In the present study, I analyzed archival data from the University of San Diego HOTM to compare the results of the current research; however, this study did not have a large enough sample size. To

establish transferability, I used a thick description by providing sufficiently detailed insight that allows the readers to determine the actual context of participant data (Shenton, 2004) and interpret participants' responses in context. Dervin et al. (2003) posited that divergent and varied findings could increase understanding by exposing the reader to different experiences and reasons.

Confirmability ensures that participants' responses were captured and not what the researcher wants to hear (Lincoln & Guba, 1985); thus, I used confirmability to limit the effect of investigator bias. To combat investigator bias, I engaged in reflexivity, evaluating personal biases and preconceptions through continuous self-dialogue during the research process (Berger, 2015; Bradbury-Jones, 2007). Reflexivity occurred through ongoing reflection of my thoughts and biases during data collection and analysis and chronicling these thoughts and biases in the results report.

Dependability refers to the replicability of results given similar contexts, thereby enhancing the credibility of a study (Lincoln & Guba, 1985). In this study, I achieved dependability by creating a detailed audit trail (Thomas & Magilvy, 2011) and maintaining a detailed log during data collection. These notes indicated all the steps of data collection, any unusual occurrences during data collection, and my reflections on the study.

Ethical Procedures

With the *Ethical Principles of Psychologists and Code of Conduct 2018*, the American Psychological Association established guidelines for research and publication. When institutional approval is necessary, researchers must provide accurate information

about the proposed study and obtain approval before conducting research. The research must occur following the approved proposal. The principles also require obtaining informed consent from participants, notifying them of the study's purpose, duration, and procedure. Additionally, informed consent outlines the right to decline, withdraw, foreseeable consequences of declining and withdrawing, potential risk, discomforts, adverse effects, benefits, risk of participation, confidentiality, incentives for participating, and whom to contact with questions.

I conducted the study following approval from the Walden University IRB. The participants returned the informed consent form prior to data collection. The participating lead kitchen worker, parent/guardian, and teacher were aware of the nature of the study and provided the opportunity to decide regarding participation. I assure individuals that participation was voluntary, and they could withdraw from the study at any time without negative consequences. All information provided by participants was solely for this study and will remain confidential. I took the necessary precautions to ensure the results included no information that could indicate the participants' identities. Due to the small sample size, it was not necessary to assign pseudonyms to maintain confidentiality. There were no incentives offered for participation. Additionally, I did not knowingly expose participants to physical or psychological harm greater than those ordinarily encountered in daily life.

Summary

This chapter presented the mixed-methods approach utilized to evaluate the HOTM nutrition education program. There were discussions of the research questions

and hypotheses, population and sampling approach for quantitative analysis, instruments, data collection procedures for mixed-methods analysis, and consideration of validity and trustworthiness. Chapter 4 presents the data analysis of the information collected, including the mixed-methods approach and results.

Chapter 4: Results

Introduction

The WHO (2016) identified childhood obesity as one of the most severe public health challenges of the 21st century, defining it as a global epidemic. Reece et al. (2016) found that severe obesity was associated with a higher risk of developing psychiatric conditions. Furthermore, a high BMI was associated with lower body image and self-esteem. According to the CDC (2021a), childhood obesity rates in the United States has risen from 1966–1970, when less than 5% of U.S. children and teens were classified as obese. From 1976–1999, children meeting the standards for being overweight and obese in the United States tripled to 18% (CDC, 2021a; Ogden et al., 2016). Kelly et al. (2016) found that high BMI is linked to poor psychosocial well-being.

As of 2014, an estimated 41 million children under the age of 5 are overweight and obese in the United States (WHO, 2016). The CDC (2022) noted that overweight and obese children are more susceptible to illness and disease and at higher risk of being overweight and obese. Obese and overweight children are at an increased risk of developing heart disease, type 2 diabetes, asthma, and mental health problems. Ineffective nutrition programs may be an influencing factor for overweight and obesity rates. Despite years of nutrition education reform, individuals in the United States continue to be impacted by the increasing rates of obesity.

The primary purpose of this evaluative case study was to examine the effectiveness of a nutrition education program in San Diego County and its impact on the nutritional habits and psychosocial well-being of primary school students. I examined the

positive and negative aspects of the HOTM nutrition education program. A goal was to suggest improvements to make the nutrition education reform policies more effective. Making the findings of this study available to the California Board of Education could assist policy makers in selecting areas for restructuring to improve the quality of nutrition education. A tertiary purpose is to contribute to the limited research about the psychosocial well-being impact and efficacy of national nutritional educational change in the United States.

I sought to answer the following RQs and hypotheses in this study:

RQ1: To what extent is HOTM nutritional program in San Diego meeting its objective of influencing the nutritional choices and psychosocial well-being for primary school students through the provision of quality nutrition education?

$H_0$1: The HOTM nutrition education program in San Diego County did not meet its objective of influencing the nutritional choices and psychosocial well-being of primary school students through providing whole person quality nutrition education.

$H_1$1: The HOTM nutrition education program in San Diego County met its objective of influencing the nutritional choices and psychosocial well-being of primary school students through providing a whole person quality nutrition education.

RQ2: What follow-up programs and steps can be initiated to assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County?

RQ3: What steps can be taken to make nutritional education reform programs more effective so that the national nutrition educational needs and psychosocial well-being of the United States can be successfully achieved?

