AN ASSESSMENT OF CALIFORNIA SCHOOL NURSES' PERCEPTIONS OF THEIR ROLE IN THE MANAGEMENT OF OBESITY WITHIN THE SCHOOL SETTING

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THESIS

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A Thesis

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I certify that these students have met the requirements for format contained in the University format manual, and that this thesis is suitable for shelving in the Library and credit is to be awarded for the thesis.

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Date

April 28, 2009
Abstract

of

AN ASSESSMENT OF CALIFORNIA SCHOOL NURSES' PERCEPTIONS OF THEIR ROLE IN THE MANAGEMENT OF OBESITY WITHIN THE SCHOOL SETTING

by

Pamela Kaye.Larios

and

Laurene Marie Staggs

Statement of Collaboration

Pam Larios wrote chapters 1 and 2. Laurie Staggs wrote chapters 3 and 5. Chapters 4 and 6 were written jointly. The tables were created by Laurie Staggs. The abstract, table of contents, and formatting were done by Pam Larios. All parts of this thesis were edited and discussed by both researchers before draft completed.

Statement of Problem

Childhood and adolescent obesity has become a problem of epidemic proportions. Because students spend most of their waking hours at school, school nurses have the potential to provide early treatment and prevention of childhood obesity, which could have long-term health and psychological effects into adulthood. The purpose of this study is to determine California school nurses' perceptions of their role in management of obesity within the school setting.

Source of Data
Data was obtained from a convenience sample of 163 credentialed California school nurses selected by invitation at three school districts and by volunteer participation at the California School Nurse Organization's State Conference during the business portion of the meeting. The researchers' sought to quantitatively determine what school nurses' perceived role in the management of obesity is in the school setting.

Conclusion Reached

School nurses cite lack of time and competence to properly manage and monitor obesity. School nurses also noted lack of policy and procedures in place to accurately assess and monitor body mass index. School nurses also cited lack of support from parents, teachers, staff, and community on this potentially life threatening disease.

Committee Chair
Dian Baker, PhD(c), APRN-BC, PNP
DEDICATION

Each of us have special people in our lives on whom we depend and would like to thank.

Pam Larios: I would like to thank my husband, John, for his continuous love and support throughout my entire educational career. You are a great man and husband. To my children, Chelsea and Spencer, you inspire me to be the best that I can be and for never complaining but always being by my side and expressing your continuous love and support. You are my pride and joy and I am so proud of both of you. To my mother and father, whose endless support, encouragement, and assistance I so depended on throughout my educational career. I could not have completed this without you taking such wonderful care of my children. To my best friend, Laurie through all the bickering and laughs, we have finally succeeded on this educational journey and only hope there are more to follow. I thank the Lord for being at my side because when I wanted to give up he lifted me high and allowed me to complete this part of my life’s journey. To all of you, I want to say I love you and I would not be the person I am today without your love and support.

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The 163 school nurses whom so graciously consented to completing our questionnaires, which provided valuable information.
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INTRODUCTION

Problem Statement

School represents the second most significant environment in a student's life. School nurses are considered as health experts in the education community and are charged with multiple roles, including serving as liaisons among health care providers, school personnel, and community (National Association of School Nurses [NASN], 2002). In addition, school nurses have the responsibility in ensuring that all school services are delivered in the overall framework of the child, the family, and the individual health plan (American Academy of Pediatrics, 2008). This study is designed to reveal school nurses' perceptions of their roles and responsibilities in the management of obesity in the school setting. Due to the rapid increase of childhood and adolescent obesity, this study will determine if current school nursing practice reflects the demand for assessment of obesity in school age children. It is vital to determine factors associated with school nurses supporting and providing obesity prevention services. School nurses interact on a frequent basis with parents and physicians to combat serious health problems by assessing and promoting the student's health and development. Childhood obesity has received monumental attention but policies and programs needed to prevent childhood and adolescent obesity are less than optimal, scarce, or non-existent (Levy & Petty, 2008). Body Mass Index (BMI) screening is a straightforward, noninvasive, low-cost tool that can be used to help detect students that are overweight or at risk of becoming overweight (Stoddard, Kubik, & Skay, 2008). As of 2005, West Virginia,
Tennessee, Pennsylvania, Missouri, Illinois, Florida, California, and Arkansas have implemented school-based BMI reporting requirements (Story, Kaphingst, & French, 2006). Despite this requirement, not all school districts in California are participating in BMI screening, which leaves a massive gap on the identification and treatment of childhood and adolescent overweight and obesity. Body Mass Index monitoring would provide early detection and school nurses would have the ability to monitor these students on a consistent basis. School nurses are the most likely to calculate the Body Mass Index (BMI) of children and adolescents. The BMI measurement may help address future programs or efforts by school nurses and schools by determining school nurses activities, perceptions, and perceived benefits and barriers as they relate to the ongoing task of BMI screening for students (Hendershot, Telljohann, Price, Dake, and Mosca, 2008). Healthy People 2010 (USDHHS, 2000) identifies specific goals to reduce the pervasiveness of obesity. Students spend a large portion of their day at school, and the school nurse has potential to have a significant role in implementing strategies to address this issue.

The Obesity Epidemic

The United States is in the midst of an obesity epidemic. Overweight and obesity are the nation’s fastest rising public health concerns. Obesity rates doubled among U.S. adults and children and tripled in teens during the past 25 years (National Alliance for Nutrition and Activity, 2003). Obesity during childhood is the most common nutritional program among young people in America (Vessey & MacKenzie, 2000). Childhood obesity is defined as body mass index (BMI) at or above the 95th percentile, and
childhood overweight is defined as BMI at or above the 85th percentile (American Medical Association, 2007). Obese children are more likely than nonobese children to suffer a variety of physical health problems, such as Type 2 diabetes mellitus, sleep apnea, orthopedic problems, and adverse risk factors such as hypertension, dislipidemias, and cardiovascular disease (Schmidt, 2003). The Centers for Disease Control and Prevention (CDC) reported that of children born in 2000; one in three would eventually develop Type 2 diabetes mellitus (Narayan, Boyle, Thompson, Sorensen, & Williamson, 2003).

Factors Contributing to the Obesity Epidemic

Centers for Disease Control and Prevention (CDC, 2007) note that obesity during childhood most likely stems from a combination of multiple aspects, including socioeconomic status, psychological, cultural, nutritional, and environmental. Activity and nutrition are imperative for development, growth, and well-being. Promotion of good nutrition habits is essential from childhood and must be maintained throughout the lifespan (NASN, 2002). Times are changing and many schools are cancelling their physical activity programs to allow more rigorous academic activities to take place (Young, et al., 2007). A majority of studies regarding parent’s perception of their children’s weight did not perceive their child to have any potential health problems or to be overweight (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000; Eckstein, et al., 2006). Latina and Hispanic mothers perceived their children’s body size as normal and failed to perceive any problems dealing with obesity (Crawford, et al., 2004; Killion, Hughes, Wendt, Pease, & Nicklas, 2006; Myers & Vargas, 2000). School settings throughout the
United States are experiencing a growth in the population of Mexican American children. School nurses need to have an awareness of the concept of acculturation and its potential implications of nutritional status of Mexican American children (Ward, 2008). School nurse practice depends on an expansive knowledge foundation to meet students' health requirements and to collaborate effectively with the various school and community team members (Hootman, 2002).

**Prevalence**

Overweight children and adolescents have a 70% chance of becoming overweight or obese adults, according to the U.S. Surgeon General's Office. Extreme weight increases amplifies the risk of health problems ranging from high blood pressure, several forms of cancer, heart disease and Type 2 diabetes (LaFee, 2008). Current indications note that the threat of obesity is greater than ever in the United States and children and adolescents will grow into the most obese generation of adults in the United States history (Hill & Trowbridge, 1998). Better methods are necessary to address adolescents' obesity. Currently, obesity measurements are defined on the basis of age-specific percentiles of body mass index (BMI). Research is needed to learn whether and how these measurements of the BMI vary with sex, age, and ethnicity (Hill & Trowbridge).

**Contributing Factors**

Obesity in children and adolescent’s which can then lead into adulthood has multiple factors that play a significant part such as poor nutrition and decreased physical activity. The student’s average daily consumption of fruits, fruits and vegetables, and total saturated fat was a significant finding in the lack of nutrients in the school setting.
Results draw attention to an urgent need to evaluate the variety and nutrient quality of the beverages and the types of food sold to students in the school setting. This study is one of the first to study and examine an adverse association between physical factors in the school, food and environment (Kubik, Lytle, et al., 2003). The highest percentages of children who are obese or overweight are found in ethnic minority communities with lower socioeconomic status. From this group, two to five year olds who reach school age, the level of obesity will be even higher (Levy & Petty, 2008). Lack of physical activity and excessive inactivity may cause obesity in children.

A study was done in South Carolina which indicated that children who spent less time in physical activity than their nonobese peers who engaged in less vigorous activity and increased television viewing were the most overweight. It was found that children from Mexico City had an increase risk for obesity by 12% for each hour per day of television viewing and decreased by 10% for each hour per day of moderate physical activity (Ebbeling, Pawlak, & Ludwig, 2002). School nurses must become active participants in the fight against childhood obesity. School nurses need to become leaders and advocate for programs and policies related to childhood obesity. Finally, school nurses can ensure that school environments are healthy and promote programs which will educate students and parents about nutrition and exercise (Hendershot, et al, 2008).

Role of the School Nurse

School nurses have the potential to have a significant impact in the area of childhood and adolescent obesity because of their access to a large population of school age children. School nursing has become a specialty practice and school nurses should be
at the forefront of all schools but are not always available. School nurses have expressed the needs for hands-on instruction regarding appropriate assessment techniques in the area of BMI measurements as well as effective counseling techniques for children and families (Moyers, Bugle, & Jackson, 2005). The health personnel most likely to calculate a child’s BMI in the school setting is the school nurse. Determining school nurse’s perceptions and barriers as they relate to BMI measurement may serve to direct future efforts and programs by schools and school nurses. BMI assessment mandates whether state, district, or school wide may not have been in place for an extended time period and therefore may not have had sufficient time to influence school nurse’s perceptions (Hendershot et al., 2008).

Purpose of the Study

This study’s purpose is to determine California’s school nurses’ perceptions of their roles in the management of obesity within the school setting. This is an exploratory cross-sectional quantitative research study. A descriptive questionnaire using convenience sampling was administered to credentialed school nurses. Obesity during childhood most likely stems from an interaction of multiple factors, including nutritional, psychological, and environmental, cultural, socioeconomic status (CDC, 2007). The ultimate goal is to determine California school nurse perceptions of their role in the management of obesity in the school setting. The findings of this study will be beneficial in discovering school nurses perceptions of their roles in the management of obesity in the school setting. School nurses should use their position to speak up for the health of children.
Research Questions

1. What are school nurses’ perceived annual responsibilities in the school setting?

2. What are the school nurses’ perceived roles in childhood obesity prevention?

3. What are the school nurses’ perceived responsibilities in school-based obesity prevention?

4. What are the school nurses’ perceptions of support from parents, staff, school board, and community?

Study Assumptions

The following aims are identified to clarify the understanding of research findings and interpretation for this study.