Setting

The study took place in the public school district within Escondido, San Diego County, California. The City of Escondido has two public school districts, EUSD and San Pasqual Union School District. EUSD was the identified San Diego County public school district utilized for this study. EUSD comprised 26 schools in the 2020–2021 school year. The school composition for the district at the time of the study was 17 elementary schools, consisting of one intermediate school, five middle schools, two comprehensive high schools, and one alternative school.

The Director of Nutrition Services selected participants. Potential participants received a SurveyMonkey survey with embedded consent. Participants had to review the informed consent document and select "I consent" before proceeding to the HOTM survey. Participants chose where they participated, which allowed for conducting surveys in a private space without interruptions. Additionally, they provided potential times and dates for their interviews. The interviews occurred by phone in a private and confidential office area, which also facilitated privacy and no interruptions.

Demographics

At the time of this study, EDSD had approximately 18,695 enrolled students. The racial/ethnic breakdown was 72% Hispanic, 19% White, 1% African American, 4% Asian, and 4% other. The student-to-teacher ratio for kindergarten through 12th grade

was 23:1. The district had 1,800 employees (certified staff, classified staff, and administrators).

For inclusion in this study, participants had to be a parent/caregiver, teacher, or a lead kitchen worker working with EUSD with knowledge of HOTM. The Director of Nutrition Services selected one parent/caregiver, one teacher, and one lead kitchen worker to participate, sharing that participation was voluntary. There were no participant demographics collected, as they were not part of the study.

Data Collection

I acquired Walden University IRB approval to conduct the research within the school district on January 27, 2021. Following approval, I immediately reached out to administrators within the district. I used the district directory to reach out to the local school administrators, receiving approval to begin on February 16, 2021. After completing the parent/guardian survey recruitment in April 2021, I began recruiting teacher and kitchen lead workers. On April 22, 2021, I received notice that the district was pausing its participation due to "premature approval in February," as I needed district approval and not just department approval. On April 27, 2021, the district denied my request to conduct the study.

On May 3, 2021, I began looking for another school district to conduct research within. I contacted 10 districts within San Diego County that UCSD identified as participating in HOTM. Officials at one district responded the same day, declining, "as too much was going, yearend." Another district also declined, stating it "does not participate in HOTM." On May 5, 2021, I reached out to 18 additional districts within

San Diego County. On May 6, 2021, one district declined. On May 10, 2021, another district responded that they could not participate due to "too many staff vacancies." Another school said they "did not participate in HOTM." On May 15, 2021, EUSD leaders agreed to participate. On May 21, 2021, I requested a change of procedure from the IRB to conduct research within another school district and received approval on June 29, 2021, based on the changes requested. The district administrator connected me with participants due to limited staffing. Consenting participants received a copy of the study consent form embedded in the SurveyMonkey.

I collected data using SurveyMonkey. Parents/caregivers and teachers completed the survey independently, and the lead kitchen worker participated in an interview in which I asked the questions in Table 1. The lead kitchen worker participated in a confidential location free of interruptions, and I was also in a private location. I discussed the interview length, structure, confidentiality, and anonymity with the participant prior to beginning the interview.

Data Analysis

I entered quantitative data into SPSS 23 for data management and analysis, using frequencies and percentages to examine the trends of nominal and ordinal demographics. Means and standard deviations were the calculations used to examine the trends of the continuous level variables.

I conducted paired sample *t* tests to assess differences in data before and after implementing the nutrition education program. To determine the minimum sample size requirement for the quantitative analysis, I conducted a power analysis using a power of

.80, medium effect size, two tail, and an alpha level of .05. Using G*Power 3.1.9.2, I determined the minimum sample size necessary for statistical validity. The minimum sample size necessary for the paired *t* test is 34 participants (Faul et al., 2013; see Figure 1).

I analyzed the qualitative data using Braun and Clarke's (2006) framework for thematic analysis. Before conducting the analysis, I imported the data into NVivo Version 11 for data management and organization. NVivo allows for the organization of the data and preliminary coding. Braun and Clarke's framework for thematic analysis involves six steps to produce the codes used to generate themes, which I used to report trends in participant data related to the nutrition education program. Data analysis occurs using a framework that includes familiarization with the data, coding, identifying themes, reviewing themes, defining themes, and reporting the themes (Braun & Clarke, 2006). I did not identify themes a priori, but allowed them to emerge organically through the data analysis. I compiled the findings and presented them at the aggregate level.

Results

Kitchen Lead Survey Results

The kitchen lead participant who completed the HOTM kitchen lead survey responded to eight survey items. The participant indicated having all the listed responsibilities in relation to the HOTM produce for classroom taste tests. The participant said they received salad greens (January), citrus (February), and strawberries (May) from San Diego County, and root vegetables (November), salad greens (January), citrus (February), cooked greens (March), cucumbers (April), and strawberries (May) from

California. The participant reported receiving root vegetables (November), apples (December), salad greens (January), citrus (February), cooked greens (March), cucumbers (April), and strawberries (May) from their distributor, and salad greens (January) and citrus (February) from a farm. They did not receive any HOTM produce from the school garden. The primary challenges for participating in HOTM were insufficient staff and too much preparation. Participants promoted HOTM at their school and cafeteria through morning announcements, HOTM board, cafeteria taste tests, special preparation of HOTM items, wearing HOTM apron bar clings, verbal promotion, posters and slides, and inclusion of HOTM in targeted entrees. Table 1 presents the responses for the participant who responded to the HOTM kitchen lead survey.