1. School nurses will respond with fidelity to the survey questions.

2. School nurses will have a perception of obesity management.

Theoretical/Conceptual Definitions

The following definitions will be used to define terms related to obesity.

*Body Mass Index (BMI).* An indirect measure of body fat calculated as the ratio of the person’s body weight in kilograms to the square of a person’s height in meters. BMI (kg/m²) = weight (kilograms) ÷ height (meters)² (CDC, 2009).

*BMI-for-age.* In children and youth, BMI is based on growth charts for age and gender and is referred to as BMI-for-age which is used to assess underweight, overweight, and risk for-over-weight (IOM, 2004c).
Childhood obesity. BMI ≥ 95th percentile by age and sex (Arkansas Obesity Task Force, 2000).

Epidemic. A condition that is occurring more frequently and extensively among individuals in a community or population than is expected (IOM, 2004c).

Obesity. An excess amount of subcutaneous body fat in proportion to lean body mass (IOM, 2004c).

Parent/Guardian. One who has the care of the person or property of another (Merriam-Webster, 2009).

Physical activity. Body movement produced by the contraction of skeletal muscles that result in energy expenditure above the basal level (IOM, 2004c).

Physical inactivity. Not meeting the type, duration, and frequency of recommended leisure time and occupational physical activities (IOM, 2004c).

School district. A geographical division, with specified limits, whose school or schools are administered by a local board of education (Dictionary.com, 2009).

School nurse. A school nurse is a registered nurse currently licensed, and who has completed the additional requirements for and possesses a current credential in school nursing (California Education Code 49426, 2009).

Sedentary. A way of living or lifestyle that requires minimal physical activity and encourages inactivity through limited choices, disincentives, and/or structural or financial barriers (IOM, 2004c).

Stadiometer. An instrument to measure height both standing and sitting (Stedman’s Medical Dictionary, 2006).
Specific Aims

The specific aims of this study are to:

1. Identify school nurses’ perceived responsibilities in the school setting.
2. Identify school nurses’ perceived responsibilities in school-based obesity prevention.
3. Identify school nurses’ perceived support from others in obesity prevention.

Summary

"Obesity has emerged as a deadly epidemic and threatens the health of children in the United States. Between 1986 and 2000, the prevalence of severe obesity (body mass index [BMI] >40 kg/m) quadrupled from 1 in 200 Americans to 1 in 50. Adults with a BMI of 50 kg/m or higher increased by a factor of 5 from 1 in 2,000 to 1 in 400" (Sheehan, & Yin, 2006, p. 308). Results of this study may be used to create interventions designed to promote the health practices of school nurses. The following chapters will look at the literature review, conceptual framework, methodology, results, and conclusions and recommendations on the subject of obesity."
Chapter 2

BACKGROUND OF THE STUDY

Literature Review

This literature review examines the prevalence of obesity, the etiology and physiology of obesity, BMI measurement, current prevention and treatment modalities. The school nurses' perceptions of their role in prevention and treatment of obesity in the school setting will be examined. Guidelines for management of obesity in schools will be addressed and the literature review will provide current data available in this area of study.

Overview of Obesity in the United States

The United States is in the midst of an obesity epidemic. Overweight and obesity is the nation’s fastest rising public health concern. Obesity rates doubled among U.S. adults and children and tripled in teens in the past 25 years (National Alliance for Nutrition and Activity, 2003). Childhood obesity is the most common nutritional problem among young people in America (Vessey & MacKenzie, 2000). Obesity has affected nearly every section of the population and of specific relevance is its impact on children (Ogden, Flegal, Carroll, & Johnson, 2002). It has been shown that children who are overweight tend to become overweight adults and are significantly more vulnerable to serious health issues related to obesity (Downey, & Boughton, 2007).

Literature Search

The search terms school nurse, school nursing, obese, obesity, children, roles, overweight, perceptions, attitudes, nutrition, programs, body mass index (BMI),
adolescents, ethnicity, school age, public school, and private school were searched in EBSCO Host, Pub Med, ERIC, and CINAHAL Plus with full text (EBSCO). Fifty-nine articles were returned and six described perceptions of others in addressing childhood obesity, three addressed attitudes and perceptions among other practitioners, 12 related to prevention and treatment of obesity, three related to ethnic groups and their risk factors for obesity, six related to nutrition, six were covered general obesity facts, two looked at BMI, 11 explored the role of the school nurse in providing school services, six examined surveys of the school nurse role in addressing obesity and monitoring BMI’s, and only four articles returned addressing perceptions of the school nurse in obesity prevention in the school setting. This would indicate more research is needed.

The purpose of this study is to assess the school nurses’ perceptions of their role in the management of obesity within the school setting. This study will utilize California school nurses’ perceptions to examine their specific role in the management of obesity in the school setting. This literature review supports the need for further research because students spend more than half of their waking hours at school.

Overweight and Obesity

According to the Centers for Disease Control (2009) overweight and obesity are both labels for ranges of weight that are greater than what is generally considered healthy for a given height. It also identifies ranges of weight that have been shown to increase the likelihood of health problems and certain diseases. Overweight, according to the Arkansas Obesity Task Force (2000), is defined as a BMI $\geq 85^{th}$ percentile and less than the $95^{th}$ percentile by sex and age; whereas obesity is defined as a BMI $> 95^{th}$ percentile.
by sex and age. Obesity in childhood needs to be addressed in order to prevent the co-morbidities resulting from years of poor eating habits and insufficient activity which is required for optimal health.

Today the number of students who are considered obese has risen substantially, and more than nine million children over 6 years of age are considered obese (IOM, 2004a). The rate of obesity has tripled in children ages 6-11 years in the past three decades (IOM, 2004a). Murphy and Polivka (2007) concluded that the public acknowledges the numerous contributing factors to childhood obesity and can recognize where prevention strategies may be successful.

**Prevalence of Obesity in the United States**

*General Prevalence*

The prevalence of obesity continues to be a health concern for adults, children, and adolescents in the United States (Centers for Disease Control, 2009). According to the Arkansas Obesity Task Force (2000), obesity is a chronic disease and is the most prevalent disease of children and adolescents. The prevalence of obesity amongst children and adolescents has doubled between 1980 and 1994. This staggering statistic notes that childhood obesity is at epidemic proportions in the United States. National U.S. surveys have documented the high prevalence of overweight and obesity during childhood and adolescence (Troiano & Flegal, 1998). According to Troiano and Flegal (1998) 11% of U.S. children and adolescents are currently classified as overweight (body mass index [BMI] >95%), and an additional 14% of children and adolescents have a BMI between the 85th and 95th percentiles that places them at risk for becoming overweight.
Prevalence of Obesity in Schools

School nurses are occupied with many disease processes such as diabetes, asthma, and special needs students within the school setting. Overweight and obesity deserves the same time and attention by school nurses. Howard (2007) noted that early intervention can avoid complications such as polycystic ovary syndrome, diabetes, orthopedic problems, and hypertension. School nurses should not assume that a parent is aware that their child is overweight, and many parents are unaware of what a BMI is and how it is defined. The school nurse must also keep the ethnicities of students in mind. Obesity may not have social stigma in all cultural and ethnic groups and may not be equally important to all groups (Davis, Northington, & Kolar, 2000). The prevalence of obese school-age children and adolescents has tripled in the last 20 years; less than five percent of youth were obese in the first National Health and Nutritional Examination Surveys (NHANES 1963-1970), but 15% were overweight in the most recent NHANES data (1999-2000) Ogden, et al., (2002). According to Gance-Cleveland and Bushmiaer (2005), there are currently, 1 in 10 infants, 1 in 7 school-age youth, and 1 in 4 adolescents that are obeses. School nurses are in a unique position because of their access to children in the school setting and can play a significant role in treatment and prevention of childhood obesity (Moyers, et al., 2005).

Prevalence of Obesity Based on Ethnicity in the School Setting

The Surgeon General’s Call To Action To Prevent and Decrease Overweight and Obesity (USDHHS, 2001) was issued to stimulate the development of specific agendas and actions targeting this public health problem. Congress in 2002, charged the Institute
of Medicine (IOM) with developing a prevention–focused action plan to lower the number of obese children and youth in the U.S. (IOM, 2004b). Prevention efforts must be attentive to language, culture, and inequities in economic, social, and physical environments and should be targeted to reach high-risk populations. Children in certain ethnic groups, including American Indian, African American, Mexican American, and Pacific Islander populations, as well those whose parents are obese and those who live in low–income households, are disproportionately affected by the obesity epidemic.

Tyler (2004) noted that the high prevalence of obesity among Mexican Americans is more significant relative to the increasing Hispanic population, which is the fastest rising racial-minority group in the United States, among whom those of Mexican descent are the largest proportion (U.S. Census Bureau, 2001). In Hispanic children, specific risk factors included sedentary lifestyles and frequent consumption of multiple servings of fruit, which increased the odds of obesity approximately two-fold and 68% respectively. Eating fruits is usually considered a healthy behavior; however excessive fruit consumption appears to increase the likelihood of obesity among Hispanic children (Urrutia-Rojas, et al., 2008). Over the past few years, a larger number of Mexican American children and adolescents ages 2-19 years have been identified as being obese based on the 2000-2002 CDC BMI-for- age growth chart criteria (National Center for Health Statistics, 2007). Data from the National Health and Nutrition Examination Survey (NHANES, 2003-2004) discovered that the prevalence of obese has increased for all children and adolescents over time but there are disparities among racial and ethnic populations. Mexican American boys ages 2-19 years, the prevalence was greater
(22.0%) than for non-Hispanic Black (16.4%) or non-Hispanic White (17.8%) boys. Mexican American girls' age 2-19 years (16.2%) was greater than non-Hispanic White girls (14.8%) but less than non-Hispanic Black girls (23.8%). It is commonly believed that Hispanics will take action if they perceive their health to be poor (Mendoza & Fuentes-Afflick, 1999). However, obesity in children may not be viewed as a health problem and may actually be seen as an indicator to good health, especially among low-income income families (Baughcum, Burklow, Deeks, Powers, & Whitaker, 1998; Baughcum, Chamberlain, Deeks, Powers, & Whitaker, 2000; Jain et al., 2001).

A study was done by Urrutia-Rojas et al. (2008) to determine specific risk factors associated with obesity among Caucasian, Hispanic, and African American children. This cross-sectional study was conducted in 2000 in Fort Worth Texas. Fort Worth Independent School District (FWISD) selected 17 elementary schools for participation. There is a growing concern over the rapid increase in childhood obesity specifically examining the diets and lifestyles of American children. Increased fruit and vegetable servings as well as decreased fat and sugar consumption significantly counteract obesity in parents and their children (Epstein, Gordy, et al., 2001).