Table 1

Kitchen Lead Survey Results

Variable	Selection
What were your responsibilities in relation to the Harvest of the Month (HOTM) produce for classroom taste tests? Check all that apply:	
Ordering produce	X
Chopping/peeling	X
Washing	X
Portioning for classes	X
Tracking pickup	X
Reminding teachers	X
Displaying	X
Other	
If you did the ordering for HOTM produce, which items did you get from San Diego County?	
Root vegetables (November)	
Apples (December)	
Salad Greens (January)	X
Citrus (February)	X
Cooked greens (March)	
Cucumbers (April)	
Strawberries (May)	X
Not applicable	
If you did the ordering for HOTM produce, which items did you get from California?	
Root vegetables (November)	X
Apples (December)	
Salad Greens (January)	X
Citrus (February)	X
Cooked greens (March)	X
Cucumbers (April)	X
Strawberries (May)	X
Not applicable	

(*table continues*)

Variable	Selection
Which HOTM produce was purchased through your distributor?	
Root vegetables (November)	X
Apples (December)	X
Salad Greens (January)	
Citrus (February)	
Cooked greens (March)	X
Cucumbers (April)	X
Strawberries (May)	X
Not applicable	
Which HOTM produce was purchased directly from a farm?	
Root vegetables (November)	
Apples (December)	
Salad Greens (January)	X
Citrus (February)	X
Cooked greens (March)	
Cucumbers (April)	
Strawberries (May)	
Not applicable	
Which HOTM produce came from the school garden?	
Root vegetables (November)	
Apples (December)	
Salad Greens (January)	
Citrus (February)	
Cooked greens (March)	
Cucumbers (April)	
Strawberries (May)	
Not applicable	X
Check all challenges that you experienced while participating in HOTM.	
No challenges for classrooms	
Not enough staff	X
Ordering produce	
Ordering produce for salad bar	
Not enough school/district support	
Too much prep	X

(*table continues*)

Variable	Selection
How did you promote HOTM at your school and cafeteria? Check all that apply.	
Morning announcements	X
School news/newsletter	
HOTM board	X
Classroom cooking demos	
Cafeteria taste tests	X
Special preparation of HOTM items	X
Wearing HOTM apron bar clings	X
Verbal promotion	X
Posters and salad	X
Inclusion of HOTM in targeted entrees	X
No promotion	
What did you like best about the HOTM Program?	
I loved how excited the kiddos were about trying different fruits and veggies. I did bring in my wok and cooked the baby bok choy with olive oil and a touch of fresh garlic and sampled it. I let them see the wok and showed them how it worked.	
What would you do to improve the HOTM Program?	
Our district did a good job on promoting this. We had good support with the school. It is a little hard trying to do all the HOTM stuff and my regular job at the same time.	
Would you like to participate in HOTM again next school year?	
Yes	X
No	
Please share any additional comments about your Harvest of the Month experience this school year:	
We did not have it this school year, we barely had students at the school with a global pandemic.	

Parent/Guardian Survey Results

The parent/guardian provided responses to nine survey items. The parent/guardian indicated that they were aware of HOTM curriculum offered at the student's school and that they were familiar with the HOTM family newsletter. They neither agreed nor

disagreed that the HOTM newsletter impacted current knowledge and/or behaviors regarding diet and physical activity. The participant disagreed the HOTM newsletter prompted them to change their diet and/or physical activity with the student and family. They disagreed that the student asked them to make changes regarding diet and/or physical activity based on HOTM nutrition education. The parent/guardian disagreed that they had more fruits and vegetables at home. They agreed that they would buy more fruits and vegetables in the future. They disagreed that they would try new recipes. They agreed that they would help the student get more exercise. Table 2 presents the responses for the parent/guardian survey.

Table 2

Parent/Guardian Survey Results

Variable	Selection
Parent/Guardian aware of HOTM curriculum offered at student's school.	
Yes	X
No	
Parent/Guardian familiar with HOTM family newsletter.	
Yes	X
No	
The HOTM newsletter has impacted your current knowledge and/or behaviors regarding diet and physical activity.	
Agree	
Neither agree nor disagree	X
Disagree	
The HOTM newsletter has prompted you to change your current diet and/or physical activity with your student and family.	
Agree	
Neither agree nor disagree	
Disagree	X
Your student has asked you to make changes regarding diet and/or physical activity based on HOTM nutrition education?	
Agree	
Neither agree nor disagree	
Disagree	X
Do you have more fruits and vegetables at home now?	
Agree	
Neither agree nor disagree	
Disagree	X
Buy more fruits and vegetables?	
Agree	X
Neither agree nor disagree	
Disagree	
Try new recipes?	
Agree	
Neither agree nor disagree	
Disagree	X
Help student get more exercise.	
Agree	X
Neither agree nor disagree	
Disagree	

Teacher Survey Results

The teacher who completed the HOTM perception of student behaviors survey responded to six survey items. The teacher indicated students were neither likely nor unlikely to express more interest in improving their eating habits. The teacher indicated that students were neither likely nor unlikely to express more interest in increasing their physical activity. They indicated that students are likely to be more receptive to tasting/eating vegetables. They indicated that students are very likely to be receptive to tasting/eating fruits. The teacher indicated that students were neither likely nor unlikely to be more receptive to tasting/eating fruits. The teacher concluded the survey by saying, "If a conversation begins with these topics, students are more receptive to engaging in dialogue about their eating habits." Table 3 presents the responses for the teacher who responded to the HOTM perception of student behaviors survey.