**Physical Activity**

Children with increased physical activity have been associated with a significant decrease in weight and body fat percentage (Epstein, Paluch, Gordy, & Dorn, 2000). Robinson (1999) suggested that television viewing, as part of a sedentary lifestyle, is one of the most easily modifiable risk factors of obesity among children. Reducing video tape, television, and video game usage has been noted to be a positive approach to
preventing childhood obesity. All fifth grade students at the selected schools were invited to participate. Approximately 1500 fifth graders (usually 10-12 years old, 1076 consented to participate in the study). Participation was voluntary and the Institutional Review Board (IRB) approved a consent form signed by parents or guardians which was required for inclusion in the study. An assent form was signed by the child if he or she agreed to participate. Only Hispanic, African American, and Caucasian children (n = 1018) were included in the analysis since the sample size for others ethnicities was very small (n = 58). The physical assessment included acanthosis nigricans (i.e. a hyperpigmentation of certain areas of skin due to insulin resistance and a warning sign of Type 2 diabetes mellitus), weight, height, and blood pressure (BP), as points of measurement. A digital electronic scale (Tanita Model TBF-300) was used to measure the weight of the children wearing light clothes and no shoes. A portable stadiometer attached to the wall was used to measure the height in inches to the nearest 1/16 of an inch, and the children stood without shoes (Urrutia-Rojas et al., 2008). Children with a BMI value over the 85th percentile for age and gender were classified as overweight (Barlow & Dietz, 1998). According to Urrutia-Rojas et al., (2008) BMI values of the 95th percentile and over were considered obese. The findings of this study indicated that eating habits and physical activity differed between Hispanic, African American, and Caucasian children. African American children who were reported eating snacks and soft drinks that were high in sugar were more likely to be overweight. In contrast, no significant association was found between high-sugar snacks/soft drink consumption and obesity in the Caucasian or Hispanic children. Lowry, Wechsler, Galuska, Fulton & Kann (2002), showed physical
inactivity to be a more severe problem in Hispanic children. They also noted that 52 percent of Hispanics, 74 percent of Black students, and 34 percent of White students watched television for more than two hours per day; although, in this study no association between watching television and being obese was found in any of these three groups. Urrutia-Rojas et al. (2008) indicated that there are specific risk factors for each ethnic group that should be examined. Eating habits and level of physical activity were different for Hispanic, African American, and Caucasian children. These associations indicate that special strategies related to lifestyle and cultural relevance, for each ethnic group, should be considered when developing preventive interventions. Final results indicated more African American (32.8 per cent) and Hispanic (31.9 per cent) children were obese compared to Caucasians (23.5 per cent). Poor children and minorities are especially vulnerable, with Hispanic and Black youth being most affected (Schmidt, 2003). Many school children may be at risk for obesity’s unfavorable effects.

Effects of Obesity on School-Related Issues

Recent research has indicated that when obese students are compared to normal weight students, obese students have lower academic success, frequent tardies and absences, and frequently serve detention (Shore, et al., 2008). It is vital that school nurses be aware of the attitudes of their students in this population. It is important that the school nurse environment foster self-esteem, positive body image, and body satisfaction when dealing with adolescents attitudes toward weight (“Guidelines for,” 2003).

National recommendations advocate for health providers to address obesity prevention. Programs are needed that provide children and their families with the
attitudes, skills and knowledge to consume a healthy diet and engage in regular activity (American Diabetes Association, 2000). School nurses are well positioned to employ these measures into their practice it appears necessary to capitalize on areas of diversity and assess individual perceptions and needs rather than imposing the ideals and beliefs of other cultures (Tyler, 2004).

Etiology and Physiology of Obesity

Obese children are prone to become obese adults, more susceptible to the wide range of health problems associated with obesity. Children’s health is affected by both school and nonschool factors (Downey & Boughton, 2007). According to (Puhl & Latner, 2007) obese children are reported to have lower self-esteem and higher rates of depression. In addition many obese children experience stigmatization and social isolation. It is known that two-thirds of obese children who are 10 years or older will become obese adults (Inge, et al., 2004). Childhood obesity is a public health priority and requires a widespread community response. Children rely on adults to protect and nurture them and they are not fully responsible for their own health choices. Obesity reflects a combination of behavioral, environmental, and genetic factors and therefore requires that the public health department identifies solutions to the problem. It is estimated that a $117 billion is spent annually by the U.S. in direct and indirect costs for care related to obesity (U.S Department of Health and Human Services [USDHHS], 2001).

There has been much written about the causes of obesity in adolescence and why over the past 30 years this trend has increased. Suggestions include the effect of culture and cultural changes in dietary patterns, prenatal influences, and genetic connection
Obese children are more likely than non-obese children to suffer a variety of devastating physical health problems, such as orthopedic problems, sleep apnea, and type-2 diabetes mellitus, and adverse risk factors such as cardiovascular disease, dislipidemias, and hypertension (Schmidt, 2003). The CDC also includes risk factors such as cancers (breast, endometrial, and colon), gallbladder and liver disease, stroke, respiratory problems, osteoarthritis (a degeneration of cartilage and its underlying bone within a joint), and gynecological problems such as abnormal menses and infertility.

**BMI Measurement in the School Setting**

The body mass index (BMI), a measurement of weight relative to height, is easy, quick, and cost-effective and is considered a valid measure of adiposity (Cole, Bellizzi, Flegal, & Dietz, 2000; Lindsay, et al., 2001; Pietrobelli, et al., 1998). In children and youth, BMI is based on growth charts for gender and age is referred to BMI-for-age, which is used to assess overweight, underweight, and risk for overweight. According to the Centers for Disease Control and Prevention (2009) a child with a BMI-for-age that is $\geq 95^{th}$ percentile is considered to be overweight. The definition of obesity is equivalent to the CDC definition of overweight. Institute of Medicine (2004) defined BMI as an indirect measure of body fat calculated as the ratio of a person’s body weight in kilograms to the square of a person’s height in meters.
Health-care Professionals' Role in BMI Monitoring

Health-care professionals have the access and the authority to influence both children and families. They have the ability to make obesity a health concern and offer them guidance in pursuing healthful dietary habits and regular physical activity. To achieve this goal, health-care providers should routinely measure their young patients' height and weight and calculate their BMI during every health office visit. By doing so, clinicians indicate to families that a BMI measurement is just as important as routine screening tests or immunizations in protecting children's health. However, despite the availability of standardized BMI charts for children, the majority of clinicians currently rely on clinical impression and weight-for-age or weight-for-height measures rather than BMI to assess risk of obesity (IOM, 2004d).

The (2004d) indicates that health-care professionals have traditionally lacked training/education in nutrition and physical activity or how to counsel students and families in these areas. To ensure that school nurses are sufficiently prepared to discuss obesity risks and prevention with their students and families, health professional schools, and other training programs to provide the required knowledge and skills related to obesity prevention must include this in their curricula and examinations. These skills may include how to calculate and interpret BMI levels for students and specific knowledge about proper nutrition and physical activity levels to prevent childhood obesity. School nurses should also create and disseminate evidence-based clinical guidelines and other educational materials on childhood obesity prevention and treatment. They should
advocate for childhood obesity prevention initiatives and coordinate their efforts with professional organizations.

Prevalence of BMI Monitoring in the Schools

According to the CDC (2009), the Journal of American Medicine (JAMA) article reports the prevalence of high body mass index (BMI) among U.S. children and adolescents. JAMA noted no significant changes between 2003-2004 and 2005-2006 and no significant trends between 1999 and 2006. Overweight and obesity are high with 31.9% of children and adolescents age 2-19 years at or above the 85th percentile of the 2000 BMI-for-age growth charts.

Some schools, districts, and states have instituted mandatory school BMI screenings for students. These policies take a considerable amount of time, effort, money, and energy to implement and are not always met with positive reactions from parents, school administration, or school nurses themselves (Hendershot et al., 2008).

School-based BMI screening programs have been implemented in several states. As of 2005, West Virginia, Tennessee, Missouri, Pennsylvania, Florida, Illinois, California, and Arkansas had BMI reporting requirements (Story, Kaphingst, et al., 2006). As of 2005 the most aggressive state wide screening program was implemented in Arkansas in 2003; this complex initiative Act 1220 (2003) mandated annual statewide BMI assessments of all Arkansas public school children. The higher rate of obesity in that state was addressed with confidential reporting of results to parents (Arkansas Center for Health Improvement [ACHI], 2004). School districts have also implemented BMI screening programs in addition to state mandates. In 2003 the Cambridge, Massachusetts
School District implemented district-wide screening for all kindergarten through 8th-grade students (Scheier, 2004). Future research could be obtained by measuring and monitoring BMI’s. This data could provide more school districts with valuable insights about what components of an adolescent obesity prevention program may be included to increase the chance of its effectiveness (Wilson, 2007). According to Stoddard, et al. (2008) the reporting prevalence results are imperative in order to monitor the extent of the problem and evaluate the effectiveness of interventions that aim to decrease the number of adolescents affected by being overweight and obese. It is important to evaluate the process for collecting the weight and height measures that will be used to calculate age- and gender- adjusted BMI percentiles for individual students. California Education Code Section 60800 requires school districts to administer physical fitness testing on an annual basis to all students in grades five, seven, and nine. Schools are required to give the students the results but it is up to the individual school whether or not they send a note home to the parent or guardian. According to California Education Code 60800 the fitness testing looks at six key fitness areas that symbolize three expansive components of fitness which include: (a) muscle strength, flexibility, and endurance, (b) aerobic activity, and (c) body composition. Under Education Code 60800, there is a section that monitors body composition and teachers have three different choices, and again this does not have to be reported to parents just to students unless a school board issues a mandated policy that has been board approved. Many students at these ages may disregard the information and not inform parents. California Education Code does not provide a list of mandated schools that are required to report body mass index information to parents or guardians.
School Nurses' Perceived Benefits/Barriers to Measuring BMI

A research study by Hendershot et al. (2008) examined elementary school nurses' perceived expectations, perceived benefits, and perceived barriers to measuring BMI in students at schools with mandated BMI policies versus schools without mandated policies. There were 2629 school nurses that participate in this study, 62% believe BMI results should be sent home, 67% believe nurses should measure BMI in schools, and 81% believe nurses should be designing programs to help children address obesity issues. In schools with a BMI assessment mandate the nurses' efficacy expectations were statistically greater and nurses' perceptions of barriers to measuring BMI were significantly lower.