Table 3

Teacher Survey Results

Variable	Selection
Students express more interest in improving their eating habits.	
Very likely	
Likely	
Neither likely nor unlikely	X
Very unlikely	
Students express more interest in increasing their physical activity.	
Very likely	
Likely	
Neither likely nor unlikely	X
Very unlikely	
Students are more receptive to tasting/eating vegetables.	
Very likely	
Likely	X
Neither likely nor unlikely	
Very unlikely	
Students are more receptive to tasting/eating fruits.	
Very likely	X
Likely	
Neither likely nor unlikely	
Very unlikely	
Students show less interest in drinking soda and sweet drinks.	
Very likely	
Likely	
Neither likely nor unlikely	X
Very unlikely	
Anything else you'd like to share?	
If a conversation begins with these topics, students are more receptive to engaging in dialogue about their eating habits.	

Evidence of Trustworthiness

Researchers establish trustworthiness through credibility, transferability, confirmability, and dependability. Credibility refers to the extent to which the results align with participants' insights (Lincoln & Guba, 1985). Triangulation was the means used to establish credibility in this study. Triangulation occurs when researchers use multiple data sources to develop a detailed view of the phenomenon (Padgett, 2008). In this research study, I attempted to achieve triangulation by comparing interview and survey data. I thought to use iterative questioning to establish credibility; however, it was not needed. Iterative questioning is an approach to maintain consistency in participants' responses (Padgett, 2008), with the researcher addressing inconsistent responses in the final project and offering possible solutions, as Shenton (2004) suggested. Finally, I implemented peer scrutiny to enhance the credibility of this study. Peer scrutiny can aid the study's credibility by offering a fresh perspective by others who are not related to the research study. I obtained peer scrutiny from the dissertation committee (chair, committee member, and university research reviewer).

Transferability relates to the extent to which the study's results are generalizable to a wider population (Lincoln & Guba, 1985; Merriam, 2009). In this study, I analyzed archival data from the University of San Diego HOTM to compare the results of the current study; however, this was an unnecessary step. I was unable to establish the transferability of the study due to limited responses. I had intended to use a thick description by providing sufficiently detailed insight that allows the readers to determine the true context of participant data (Shenton, 2004), allowing the reader to interpret

participants' responses in context. Dervin et al. (2003) posited that divergent and varied findings could increase understanding by exposing the reader to different experiences and reasons.

Confirmability ensures the capture of participants' responses, not what the researcher wants to hear (Lincoln & Guba, 1985). Confirmability is a means to limit the effect of investigator bias. To combat investigator bias, I engaged in reflexivity, evaluating personal biases and preconceptions through continuous self-dialogue during the research process (Berger, 2015; Bradbury-Jones, 2007). Reflexivity entailed ongoing reflection of my thoughts and biases during data collection and analysis and chronicling these thoughts and biases in the results. I recorded participants' responses in a SurveyMonkey survey as received. I read back responses to ensure the correct capture of participants' words.

Dependability refers to the replicability of results given similar contexts, thereby enhancing the credibility of a study (Lincoln & Guba, 1985). Researchers achieve dependability by creating a detailed audit trail (Thomas & Magilvy, 2011). Thus, I created a comprehensive audit trail and a detailed log during data collection, chronicling the data collection steps, any unusual occurrences during data collection, and my reflections on the study.

Summary

Presented in Chapter 4 were the survey responses of the parent/caregiver, teacher, and lead kitchen worker. A consistent theme was limited exposure to HOTM for multiple reasons. One reason was the global pandemic, COVID 19. The lead kitchen worker noted

that there were limited students in-person during the school year, which impacted program implementation. The lead kitchen worker and teacher shared that additional staffing and/or support was needed to implement the program fully. The district nutrition supervisor and staff reported that, in the past, students from UCSD cofacilitated the implementation of the program. During the global pandemic, there was also difficulty accessing farm-fresh produce for multiple reasons.

Chapter 5 will provide a comprehensive overview of the interpretative findings and purpose of the research. Additionally, Chapter 5 will include the research study limitations, recommendations, implications of the study, and conclusion.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

In this chapter, I further discuss the research findings presented in Chapter 4. In conducting this study, I sought to determine the effectiveness of a nutrition program implemented within a public school district in San Diego County. I examined the dietary habits of children, their consumption of locally grown food items, their nutritional education, and the components of the HOTM nutritional educational program. Additionally, I evaluate whether the program accomplished its goals.

There have been nutrition programs implemented at both the federal and local levels to curb the upward trend of childhood obesity in the United States (Kristensen et al., 2014). Local school leaders implemented the HOTM program within the San Diego County Public School District to address the increasing rates of obese and overweight children and decrease risk factors associated with obesity, such as medical and mental health problems. The goal of this evaluative case study was to identify the positive and negative aspects of the HOTM nutritional educational program and its impact on the psychosocial well-being of primary school students. I also wanted to provide information for improvements to make nutrition education reform programs more effective in San Diego County. The need for this study was apparent from University of California, Los Angeles Center for Health Policy Research (2012) data, which showed that 11.1% of children aged 2–11 and 30.7% of children aged 12–17 in California were overweight and obese. Additionally, higher rates of psychosocial distress were apparent among individuals who are obese (Van Zutven et al., 2015).