Results indicated that of 2629 surveys that were returned electronically had a response rate of 42%. A majority of the responding school nurses were female (97%), White (91%), held a bachelors degree (58%), worked in a public school (91%), and were certified as a school nurse (55%), and (49%) worked in a suburban setting. Of the responding nurses, 18.8% had state mandates, 23% reported they had mandates for measuring BMI, 4.5% had district mandates, and 1.0% had school mandates. Nurses in schools with a mandate were significantly more likely to be measuring BMI (85%) compared with nurses in schools without mandates (27.9%). The majority of school nurses (51.1%) indicated they agreed or strongly agreed that appropriate physical activity would help children maintain a healthy weight. Almost (51%) reported they agreed or strongly agreed that tracking BMI would help convince administrators to implement programs that would help children maintain a healthy weight, and (26%) of school nurses
agreed or strongly agreed that informing parents of their child’s BMI on a regular basis would help the child maintain a healthy weight. A statistically significant impact on school nurses outcome expectations scores were impacted by their level of education. Those with bachelor’s degrees or less had lower outcome expectation scores than those with a graduate degree. No statistically significant difference was noted between a school nurses BMI and the nurses outcome expectation score (Hendershot et al, 2008).

There were ten items that were used to query nurses concerning their perceived benefits of measuring children’s BMI’s in school. About 1 and 20 (6.4%) school nurses answered there were no benefits to measuring BMI’s. The top three benefits school nurses identified were (a) educating students and parents about potential obesity problems (68.6%), (b) creating awareness of the obesity problem (72.9%), and (c) providing evidence to change policy to reduce obesity levels (71.9%). About 1 in 5 nurses (22.3%) identified all nine possible responses as perceived benefits of measuring BMI in school children. Having a mandate to measure BMI versus not having a mandate did not result in a statistically significant difference, $t(2482) = -2.20, p = .03$ regarding nurses’ number of perceived benefits from measuring BMI in schools. The level of education and perceived benefits identified a statistically significant difference or measuring BMI, $F(2, 2608) = 4.952, p = .007$. School nurses with a bachelor’s degree or less perceived fewer benefits to measuring students BMI than did those with a graduate degree. A statistically significant relationship was noted to school nurses’ BMI and their perceived barriers to measuring BMI in students’ total number of perceived barriers of school nurses’ BMI, $F(2, 2622) = 6.415, p = .002$ (Hendershot et al., 2008).
School nurses were asked to identify potential barriers related to measuring children's BMI's in their elementary school. School nurses identified inadequate school resources to support follow-up (57.6%), inadequate or inappropriate parental responses (55.2%), and parents viewing it as an intrusion on their child's privacy (47.9%) as the top three barriers to measuring BMI. One nurse in 10 (10.3%) indicated that there were no barriers to measuring BMI's and about 20% of nurses stated they did not know how to measure BMI. Nurses in schools with a mandate identified significantly fewer barriers than those in schools without such a mandate. Having a mandate resulted in more nurses reporting that they knew how to measure BMI compared to nurses in non-mandated schools and were significantly more likely to have been educated in measuring student BMI's. There was not a statistically significant difference in the level of education of nurses and their total number of perceived barriers for measuring BMI. School nurses' BMI did not have a significant relationship to their total number of perceived barriers to measuring BMI in school children. The distinction of normal weight nurses (BMI 18.5-24.9) and obese (BMI 30+) nurses' to measuring use BMI (Hendershot et al., 2008).

School Nurse Role and BMI Measurements

School nurses must take an active role in the fight against obesity. One of the first steps in addressing this growing epidemic is calculating the BMI. It is important to monitor the BMI because it can identify those students at risk of developing potential psychological problems or health problems due to overweight or obesity (Hendershot et al., 2008). Discrimination by adults and peers may impact obese students resulting in low
self-esteem. Information suggests that obesity in childhood may be associated with long-term medical and psychosocial consequences (Hill & Trowbridge, 1998). School nurses need to be leaders and advocate for policies and programs that mandate the measurement of BMI’s with parental notification and appropriate follow-up when indicated. School nurses can take the lead to ensure a healthy school environment and coordinate programs that will educate students and parents about healthy increased physical activity and healthy nutritional choices, mandates for height, weight, and BMI screening positively influenced elementary school nurses and their measurement of BMI in this study. This study also indicated that mandates increased the number of school nurses measuring and reporting BMI as a way to influence a healthy weight in schoolchildren and policies related to school environment (Hendershot et al.).

*School Nurses’ Perceptions of their Role in Prevention and Treatment of Obesity in the School Setting*

Significantly more research is needed to better understand how eating and physical activity patterns develop, and how patterns learned in childhood track into adulthood. Many existing studies are cross-sectional, and there is a great need for longitudinal studies, following subjects through childhood and adolescence. A serious limitation in understanding the development of eating and physical activity patterns is the lack of accurate techniques to assess food intake and physical activity in children (Hill & Trowbridge, 1998).

A three-round Delphi study was conducted in which Florida school nurses identified research priorities. The 10 priority research topics were (a) role of the school
nurses (b) obesity/nutrition (c) emergencies, (d) legal/ethical issues, (e) absenteeism/attendance, (f) health education, (g) injuries, (h) diabetes and insulin, (i) asthma and (j) health services. The Delphi study determined a national school nurse research agenda for the perspective of national school nursing and childhood leaders. A list of 27 priority areas of interest for school nursing research was compiled and was categorized into four areas that included process issues, structural issues, general issues, and outcome issues. Throughout the three rounds, the panel of experts remained constant in identifying the most important issues as (a) the relationship between school nurse practice and educational outcomes, and (b) the impact of school nurse services on school health (Gordon & Barry, 2006). Despite the development of research agendas and multiple research studies, significant research findings can take up to 20 years to have an impact on practice across disciplines (Agency for Health Research and Quality [AHRQ], 2001). The Delphi Technique is a survey that involves sending a series of questionnaires or “rounds” that focus on judgments, predictions, or opinions on a particular topic to a panel of experts. It is frequently used as a method to identify topics of interest and to develop a consensus (Powell, 2003). In round one the initial survey went to 263 nurse members of the Florida Association of School Nursing. Participants in round one were asked to identify research topics important to their school nurse practice. The purpose of this round was to generate research topics and allow participants freedom to respond based on their school nursing knowledge (Powell). The surveys yielded a (77/263) response rate. Participants listed 187 research topics and content analysis of responses was used to organize statements into similar groups based on key terms and phrases.
Participants in round one were sent surveys for round two. Of the 77 surveys mailed 61 were returned. Participants in round two were asked to review the list of 36 research topic categories and descriptions that were listed in alphabetical order and rank them in order of importance. The top 10 research topics in round two were (a) absenteeism/attendance, (b) obesity/nutrition, (c) role of the school nurse, (d) emergencies, (e) legal/ethical issues (f) health services, (g) diabetes/insulin, (h) communicable diseases (i) health education, and (j) injuries. Additional topics of importance were written by participants and these topics added by the participants during this round were collapsed into existing categories, indicating the research topic categories were saturated. Round three was the final round of the Delphi survey. Research topic categories were ranked in order according to the results of round two. People who participated in round one were asked to rerank the research topics in order of importance. The response rate for round three was 71% (Gordon & Barry, 2006). All of the topics identified by Florida school nurses fit under broad priorities (acute and chronic illness, health promotion and disease, and nursing systems) that composed the National Nursing Research Agenda set by expert panels (National Center for Nursing Research, 2005).

A comparison of the results of the current study with the national school nurse priorities reported by Edwards (2002) revealed similarities and differences. Participants of both Delphi studies indicated that they were concerned with outcomes of school nurse practice. Concern about outcomes as a specific research category dominated Edwards’ research priorities. Some of the research priorities identified by participants in the current study implied concern for outcomes. A main difference between the research priorities
was the level of abstraction. The information that was gleaned will be used to form research groups based on research interest, level of research experience, educational background and desired involvement (Gordon & Barry, 2006).

Kubik, Story, and Davey (2007) compiled a research study in fall of 2005 to determine responses of school nurses delivering obesity prevention services, assess opinions and beliefs about school-based obesity prevention, and determine factors associated with school nurses supporting and providing obesity prevention services. A self-administered survey was mailed to 275 school nurses in Minnesota with a return rate of 221. The sample consisted of active members of the school nurse organization of Minnesota, an affiliate of the National Association of School Nurses (NASN). There were 275 eligible participants that were mailed a survey, a stamped return envelope, and $1-bill incentive. A second survey was mailed to non-responders two weeks later and a total of 221 surveys were returned. A 64-item survey was developed to determine responsibility of school nurses in assessing opinions and beliefs about school-based obesity prevention and delivering obesity prevention services. Questions were based on research literature, the NASN (National Association of School Nurses, 2002) position statements addressing school environment (1998), childhood overweight (2002), and prior experience and knowledge. The results noted that 76% school nurses supported the use of school health services (SHS) for obesity prevention. Nearly 40% agreed schools should conduct annual assessments of students’ height/weight/BMI and provide information to parents. There were only 29% that believed school nurses were prepared to oversee obesity prevention services, and 88% felt that time available for oversight was
insufficient. Because school nurses provide most SHS (AAP, 2008), it seems likely that nurses will assume responsibility for coordinating obesity prevention services. Consistent with similar studies assessing school nurse opinion about school-based obesity prevention (Price, Desmond, & Ruppert, 1987, Stang, Story, & Kalina, 1997), this study found that school nurses support the use of SHS for obesity prevention. NASN (2004) recognizes that one of the school nurse roles is promoting a healthy school environment; recognition by others has been less forthcoming and would benefit from further support and development (Kubik et al.).

The Arkansas legislature passed a bill in 1999 calling for a study on obesity. A task force assembled by the Arkansas Department of Health issued a report and recommendations the following year. A bill was passed in 2001 to increase physical activity in schools. Act 1220 was passed in 2003 by the Arkansas legislature responding to the obesity epidemic, which mandated measures to prevent and attempt to control the increase in obese children in the public school system. A Child Health Advisory Committee (CHAC) was created to organize statewide efforts to fight against childhood obesity and related health problems to improve the overall health of Arkansas’s generation (Arkansas Center for Health Improvement [ACHI], 2004). This act mandated that every Arkansas public school student must have an annual body mass index-for-age (BMI-for-age) assessment with parental notification. The parents receive a health report with an explanation of BMI-for-age and the possible health effects that could occur with these measurements, nutrition and physical activity were also explained. Act 1220 received the most attention and controversy assessing BMI’s on all students. As with
other legislation, no funding was attached to this mandate and data collection fell into the hands of 415 school nurses in Arkansas. The assessment was done by measuring height and weight which required attention to detail, skill, and a protocol. Pilot studies were done and noted that 600 students could be measured in six hours if there were six stations with two people per station. This pilot took place in five schools and an 8-minute video was made for training. The video provided train-the-trainer sessions and described the measurement protocol. School nurses were in charge of the data but utilized coaches, physical education teachers, and nursing students to assist with measurement. The protocol for obtaining standing height measurement was measured using the stadiometer and the measurement was recorded to the nearest 0.1 cm. The participant must be remeasured in sets of two trials until the difference between the two measurements is less than 1.0 cm. A Tanita HD-314 portable digital scale with the capacity of 330 pounds was used for measuring weight. Participants were asked to remove their shoes and weight recorded to the nearest 0.1 kg. The participants must be remeasured in sets of two trials until the difference between the two measurements was less than 0.5 kg (Gance-Cleveland & Bushmiaer, 2005). Results identified ninety-three percent (1058 of 1135) of the schools in Arkansas reported results of youth in their schools. Data was reported for (421,973 of 449,485) of the public school students. Of the 421,973 assessments submitted 345,892 were considered valid. If age, gender, or measurement were missing the data was eliminated. Individual student health reports on these 345,892 students were sent home to the guardian or parent (ACHI, 2004). Due to the high level of participation it allowed a detailed evaluation of the obesity epidemic in Arkansas. Among the students
assessed CDC criteria for overweight noted that 21% met these criteria and 17% were at risk for overweight. Results noted 38% were at an increased risk for obesity related illnesses in the future. Similar to national trends, Arkansas data pointed out the ethnic disparities, with a higher percentage of ethnic minority youth classified as overweight or at risk for overweight. Forty-six percent of Hispanic youth and (41%) of African American youth were in high-risk categories compared to 37% Caucasian youth (ACHI, 2004).

Position Statements and Guidelines for Management of Obesity in Schools

The American Academy of Pediatrics (AAP, 2008) appreciates and recognizes the complexity and contributions of school nurses. The revised policy statement focuses on the daily contributions of school nurses to serve all students, not just those with special healthcare needs. School nurses are partners in providing comprehensive health services to all children and youth. Children and adolescents are beginning to have multifaceted health issues with increased complex chronic conditions to a significant number of children who lack access to regular health care. Pediatricians have a mode of practice of their own specialty and rely on school nurses as health care representatives to assist them in providing care for children. Effective partners can make the new health care model work. The revised statement seeks to understand the role of school nurses in addressing child health and the ways that school nurses and pediatricians can partner together to improve the healthcare of children. The AAP appreciates and recognizes school nurses' daily dedication to the students as specialties evolve. Pediatricians aim for universal access to care, improved education in health services, an integrated health model, and a
strong supportive coordinated school health program. Americas’ school children deserve
the road to lifelong health and well-being (Murray, 2008).

National Association of School Nurses

The National Association of School Nurses defines school nursing as “a
specialized practice of professional nursing that advances the well-being, academic
success, and lifelong achievement of students. To that end, school nurses facilitate
positive student response to normal development: promote health and safety; intervene
with actual and potential health problems, provide case management, supervise, and
actively collaborate with others to build student and family capacity for adaptation, self-
management, self-advocacy, and learning” (NASN, 2009, ¶ 7). The NASN’s position
statement on obese children and adolescents notes that obesity is the fastest rising public
health problem in our nation, second only to tobacco use. Currently, in the United States
13% of children 6-11 years of age and 14% of teens 12-19 years of age are categorized as
overweight (CDC 2009; USDHHS, 2000). The school nurse has the capacity to reach a
large number of students from different backgrounds and the school can provide healthy
environments that support activity and balanced nutrition. School is a key setting for
implementation strategies to address this issue as students spend a large portion of their
day at school. Healthy People 2010 (USDHHS, 2000) identifies specific goals to reduce
the prevalence of overweight and obesity. School nurses have expertise and knowledge in
the areas of exercise, weight management, and nutrition. The knowledge can be applied
in prevention and intervention programs for students at risk for overweight. School
nurses play a key role in providing health care providers with important statistical
information and can work with students, school personnel, parents, and health care providers. National Association of School Nurses’ rationale is very simple as school nurses can provide essential leadership in helping students maintain a healthy weight to decrease the burden of illness and increase quality of life and life expectancy.

*California School Nurses Organization*

The California School Nurses Organization (CSNO) posits that there is a direct correlation between fit and healthy students and academic success. The credentialed school nurses should work collaboratively with parents, community members, and educational staff to develop wellness policies that help support a healthy school environment for students and staff. Adoption of district policies is essential in helping students maintain a healthy weight:

1. Promotion of life-long fitness skills as an integral part of the physical education curriculum. (CEC 51210, 51222, 51223, 51225.3)
2. Replacement of non-nutritious foods and sodas with water and nutritional drinks and foods in vending machines on all campuses. (CECS section 49431.3)
3. Application of the same nutritional standards to all foods served on campus whether by outside vendors or school food service. (7CFR 210)

California School Nurses Organization’s rationale recognizes children and adolescents identified as obese as measured by age specific body mass index (BMI) and gender, have reached epidemic proportions in California. A plethora of psychosocial and health concerns can be attributed to a combination of lack of physical activity and excess weight. The credentialed school nurse has the leadership skills and knowledge to assist
schools in providing a coordinated, comprehensive approach to the issue of overweight children and adolescents. The credentialed school nurse understands the serious risk of overweight and the potential of development of chronic health conditions such as musculoskeletal disorders and asthma, high blood cholesterol, type 2 diabetes and hypertension. Through policy development, intervention, and education the credentialed school nurses can help eliminate the impact of overweight, poor nutrition, lack of physical activity, and related health problems on academic achievement, quality of life, and long term health (NASN Position Statement, 2002).

Summary

The quantity of children who are considered obese has risen considerably and more than 9 million adolescents aged 6 and over are considered obese (Institute of Medicine, 2004). Many barriers exist to the prevention and treatment of childhood obesity. School nurses view obesity as difficult and frustrating to treat (Story, Neumark-Stzainer, et al., 2002). Many third-party payers do not cover treatment for obesity (Moyers, et al., 2005). Students spend a vast amount of their day at school, yet schools have decreased the amount of physical education in the curriculum (Burgeson, Wechsler, Brener, Young, & Spain, 2003) and have increased the number of vending machines filled with foods high in calories and fat (Wechsler, Brener, Kuestr, & Miller, 2001). The prevention of childhood obesity is calling for parents, communities, and schools to take a more active role. This literature review brought information to light on the needed research that was necessary on the topic of adolescent obesity. Pratt, Stevens, & Daniels (2008) noted an urgent need for research that would provide effective protocols for the
adolescent obesity on prevention and treatment and present other healthcare providers, and agencies about the different prevention and treatment options that are available. The research that will be obtained from the study will provide a perspective on what school nurses’ perceptions of their roles in the management of obesity truly are. It would benefit California to have mandated reporting of BMI measurements for parents and guardians, which has not been currently established.
This chapter will discuss the health belief model, identify and discuss how it relates to this study. Health belief model (HBM) is a framework that helps to explain why this project was done in a particular way and it helps clarify why others have used similar methods. This model is built on two major premises, they are that the eventual success of disease prevention and curing regimens that involve the clients' willingness to participate and the belief that health is valuable (Janz & Becker, 1984). Both of these premises need to be present for the model to be significant in explaining health behavior (Bastable, 2003). The HBM will be instrumental in diagnosing school nurses' perceptions of obesity in the school setting. The school nurses' responses will denote their perceptions on obesity management and indicate their willingness to participate in the importance of health education on nutrition and body mass index in the school setting.

Major Concepts

Health belief model is a psychological model that attempts to predict and explain health behaviors. This is done by focusing on the attitudes and beliefs of individuals. The HBM was first developed in the 1950's by Hochbaum, Rosenstock, and Kegels who were social psychologists working in the U.S. Public Health Services. This model was developed in response to the failure of a free tuberculosis (TB) health screening program (EXCUSERCISE, 2002). This model is grounded on the supposition that it can be possible to predict health behavior given three major interacting components: likelihood
of action, individual perceptions, and modifying factors (Bastable, 2003). The HBM is
defined as four constructs representing the perceived threat and net benefits: perceived
susceptibility, perceived severity, perceived benefits, and perceived barriers. These
concepts were important because it identified peoples “readiness to act”. An added
concept, cues to action, would activate the readiness and cause a change in behavior.
HBM had a recent addition which is the concept of self-efficacy which is defined as one’s
confidence in the ability to successfully perform an action. This was added by
Rosenstock and others in 1988 to help the HBM better fit the challenges of changing
habitual unhealthy behaviors (Eisen, Zellman, & McAlister, 1992).
Table 1


<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived susceptibility</td>
<td>Attitudes about the chances of getting a condition</td>
<td>Define population(s) at risk, and their levels of risk; alter risk information base on persons features or behavior; aid the individual to heighten perceived susceptibility if too low.</td>
</tr>
<tr>
<td>Perceived severity</td>
<td>Attitudes of how serious a condition and its consequences are.</td>
<td>Specify consequences of the condition and the risk.</td>
</tr>
<tr>
<td>Perceived benefits</td>
<td>Attitude about the efficacy of the advised action to reduce risk or seriousness of impact.</td>
<td>Determine action to take; when, where, how; clarify the positive effects to be expected.</td>
</tr>
</tbody>
</table>
Table 1 continued


<table>
<thead>
<tr>
<th>Perceived barriers</th>
<th>Attitudes about the problems that could result when taking action.</th>
<th>Provide collaboration and positive information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cues to action</td>
<td>Attitudes to activate &quot;readiness&quot; to change.</td>
<td>Provide &quot;how to&quot; information, employ reminder systems and promote awareness.</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Confidence in one’s ability to take action.</td>
<td>Provide training and guidance in performing action; give verbal reinforcement; use progressive goal setting; demonstrate desired behaviors.</td>
</tr>
</tbody>
</table>
**Figure 6-1**

The Health belief model used as a predictor of preventative health behavior

**INDIVIDUAL PERCEPTIONS**

<table>
<thead>
<tr>
<th>Perceived Susceptibility</th>
<th>Perceived Threat of Disease “X”</th>
</tr>
</thead>
</table>

**MODIFYING FACTORS**

- Demographic Variables (age, sex, race, ethnicity, etc.)
- Sociopsychological Variables (personality, social class, peer and reference group pressure, etc.)
- Structural Variables (knowledge about the disease, prior contact with the disease, etc.)

**LIKELIHOOD OF ACTION**

- Perceived benefits of Preventative Action minus Perceived Barriers to Preventative Action

**Cues to Action**

- Mass Media Campaigns
- Advice from Others
- Reminder Postcard from Illness of Family or Friend
- Newspaper or Magazine Article

The HBM and School Nurses’ Role

The HBM may be applied to an extensive range of health behaviors and populations; these extensive areas can be divided into three different groups: (a) health behaviors, which include health-promoting (e.g. nutrition, physical activity) and health-risk (e.g. alcohol consumption) behaviors as well as vaccination and contraceptive practices, (b) role behaviors, which refer to the professional diagnosis of illness and the compliancy with medical regimens, and (c) clinic use which encompasses physician visits for a variety of reasons (Conner & Norman, 1996).