The theoretical framework of this study was Engel's (1980) biopsychosocial model. The biopsychosocial model holds that disease and health can be impacted by biological, psychological, and sociocultural factors (Miles, 2013). This perspective reflects a shift from examining disease exclusively in terms of biological factors, and places increased significance on the impact psychological and sociocultural factors have on disease (Engel, 1980). The biopsychosocial model allows researchers to examine disease outcomes from the perspectives of biology, psychology, and sociology. I concluded that the biopsychosocial model was applicable to evaluating the HOTM education program because a review of the literature has shown that childhood obesity involves biological (genetics), psychological (well-being), and sociological (nutritional habits, parental influences) factors (Gupta et al., 2012; Keast et al., 2013). Researchers have suggested further study of interventions from a multifaceted treatment modality (Hard et al., 2014). Gupta et al. (2012) and Keast et al. (2013) identified the need for effective interventions on a biopsychosocial level. Because the biopsychosocial model enables the examination of disease outcomes from a multifaceted perspective (genetics, mental health, and environment), it is appropriate to study childhood obesity, a phenomenon affected by multiple factors.

I designed this study to examine the positive and negative aspects of HOTM nutritional educational program and its impact on the nutrition education and psychosocial well-being of primary school students in San Diego County. In conducting this evaluation, I sought to produce findings that would provide San Diego County policy makers with an analysis of past nutritional reforms and suggestions for changes they can

make that might promote a sustainable nutrition education program in San Diego County. However, there were not enough data collected to ascertain information present for reforms and suggest changes for present and future programs. I sought to understand the effectiveness of nutrition education programs, potentially helping decision-makers discover what would improve the value of nutrition education in San Diego County and address psychological well-being among obese children and adolescents.

The primary purpose of this evaluative case study was to examine the effectiveness of a nutrition education program in San Diego County and its impact on the nutritional habits and psychosocial well-being of primary school students. I attempted to highlight the positive and negative aspects of the HOTM nutrition education program and suggest improvements to make nutrition education reform policies more effective. A secondary purpose was to make the findings of this study available to the California Board of Education to assist in selecting areas for restructuring nutrition education policy to improve the quality of nutrition education. A tertiary purpose was to contribute to the limited research on the psychosocial well-being impact and efficacy of national nutritional educational change in the United States.

Interpretation of the Findings

EDSD had approximately 18,695 students at the time of this study. The racial/ethnic breakdown was 72% Hispanic, 19% White, 1% African American, 4% Asian, and 4% other. The student-to-teacher ratio for kindergarten through 12th grade was 23:1, and the district had 1,800 employees (certified staff, classified staff, and administrators).

To be eligible for the study, participants had to be a parent/caregiver, teacher, or a lead kitchen worker working with EUSD and having knowledge of HOTM. The Director of Nutrition Services selected one parent/caregiver, one teacher, and one lead kitchen worker to participate. Participants' demographics were not part of the study.

More research is needed to understand further barriers in implementing effective interventions to lower the rates of childhood obesity. BMI is one standard measure for calculating body fat, comparing weight to height to determine the percentage of the body (WHO, 2016). Based on the percentage, a person can qualify as underweight to obese (CDC; 2015). There has been a rise in rates of obesity in children, and rates have steadily increased over the last 2 decades (WHO, 2016).

The literature shows that current interventions have failed at addressing the globally identified problem. The problem with tackling childhood obesity is more prominent than children, families, schools, and community agencies. Childhood obesity has gained so much attention that it has become an international concern. Childhood obesity does not discriminate and has impacts on children from various socioeconomic statuses, ethnicities, neighborhoods, and backgrounds. Obese children often have physical health, mental health, academic, and social problems associated with their weight.

Numerous agencies from local, state, and federal governments have implemented programs to lower the rates of childhood obesity due to all the problems associated with obesity but have been unsuccessful. The literature showed that multifaceted interventions are the most effective at treating and preventing childhood obesity. HOTM is a specific

program California has implemented in local schools to target obesity. However, not enough research has taken place to evaluate the program's effectiveness. With this study, I attempted to fill the knowledge gap in understanding the factors that contribute to obesity and the interventions that are most effective.

The study sample was a parent, a teacher, and a lead kitchen worker within the identified school district in San Diego County. I collected data using SurveyMonkey. The parent/caregiver and teacher completed the survey independently, whereas the lead kitchen worker participated in a researcher-administered interview (see questions in Appendix C). The lead kitchen worker and I participated in confidential locations free of interruptions. I discussed the interview length, structure, confidentiality, and anonymity with the participant prior to beginning the interview.

RQ1 was, To what extent is the Harvest of the Month nutritional program in San Diego meeting its objective of influencing the nutritional choices and psychosocial well-being for primary school students through the provision of quality nutrition education? Due to limited participant responses, I could not ascertain the extent to which the HOTM program in San Diego was meeting the objective to influence the nutritional choices and psychosocial well-being of primary school students through the provision of quality nutrition education.

RQ2 was, What follow-up programs and steps can be initiated to assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County? I could not ascertain what follow-up programs and steps could

assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County due to the small sample size.

RQ3 was, What steps can be taken to make nutritional education reform programs more effective so that the national nutrition educational needs and psychosocial well-being of the United States can be successfully achieved? Also due to limited participant responses, I could not identify steps to make nutritional education reform programs more effective to meet the national nutrition educational needs and achieve psychosocial well-being.

$H_0$1 was, The Harvest of the Month nutrition education program in San Diego County did not meet its objective of influencing the nutritional choices and psychosocial well-being of primary school students through providing whole person quality nutrition education. This study could not indicate whether the Harvest of the Month nutrition education program in San Diego County did not meet its objective of influencing the nutritional choices and psychosocial well-being for primary school students through the provision of a whole person quality nutrition education due to limited participant responses.