An example of the usefulness of the HBM is a study where California school nurses are asked to assess their perception of obesity within the school setting. Since these nurses may be understaffed and overwhelmed, they may not even know the risk of childhood obesity and the possible diseases the students may face. The nurses may not be concerned about their ability, or the schools responsibility to promote lifestyles and behavior. The HBM is beneficial for developing strategies to deal with the lack of responsibility and knowledge in these situations. According to the HBM, perceived susceptibility may be noted in the schools nurses’ perception of their lack of responsibility in the management of obesity in the school setting. School nurses must have a perceived severity of how obese children can become obese adults and suffer from life-threatening diseases which could decrease their life-span. The nurses must realize that policies and procedures and obesity education programs such as S.C.O.P.E will offer prevention and treatment for a longer life (perceived benefits). Nurses may note perceived barriers in dealing with the school districts and the monies needed to fund and
implement prevention and treatment programs. Training and community participation can promote the importance of nurses assisting in the school setting to provide BMI measuring and prevention and intervention for families and students (cues to action). Self efficacy will be met when there is a BMI mandate in all states and students are receiving the education and attention required to reduce the obesity epidemic.

Relationship to Current Study

The HBM was used as a framework for the research investigation. The principal research questions examined the California school nurses' perceptions of their role in the management of obesity within the school setting. Which includes; their perceived responsibility in the school setting, their perceived responsibility in childhood obesity prevention, their perceived responsibility in school based obesity prevention, and their perceptions of support from others in obesity prevention. The following is a list of concepts, perceptions, and potentials based from the health belief model and will address the specific questions from the survey as they apply to each area.

1. Perceived Susceptibility (What do school nurses believe that their responsibilities are in the school?) The change action that is desired (School nurses who do not believe that health education is a part of their role in the school setting will become familiar with obesity prevention programs).

2. Perceived benefits (What do school nurses believe their responsibilities are in school based obesity prevention?) The change action that is desired (School nurses will learn they have the support and collaboration of students, staff, and community leaders to
promote obesity prevention and treatment. They will have the support of the school district. The following survey questions address the perceived benefits:

23. Do you monitor school nutrition practices, like the food used in fund raising and as incentives and/rewards for students?

24. Do you monitor school physical activity like whether children have access to space and equipment for play before and after school?

25. Do you assess the nutrient qualities of food and beverages offered

26. Do you assess the nutrient quality of other food and drinks sold to students at school such as foods offered as al la carte, in vending machines, school stores, and fund raising?

31. Will teachers in my school support obesity prevention efforts?

32. Will school food service staff support obesity prevention efforts?

33. Will school administrators support obesity prevention efforts?

34. Will health providers in the community support obesity prevention efforts?

3. Perceived barriers (What do school nurses believe the barriers are when it comes to support from others in obesity prevention?) The change action that is desired (School nurses note lack of policy and procedure to implement a promotion, treatment, and prevention plan. A lack of funding to provide additional educational training on the correct measurement on BMI monitoring and how to disseminate the information so parents will be supportive of the programs). The following survey questions address the perceived barriers:
19. Do you provide consultation to school administrators about health-related school policy?

28. Are school health services used for obesity prevention efforts?

29. Should schools provide annual assessments of students’ weight, height, and BMI and make that information available to parents?

30. Does the school nurse have adequate time to oversee and monitor obesity prevention efforts at school?

43. How many schools are you responsible for?

44. How many students are you responsible for?

45. What is the location of the schools you work in?

4. Cues to action (What do California school nurses in public schools think will change?). The change action that is desired (Quantitative data from the research survey will be reviewed to determine the next step). The following survey questions address the cues to action:

36. What year were you born?

37. Are you male or female?

38. What is the highest academic degree you have received?

39. What racial or ethnic group do you consider yourself?

40. How many years have you held your current position in this school?

41. How many total years of school nursing experience do you have?

42. How many total years of nursing experience do you have?
46. What is the approximate racial/ethnic composition of the children in the schools you serve?

5. Self-efficacy (All California public schools will recognize obesity as one of the fastest growing diseases in the United States). The change action that is desired (All California public school nurses will participate in mandated BMI screenings with proper follow-up plans in place). The following survey questions address self-efficacy:

20. Do you participate as part of a school health council?

21. Do you provide classroom health teaching on nutrition?

22. Do you provide classroom health teaching on physical activity?

27. Do you write articles about healthy lifestyle habits for the school newspaper?

35. Is the school nurse prepared to oversee and monitor obesity prevention efforts in school?

Summary

The HBM will provide information on what California school nurses perceptions are of their role in the management of obesity in the school setting. It will look at their perceived issues on the importance of obesity for children and adolescents within the school setting. School nurses perceptions will reflect what they perceive as the severity of overweight and obesity and the potential for secondary diseases resulting from years of untreated obesity. Barriers may be removed when school districts, with the superintendent’s support, and the collaboration of pediatricians, community, staff, and parents become involved and recognize that school nurses can provide health promotion,
treatment, and intervention for overweight and obesity. Health education is a vital, yet challenging and exhaustive, nursing intervention. It is one of the most important skills that school nurses have in teaching students, parents, staff, and communities about the importance of planning and implementing appealing and effective programs to students (Denehy, 2001). School nurses have daily access to an abundance of students every day. There are as many as 55 million U.S. children in school (U.S. Census Bureau, 2009) and school nurses are in a leading position to positively impact the health of our nations' youth.
Chapter 4

METHODOLOGY

The purpose of this study is to determine California school nurses' perception of their role in the management of obesity in the school setting. School-based BMI screening programs have been implemented in several states. Story, Kaphsing, and French, (2006) reported that as of 2005, Florida, California, Missouri, Illinois, Pennsylvania, West Virginia, and Tennessee had BMI reporting requirements. One objective of this study was to determine what California school nurses believed to be their responsibility in BMI monitoring, prevention, and treatment of obesity related to their role in obesity management within the school setting. This chapter will include the research design and methodology of this study.

This study is an exploratory cross-sectional descriptive design using convenience sampling. A cross-sectional design looks at a snapshot at one point in time and it can allow for a larger survey sample (Burns & Grove, 2005).

Research Questions

1. What are school nurses' perceived annual responsibilities in the school setting?

2. What are the school nurses' perceived roles in childhood obesity prevention?

3. What are the school nurses' perceived responsibilities in school-based obesity prevention programs?
4. What are the school nurses' perceptions of support from parents, staff, school board, and community?

Aims

1. Identify school nurses' perceived responsibilities in the school setting.
2. Identify school nurses' perceived responsibilities in school-based obesity prevention.
3. Identify school nurses' perceived support from other school staff in obesity prevention.

Research Design

The survey used for this study is an adaptation of the Minnesota School Nurse Survey, which was constructed by Dr. Martha Kubik. The adapted version, California School Nurses' Perceptions of Obesity Management in School, contained 46 questions. Some questions were created to identify school nurses' perception of their responsibilities of management of obesity in the school setting. A descriptive design was used to identify a phenomenon of interest, school nurses' perceptions, and identify variables within the phenomenon. Definitions of conceptual and perceived variables will be defined and the described variables will be examined within this study. The survey utilized a cross-sectional design to explore the 35 questions adapted for this study. Thirty-five are survey-based questions and eleven are demographic, the questionnaire is broken down into five sections. The first section contains eight questions related to school nurse practice, the second section addresses child-level obesity prevention tasks and contains nine questions, the third section is based on school-level obesity prevention and contains ten questions,
the fourth section examines support from others and contains eight questions, and the final section is personal and school demographics and contains eleven questions.

Methods

Sample

Study subjects included a convenience sample of 163 California school nurses. The subjects were selected from Clovis Unified School District, CSNO’s Annual Conference, Fresno Unified School District, and Madera Unified School District.

Demographics

The population of this study included information to provide specific information on the school nurse participants. The following data was collected (a) gender, (b) highest academic degree, (c) race or ethnicity, (d) years in current position at a school site, (e) total years of school nurse experience, and (f) total years of nursing experience. The second set of questions was specific to their current assignment (a) number of schools in current assignment, (b) total number of students assigned to each nurse, (c) location of schools (urban, suburban, or rural), (d) racial/ethnic composition of students in the school that the nurse serves.

Human Subjects

The subject’s right to privacy and safety was protected because the questionnaire was anonymous. The consents (Appendix A) and questionnaires were stored in separate boxes and safety was maintained by storing these in a locked cabinet. Responses from the questionnaire were stored in a password protected computer file. Only aggregate data will be reported and no specific school district data will be released.
The research proposal was reviewed by the Student Research Committee for the Protection of Human Subjects in the College on Health and Human Services, Division of Nursing at California State University, Sacramento. There was no risk for participating in this study because there were no personal health behavior questions and participants could terminate participation at any time. This information will be useful to identify school nurses’ perceptions of their responsibilities in delivering obesity prevention services in the school setting, and to assess school nurses opinions regarding school-based obesity prevention.

Recruitment

Permission was obtained from the health directors, through email and personal phone contacts, to survey their nurses at staff meetings in the months of January and February, 2009. A 46-item convenience questionnaire was administered for the purpose of data collection from California school nurses. The convenience sample included Madera Unified (n=13) which was surveyed on January 12, 2009, Fresno Unified (n=34) surveyed on February 2, 2009, and Clovis Unified (n=26) was surveyed on February 18, 2009. A signed consent was obtained for each school nurse prior to the completion of the questionnaire, and collected and placed in a consent box. Approval for administration of survey was granted by Barbara Miller with the California School Nurse Association (CSNO). School nurses were given 30 minutes to complete the questionnaire. Upon the return of the questionnaire, the participants were given a personalized breast cancer pencil, which stated, “Thanks for Your Participation”.
The second recruitment method occurred at the CSNO statewide conference held in Sacramento, California from March 4-7, 2009. School nurses attending the conference were invited to participate in this survey. The survey was administered at the Annual CSNO business meeting on March 6, 2009. The number of school nurse attendees for the business meeting was expected to be approximately 300 (B. Miller, personal communication, February 27, 2009). The surveys and consents were placed on every chair for each school nurse to review and decide if they wished to participate in the study. Barbara Miller made an announcement regarding the survey and encouraged participants to review and participate if they were willing. The collection of surveys (n=90) and consents was done at the two main exit doors where there was a set of clearly labeled covered boxes for consent and survey returns.

Data Collection

The survey included forty six-questions (Appendix B) some with multiple parts. The participant was able to complete the survey by marking the multiple-choice questionnaire with a pen or pencil and complete the fill-in questions on the section for school and personal demographics. A four-page survey using a size 10 font was used for ease of readability. According to Burns & Grove (2005), a Likert scale is an instrument used to determine the opinion or attitude of the subject and it contains a number of declarative statements on the scale after each statement. Each participant was given 30 minutes to complete the survey and the number of questions was limited in an endeavor to minimize the time as an impediment to completion of the survey.
Data Analysis

Data was organized for examination on the majority of questions using frequency distribution. Burns & Grove (2005) describes frequency distribution as a statistical procedure that includes identifying all possible measures of a variable and tallying each piece of data on the research that was collected. The research that was obtained provided frequency data for demographic variables as well as other variables that could be examined. Correlation was used to compare the data against variables to distinguish if there was a significant correlation between the different variables. Pearson’s correlation is the most commonly used method of correlation and the coefficient (r) which is Pearson’s correlation measures the association and strength between the two variables (Burns & Grove, 2005). Spearman’s rho is a nonparametric test and it is used when the assumptions of Pearson’s analysis cannot be met. Ordinal data or scores that may be skewed are often categorized under Spearman rho. Validity and reliability were used throughout the data analysis.

1. What are school nurses perceived annual responsibilities in the school setting?

School nursing practice was examined using an ordinal scale to rank the most common services delivered by school nurses. Ordinal data is important because it yields data that can be ranked. The categories must be exhaustive and exclusive. Ordinal data are considered to have unequal intervals (Burns & Grove, 2005). The rank was listed from 1-11 with one being the most common service provided and 11 being the least provided service. The next set of questions analyzed health screening provided by school
nurses in the school setting. Yes or no responses were required and school nurses were questioned if parents were notified.

2. What are the school nurses’ perceived roles in childhood obesity prevention?

School nurses were questioned on how often during the school year they performed child-level obesity prevention tasks. The questions ranged from contacting parents to monitoring height, weight, and BMI. A Likert scale is an instrument developed to determine the attitude or opinion of a subject. It includes a number of declarative statements with a value attached to each statement (Burns & Grove, 2005). The questions addressed child-level obesity prevention tasks and the Likert scale contained values of 1-Never, 2-Rarely, 3-Sometimes, and 4-Often.

3. What are school nurses’ perceived responsibilities in school-based obesity prevention programs?

Questions asked school nurses how often during the school year they provided school level obesity prevention. The questions inquired about the provision of health information to parents and staff. Questions included whether or not school nurses taught health education in the classroom and whether they assessed and monitored food and nutrients inside the cafeteria. The same Likert scale was used in this question as in question two.

4. What are the school nurses’ perceptions of support from parents, staff, school board, and community?
Questions asked for school nurses' opinions on the support they received from others within the school setting and the community. A Likert scale was used 1- Strongly Disagree, 2-Disagree, 3-Uncertain, 4-Agree, and 5-Strongly Agree.

A final set of questions labeled personal and school demographics provided information that was compiled and provided valuable data to the research.

**Instrument**

All data was collected using the SPSS software program to provide research service. Permission was granted from Dr. Martha Kubik to prepare and adapt a new questionnaire for California’s School Nurse Perceptions of Obesity Management in the School Setting. The original survey contained 64 questions developed to determine responsibilities of school nurses in delivering obesity prevention services and assess opinions and beliefs about school-based obesity prevention. The NASN (National Association of School Nurses, 2002) position statements addressing school environment (1998) and childhood overweight (2002), research literature, as well as prior experience and knowledge provided the foundation for the survey questions. Content validity was verified by experts in childhood obesity, school nursing, and school based research. Principal component factor analysis was utilized to create scales assessing child- and school-based obesity prevention tasks and perceived support from others to provide school-based obesity prevention services (Kubik, et al. 2007). The survey was divided into five different sections. Section A was defined as School Nursing Practice and addressed the common services that the nurses identify taking place at their school sites. Questions regarding annual health screenings as well as all the components related to
calculating a student’s BMI were included in this section. Section B addressed child-level obesity prevention providing data which will disclose what school nurses are doing at this time. Section C looked at school-level obesity prevention to survey the nurses on what is currently being done at the school sites from preschool through senior high school where many students could make a significant change in their lives through participation in obesity prevention programs. Section D looked at support from others and the information it could provide if teachers, administrators or parents are looking at this disease that is becoming an epidemic. The fifth and final Section E looked at personal and school demographics. It addressed the nurses regarding degree level, ethnicity, region of school, and percentage of students with different ethnicities in a school district. The goal was that the information obtained would answer questions regarding school nurse’s perceptions of their role in the management of obesity in the school setting.

Summary

The purpose of this study was to determine California school nurses’ perceptions of their roles of managing obesity within the school setting. Quantitative data was analyzed for themes and added worth and value to the study. Researching obesity prevention and management in school settings showed a gap in the research of this growing epidemic. A convenience sample of 163 participants contributed to this study. This descriptive design study, using secondary data, was able to assess what California school nurses’ perceptions of their roles in the management of obesity were in the school settings.
Chapter 5

RESULTS

This chapter examines the findings of the study. The first section explores the demographics of the survey participants. The second section reviews the school nursing practice of the sample population. The second section reviews child-level obesity prevention tasks. The third section examines school level obesity prevention. The fourth section identifies support from others and the final section includes a demographic section.

**Demographics**

The majority (55%, \( n = 90 \)) of the participants were members of CSNO and represented several school districts from California. The second largest group of participants (21%, \( n = 34 \)) were from Fresno Unified School District. The third largest group of participants (16%, \( n = 26 \)) were from Clovis Unified School District and the remainder of participants were from Madera Unified School District (8%, \( n = 13 \)). See Table 2

<table>
<thead>
<tr>
<th>Participants’ in Survey (N = 163)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>California School Nurses Organization Conference</td>
<td>90</td>
<td>55</td>
</tr>
<tr>
<td>Clovis Unified</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Fresno Unified</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td>Madera Unified</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>163</td>
<td>100</td>
</tr>
</tbody>
</table>
Of the 163 subjects, there were 162 respondents and the results covered a wide range of values through the years 1936 through 1986 as illustrated in Table 3. The mean resulted with the year of 1957.

Table 3

*Participants’ Year of Birth (N = 163)*

<table>
<thead>
<tr>
<th>Year of Birth</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930-1940</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1941-1950</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td>1951-1960</td>
<td>85</td>
<td>52</td>
</tr>
<tr>
<td>1961-1970</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>1971-1980</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>1981-1990</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>162</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Of the 163 surveyed, there were 163 responses, and results indicated that there were 161 female and 2 male participants. From the 163 surveyed, there were 100 (61%) with Bachelor degrees, 62 (38%) with Masters' degrees, and 1 (1%) with a Doctoral degree. Table 4 identified the racial and ethnic categories. The largest group of respondents totaled 78%, which represented White/Caucasian, and the lowest was 1% representing American Indian/Alaskan Native.

Table 4

**Participants' Racial or Ethnic Group (n = 162)**

<table>
<thead>
<tr>
<th>Race or Ethnicity</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaskan Native</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Asian</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Black/African American</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>128</td>
<td>79</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>162</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 5 had respondents (162/163) with a wide range from 1 to 37 years and a mean of 20 years. Table 6 had respondents (160/163) with a wide range of results from 1 to 48 years, with a mean of 23 years. Table 7 shows a range from 1 to 51 years with a mean of 26 years.

Table 5

*Participants' Years in Current Position (n = 162)*

<table>
<thead>
<tr>
<th>Years in Current Position</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>85</td>
<td>52</td>
</tr>
<tr>
<td>11-20</td>
<td>50</td>
<td>31</td>
</tr>
<tr>
<td>21-30</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>31-40</td>
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<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>162</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 6

Participants’ Years in School Nursing (n = 160)

<table>
<thead>
<tr>
<th>Years in School Nursing</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>6-10</td>
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<td>36-40</td>
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<td>0</td>
</tr>
<tr>
<td>46-50</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>160</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 7

Participants' Years of Nursing Experience (n = 157)

<table>
<thead>
<tr>
<th>Years of Nursing Experience</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>11-20</td>
<td>37</td>
<td>24</td>
</tr>
<tr>
<td>21-30</td>
<td>54</td>
<td>34</td>
</tr>
<tr>
<td>31-40</td>
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<td>31</td>
</tr>
<tr>
<td>41-50</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>51-60</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100</td>
</tr>
</tbody>
</table>

School Nurse Work Load and Setting

The majority 30% (n = 48) had five or more schools and they represented the overall respondents 97% (n = 158) of the 163 surveyed. The lowest percent of respondents 8% (n = 12) noted they had four schools. The conclusion can be made that school nurses in California have four or more schools and this is a huge responsibility when looking at obesity management and treatment in the school setting. The majority 53% (n = 86) of respondents indicated that they had 1500 or more students in their caseload. The respondents (161/163) noted the majority 36% (n = 58) of the participants identifying the location of their school as an urban setting. The lowest percent 1% (n = 2) identified they worked in a combination of urban and rural settings. The majority 58% (n = 91) were identified as Blacks/African Americans this posed the largest ethnic group in
the study with respondents (157/163). Asian Americans/Pacific Islanders showed 50% (n = 75) with (151/163) respondents replying. White/European Americans showed 30% (n = 47) with (156/163) persons responding. The respondents (156/163) identified Native Americans/Alaskan Natives to be 54% (n = 74). Hispanic/Latin Americans with (156/163) responding 35% (n = 55). The respondents (37/163) identified Ethnic/Other students with the majority 24% (n = 9). Significant results noted that there was a 26-50% composition rate of White/European Americans being served at different school sites and a composition of 26-50% of Hispanic/Latin American students being served in the school sites.

School

Table 8 lists the four most common services delivered by the school nurse and Table 9 lists the two least performed services. Data was collected through ordinal ranking of numbers 1-11 and zero if the service was not provided. Health screening was not offered at their schools; 3% (n = 5) while 15% (n = 24) performed health screening upon request. A positive response was noted that 75% (n = 123) offered health screening on an annual basis.
Table 8

*Top four common services of school nurses (N = 163)*

<table>
<thead>
<tr>
<th>Services</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case management of students with chronic health needs</td>
<td>42</td>
<td>26</td>
</tr>
<tr>
<td>Paperwork</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td>Non-acute assessment</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>Assessment of acute health conditions</td>
<td>27</td>
<td>17</td>
</tr>
</tbody>
</table>

Table 9

*Least common services of school nurses (N = 163)*

<table>
<thead>
<tr>
<th>Services</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled care</td>
<td>41</td>
<td>25</td>
</tr>
<tr>
<td>Height and Weight</td>
<td>29</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 10

*Annual vision at school sites (N = 163)*

<table>
<thead>
<tr>
<th>Screened</th>
<th>Frequency</th>
<th>%</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>145</td>
<td>89</td>
<td>145</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Options were given for parental notification. Results indicated that 74% (n = 121) of nurses reported notifying parents if vision was not normal, 10% (n = 17) of nurses reported that parents were notified of all vision results, while 3% (n = 5) reported that
they did not notify parents at all. One nurse 0.6% (n = 1) reported he or she did not screen.

Table 11

*Annual hearing screening at school sites (N = 163)*

<table>
<thead>
<tr>
<th>Screened</th>
<th>Frequency</th>
<th>%</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing</td>
<td>142</td>
<td>87</td>
<td>142</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Options were given for parental notification. Results indicated that 75% (n=122) of nurses reported notifying parents if hearing was not normal, 10% (n=17) of nurses reported that parents were notified of all hearing results, while 3% (n = 5) he or she did not screen and therefore did not notify parents.