$H_1$1 was, The Harvest of the Month nutrition education program in San Diego County met its objective of influencing the nutritional choices and psychosocial well-being of primary school students through providing a whole person quality nutrition education. The study's small sample size meant that I could not state whether the Harvest of the Month nutrition education program in San Diego County met its objective of

influencing the nutritional choices and psychosocial well-being of primary school students through the provision of a whole person quality nutrition education.

The kitchen lead participant who completed the HOTM kitchen lead survey responded to eight survey items. The participant indicated having all the listed responsibilities about the HOTM produce for classroom taste tests. The participant reported receiving salad greens (January), citrus (February), and strawberries (May) from San Diego County; root vegetables (November), salad greens (January), citrus (February), cooked greens (March), cucumbers (April), and strawberries (May) from California; root vegetables (November), apples (December), salad greens (January), citrus (February), cooked greens (March), cucumbers (April), and strawberries (May) from their distributor; and salad greens (January) and citrus (February) from a farm. They did not receive any HOTM produce from the school garden. The primary challenges for participating in HOTM were insufficient staff and excessive preparation. Participants promoted HOTM at their school and cafeteria through morning announcements, HOTM board, cafeteria taste tests, special preparation of HOTM items, wearing HOTM apron bar clings, verbal promotion, posters and slides, and inclusion of HOTM in targeted entrees. Table 1 presents the responses of the participant who completed the HOTM kitchen lead survey. These findings support Keast et al.'s (2013) assertion that produce should be introduced early in childhood so that individuals develop a preference for fruits and vegetables. Furthermore, the findings were consistent with Sahoo et al. (2015) in that types of food and variety of foods offered influence eating habits and preferences. Last,

the lead kitchen worker's responses aligned with the literature (Sbruzzi et al., 2013; Silveira et al., 2013) supporting school-based interventions, as discussed in Chapter 2.

The parent/guardian who completed the survey responded to nine survey items. The parent/guardian indicated that they were aware of the HOTM curriculum offered at the student's school and familiar with the HOTM family newsletter. They neither agreed nor disagreed that the HOTM newsletter impacted current knowledge and/or behaviors regarding diet and physical activity. The participant disagreed the HOTM newsletter prompted them to change their diet and/or physical activity with the student and family. They disagreed that the student asked them to change diet and/or physical activity based on HOTM nutrition education; disagreed that they had more fruits and vegetables at home; agreed that they would buy more fruits and vegetables in the future; disagreed that they would try new recipes; and agreed that they would help the student get more exercise. Table 2 presents the responses of the teacher who completed the survey. The findings supported Altman and Wilfley (2017), who addressed the importance of including families in interventions. The parent surveyed was not able to agree nor disagree that literature associated with the program implemented in the school prompted change behavior in the school. Furthermore, the parent reported that information the student learned promoted the family to change behaviors in the home. Gupta et al. (2012) offered suggestions on ways to involve parents, including encouraging healthy eating.

The teacher who completed the HOTM perception of student behaviors survey responded to six survey items. The teacher indicated students were neither likely nor unlikely to express more interest in improving their eating habits. The teacher also

reported that students were neither likely nor unlikely to express more interest in increasing their physical activity; that students are likely to be more receptive to tasting/eating vegetables; that students are likely to be receptive to tasting/eating fruits; and that students were neither likely nor unlikely to be more receptive to tasting/eating fruits. The teacher concluded the survey with, "If a conversation begins with these topics, students are more receptive to engaging in dialogue about their eating habits." Table 3 presents the responses for the teacher who responded to the HOTM perception of student behaviors survey. Findings from the teacher's responses are consistent with findings from Wang et al. (2013) in supporting programs that implemented a multifaceted approach.

Limitations of the Study

The results of this study were limited to only the public school district nutrition program within San Diego County, as I did not look outside of San Diego County. The demographics of San Diego County are different than other counties within California. The results are limited to the limited population used in this study. I did not consider individual differences within the population of children evaluated were; however, those differences could likely play an essential role among the sample population. Also not considered were intradistrict demographic locations; however, the environment might play an essential role among the sample population. The responses were based on self-reported data and thus subject to response bias due to social desirability.

Recommendations

Limitations of this study can drive future research studies. I had difficulty finding a school district in San Diego County to evaluate due to several districts declining to

participate in the program. A recommendation is to expand the nature of the study to evaluate the nutrition education program in general. Another barrier was that several schools were not participating in HOTM; however, most reported having some nutrition education program. Schools have a financial incentive to participate in the program and receive local, state, and federal nutrition funding that supplements the nutrition program. I learned that some schools were only participating in one or two aspects of the program and did not want to "publicly expose" the shortcomings of their program. There was also a lack of probability sampling, a specific limitation of this study. Because EUSD provided me with the participants, I am unable to generalize findings for multiple reasons (e.g., sample size, potential for bias, etc.).

I faced challenges due to the many schools' inability to implement the program in the 2020–2021 school year, which required schools to recall dates from the previous year. The prior-year recollection was a limitation of the study, specifically because on March 11, 2020, the WHO declared COVID-19 a pandemic (Armstrong-Mensah et al., 2020). This was an unforeseen limitation, and it impacted the ability to conduct research. Furthermore, the global pandemic also impacted access to participants, which affected the participant pool.

Implications

I designed this study to understand to what extent HOTM was meeting its objective of influencing nutritional choices and psychosocial well-being for primary school students through quality nutrition. Limited literature focuses on the factors that contribute to childhood obesity. There have been nutrition programs implemented at the

federal and local levels to curb the upward trend of childhood obesity in the United States (Kristensen et al., 2014). However, it is unknown what is or are the most effective interventions for tackling this global crisis. Gupta et al. (2012) suggested that combating childhood obesity requires addressing sedentary lifestyles, the consumption of less nutrient-dense foods, and increased intake of sugary beverages.

A gap in the literature exists in understanding the current programs implemented and ascertaining if they are adequately addressing the following concerns: better school-based physical education, community support, parental involvement, safe ways for children to walk/bike to school, resistance training exercise, encouraging healthy eating at home and school, nutrition education at school, parents setting healthy examples, regular health checkups, and long-term campaigns aimed at intervention (Gupta et al., 2012). The present study is also significant for psychological issues, especially those relating to mental health implications of childhood obesity. Karnik and Kanekar (2011) found that children who were obese had a more inferior self-image, which could exacerbate psychological health problems that can last well into adulthood. Having a more inferior self-image contributes to mental health comorbidities that have the potential to become financially burdensome later in life, particularly when compounded with medical expenditures related to obesity-related ailments (Halfon et al., 2013). By addressing childhood obesity early on with nutrition education programs at school, it could be possible to avoid these adverse effects later in life. Childhood obesity is a problem within the United States, with nearly 18% of children meeting the standards for being overweight or obese (CDC, 2021a; Ogden et al., 2016).

Federally mandated and local programs are in place to curb the upward trend of childhood obesity (Kristensen et al., 2014). The public school district in San Diego County implemented one such program to address its obesity rates, with 11.1% of children aged 2–11 and 30.7% of children aged 12–17 reported as overweight (Gee et al., 2013). Although I could not determine the extent to which HOTM influenced the nutritional choices and psychosocial well-being of primary school students through the provision of whole person quality nutrition education, exploring this topic is significant, as childhood obesity is a global crisis. Modifying the present study as recommended would allow for further inquiry and expanded findings.

Conclusion

This research was a study to examine the extent HOTM nutrition education program in San Diego was meeting its objective of influencing the nutritional choices and psychosocial well-being for primary school students through the provision of quality nutrition education, to identify what follow-up programs and steps can be initiated to assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County, and to identify what steps can be taken to make nutritional education reform programs more effective so that the national nutrition educational needs and psychosocial well-being of the United States can be successfully achieved. In this study, I could not determine what follow-up programs and steps could assist primary schools in sustaining successful nutrition educational change and psychosocial well-being in San Diego County because of limited participant responses. Also due to a small sample size, it was not possible to identify steps to make nutritional

education reform programs more effective to achieve national nutrition educational needs and psychosocial well-being in the United States. Finally, I was unable to state whether San Diego County's implementation of the HOTM nutrition education program did or did not meet the objective of influencing the nutritional choices and psychosocial well-being for primary school students through the provision of a whole person quality nutrition education, also due to limited participant responses.

Despite its limitations, this study supports the need for further research in the area of sustaining successful nutrition educational changes and psychosocial well-being through nutrition education for San Diego County students. A review of the literature identified a relationship between positive health outcomes in children with obesity and nutrition education (O'Neill Hayes & VanHorn, 2021). Further research is needed to identify what specific nutrition education components were most effective and what other factors contributed to more successful outcomes.

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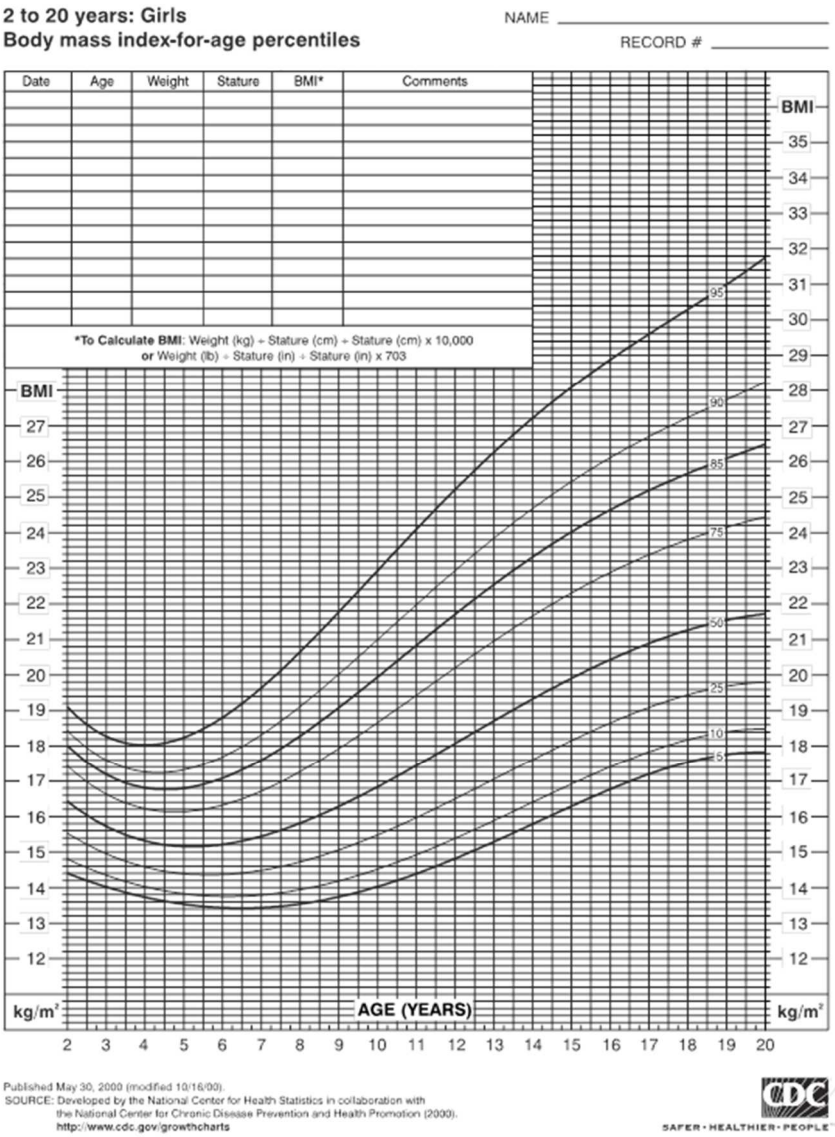
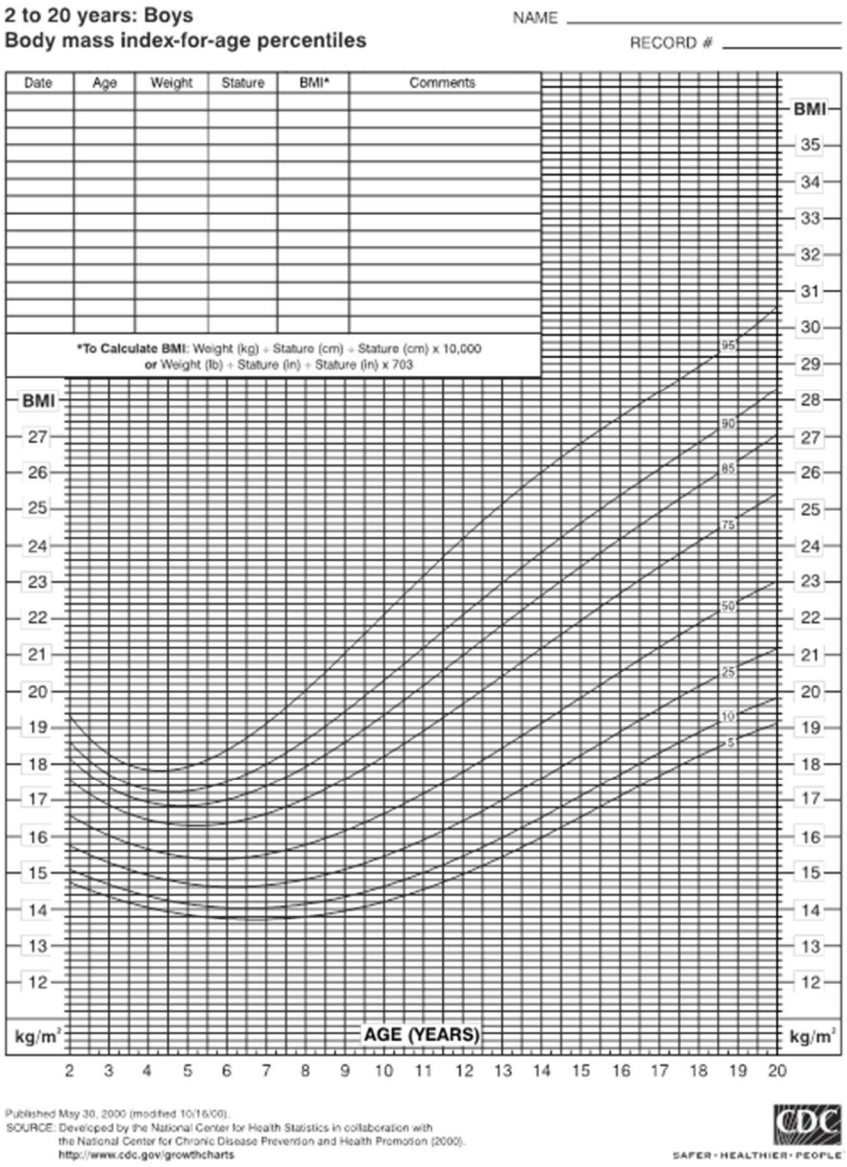
Appendix A: Centers for Disease Control and Prevention Clinical Growth Chart (2 to 20 Years: Girls)



Note. From *2 to 20 Years: Girls Body Mass Index-for-Age Percentiles*, by Centers for Disease Control and Prevention, 2000b (https://www.cdc.gov/growthcharts/data/set1clinical/cj41c024.pdf). In the public domain.

Appendix B: Centers for Disease Control and Prevention Clinical Growth Chart (2 to 20 Years: Boys)



Note. From *2 to 20 Years: Boys Body Mass Index-for-Age Percentiles*, by Centers for Disease Control and Prevention, 2000a (https://www.cdc.gov/growthcharts/data/set1clinical/cj41c023.pdf). In the public domain.

Appendix C: Permission to Use Harvest of the Month Survey Data

UC San Diego
SCHOOL OF MEDICINE

June 18, 2018

To Whom It May Concern;

Donielle Turner has permission to use survey data and instruments associated with the Harvest of the Month Program Evaluations conducted 2015 – 2017, by UC San Diego Center for Community Health and the County of San Diego, NEOP-B department.

Sincerely,