Table 12

*Annual height screening at school sites (N = 163)*

<table>
<thead>
<tr>
<th>Screened</th>
<th>Frequency</th>
<th>%</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>55</td>
<td>34</td>
<td>55</td>
<td>71</td>
<td>43</td>
</tr>
</tbody>
</table>

Options were given for parental notification. Results indicated that 17% (n =27) of nurses reported notifying parents if height was not normal, 6% (n =10) of nurses reported that parents were notified of all height results, while 15% (n = 25) did not screen and 42% (n = 68) did not screen and therefore did not notify parents.
Table 13

*Annual weight screening at school sites (N = 163)*

<table>
<thead>
<tr>
<th>Screened</th>
<th>Frequency</th>
<th>%</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>55</td>
<td>34</td>
<td>55</td>
<td>73</td>
<td>45</td>
</tr>
</tbody>
</table>

Options were given for parental notification. Results indicated that 17% \((n = 27)\) of nurses reported notifying parents if weight was not normal, 6% \((n = 10)\) of nurses reported that parents were notified of all weight results, while 13% \((n = 24)\) did not screen and 42% \((n = 69)\) did not screen and therefore did not notify parents.

Table 14

*Annual BMI screening at school sites (N = 163)*

<table>
<thead>
<tr>
<th>Screened</th>
<th>Frequency</th>
<th>%</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>30</td>
<td>18</td>
<td>30</td>
<td>100</td>
<td>61</td>
</tr>
</tbody>
</table>

Options were given for parental notification. Results indicated that 13% \((n = 21)\) of nurses reported notifying parents if BMI was not normal, 9% \((n = 14)\) of nurses reported that parents were notified of all BMI results, while 8% \((n = 13)\) did not screen and 54% \((n = 88)\) did not screen and therefore did not notify parents.
Table 15

*Contact parent weight concerns (N = 163)*

<table>
<thead>
<tr>
<th>Parent contacted</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Rarely</td>
<td>63</td>
<td>39</td>
</tr>
<tr>
<td>Sometimes</td>
<td>80</td>
<td>50</td>
</tr>
<tr>
<td>Often</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 16

*Contact health care provider (HCP) regarding weight concerns (N = 163)*

<table>
<thead>
<tr>
<th>HCP contacted</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Rarely</td>
<td>65</td>
<td>40</td>
</tr>
<tr>
<td>Sometimes</td>
<td>76</td>
<td>47</td>
</tr>
<tr>
<td>Often</td>
<td>15</td>
<td>9</td>
</tr>
</tbody>
</table>
Table 17

*Counsel parent regarding weight concerns (N = 163)*

<table>
<thead>
<tr>
<th>Parent counseled</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Rarely</td>
<td>73</td>
<td>45</td>
</tr>
<tr>
<td>Sometimes</td>
<td>72</td>
<td>44</td>
</tr>
<tr>
<td>Often</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 18

*Counsel child regarding weight concerns (N = 163)*

<table>
<thead>
<tr>
<th>Child counseled</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Rarely</td>
<td>59</td>
<td>36</td>
</tr>
<tr>
<td>Sometimes</td>
<td>70</td>
<td>43</td>
</tr>
<tr>
<td>Often</td>
<td>13</td>
<td>8</td>
</tr>
</tbody>
</table>
Table 19

*Consult with teacher regarding weight concerns (N = 163)*

<table>
<thead>
<tr>
<th>Teacher consulted</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Rarely</td>
<td>70</td>
<td>43</td>
</tr>
<tr>
<td>Sometimes</td>
<td>68</td>
<td>42</td>
</tr>
<tr>
<td>Often</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 20

*Monitor student’s weight (N = 163)*

<table>
<thead>
<tr>
<th>Monitor weight</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>45</td>
<td>28</td>
</tr>
<tr>
<td>Rarely</td>
<td>58</td>
<td>36</td>
</tr>
<tr>
<td>Sometimes</td>
<td>54</td>
<td>33</td>
</tr>
<tr>
<td>Often</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 21

*Check blood pressure of overweight child (N = 163)*

<table>
<thead>
<tr>
<th>Check blood pressure</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>61</td>
<td>37</td>
</tr>
<tr>
<td>Rarely</td>
<td>60</td>
<td>37</td>
</tr>
<tr>
<td>Sometimes</td>
<td>38</td>
<td>23</td>
</tr>
<tr>
<td>Often</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 22

*Check BMI if nurse perceives a child as overweight (N = 163)*

<table>
<thead>
<tr>
<th>Check BMI</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>56</td>
<td>34</td>
</tr>
<tr>
<td>Rarely</td>
<td>47</td>
<td>29</td>
</tr>
<tr>
<td>Sometimes</td>
<td>44</td>
<td>27</td>
</tr>
<tr>
<td>Often</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 23

Use BMI to assess weight status (N = 163)

<table>
<thead>
<tr>
<th>BMI status</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>44</td>
<td>27</td>
</tr>
<tr>
<td>Rarely</td>
<td>32</td>
<td>20</td>
</tr>
<tr>
<td>Sometimes</td>
<td>51</td>
<td>31</td>
</tr>
<tr>
<td>Often</td>
<td>36</td>
<td>22</td>
</tr>
</tbody>
</table>

School-Level Obesity Prevention

Participants were given questions using a Likert scale to identify if school nurses participated in school-level obesity prevention activities during the school year. In the following questions, participants were given the following choices (a) never, (b) rarely, (c) sometimes, and (d) often. Results indicated that 23% \( (n = 38) \) never reported, 35% \( (n = 57) \) rarely reported, 24% \( (n = 55) \) sometimes reported, and 7% \( (n = 11) \) often reported when asked if school nurses provided written information to parents. Results indicated that 19% \( (n = 31) \) never reported, 28% \( (n = 45) \) rarely reported, 36% \( (n = 59) \) sometimes reported, and 15% \( (n = 25) \) often reported when asked if school nurses provided counsel to school administrators about health related school policy. Results indicated 50% \( (n = 81) \) never, 21% \( (n = 35) \) rarely, 18% \( (n = 30) \) sometimes, and 9% \( (n = 15) \) often participated when asked if they participated as members of the school health council. Outcomes indicated that 41% \( (n = 67) \) never, 34% \( (n = 55) \) rarely, 21% \( (n = 34) \)
sometimes, and 4% (n = 7) often provided nutrition education in the classroom when asked if they offered classroom teaching on nutrition. Responses were often provided 50% (n = 81) never, 34% (n = 56) rarely, 13% (n = 21) sometimes, and 2% (n = 4) often provided classroom education related to physical activity when school nurses were queried about their education related to physical activity. The overall results of this set of questions provided information that there is a definite deficit of school-level obesity prevention in these areas at this time.

Tables 24 and 25 illustrated if school nurses monitored nutrition practices and if they monitored physical activity practices.

Table 24

School nurse monitoring (N = 163)

<table>
<thead>
<tr>
<th>School nutrition</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>70</td>
<td>43</td>
</tr>
<tr>
<td>Rarely</td>
<td>58</td>
<td>36</td>
</tr>
<tr>
<td>Sometimes</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>Often</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 25

*School nurse monitoring (N = 163)*

<table>
<thead>
<tr>
<th>School physical activity</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>92</td>
<td>56</td>
</tr>
<tr>
<td>Rarely</td>
<td>49</td>
<td>30</td>
</tr>
<tr>
<td>Sometimes</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Often</td>
<td>1</td>
<td>0.6</td>
</tr>
</tbody>
</table>

A Likert scale was again used to identify if school nurses participated in school-level obesity prevention activities during the school year. In the following questions, participants were given the following choices (a) never, (b) rarely, (c) sometimes, and (d) often. Results indicated 44% (*n* = 71) never, 33% (*n* = 53) rarely, 17% (*n* = 28) sometimes, and 7% (*n* = 12) often participated in the assessment of nutrient quality food and beverages. Responses noted 52% (*n* = 84) never, 31% (*n* = 50) rarely, 12% (*n* = 19) sometimes, and 5% (*n* = 8) often assessing nutrient quality of other foods sold on campus.
Table 26
School health information (N = 163)

<table>
<thead>
<tr>
<th>School nurse communication through media</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>76</td>
<td>47</td>
</tr>
<tr>
<td>Rarely</td>
<td>43</td>
<td>26</td>
</tr>
<tr>
<td>Sometimes</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td>Often</td>
<td>10</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Support From Others

A Likert scale was used with the following choices (a) strongly disagree, (b) disagree, (c) uncertain, (d) agree, and (e) strongly agree. Results indicated 43% (n = 70) strongly disagree, 36% (n = 58) disagree, 10% (n = 16) uncertain, 85 (n = 13) agree, and 4% (n = 7) strongly agree that school nurses perceive that school health services should not be used for obesity prevention efforts. Table 27 showed the results of school nurses' opinions regarding if schools should provide annual assessment of students' weight, height and BMI and make information available to parents. Table 28 illustrates that school nurses perceive that a significant number of teachers were in agreement of supporting obesity prevention efforts at school although it did not indicate who would be responsible for this task. Table 29 indicates an uncertainty whether school nurses...
perceive that school administrators will support obesity prevention efforts at school.

Table 30 illustrates that the majority of school nurses perceive that they are prepared to oversee and monitor obesity prevention efforts at school.

Table 27

School nurse monitoring (N=163)

<table>
<thead>
<tr>
<th>Provide annual BMI assessment</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Disagree</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Uncertain</td>
<td>35</td>
<td>21</td>
</tr>
<tr>
<td>Agree</td>
<td>77</td>
<td>47</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>34</td>
<td>21</td>
</tr>
</tbody>
</table>
Table 28

School nurse monitoring (N = 163)

<table>
<thead>
<tr>
<th>Teacher support</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Disagree</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Uncertain</td>
<td>72</td>
<td>44</td>
</tr>
<tr>
<td>Agree</td>
<td>76</td>
<td>47</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 29

School nurse monitoring (N = 163)

<table>
<thead>
<tr>
<th>Administration support</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Disagree</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Uncertain</td>
<td>76</td>
<td>47</td>
</tr>
<tr>
<td>Agree</td>
<td>63</td>
<td>39</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 30

School nurse monitoring (N = 163)

<table>
<thead>
<tr>
<th>School nurse prepared</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Disagree</td>
<td>35</td>
<td>21</td>
</tr>
<tr>
<td>Uncertain</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>Agree</td>
<td>62</td>
<td>38</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>17</td>
<td>10</td>
</tr>
</tbody>
</table>

Research Questions

Research Question 1

Do California school nurses perceive that they should provide BMI monitoring if the student appears to be obese?

Spearman’s rho correlation coefficient was calculated to determine the correlations between school nurses checking BMI and a student who appears to be obese. There was a significant correlation between the variables ($r_2 = .223, p = .004, 2$-tailed). This indicates school nurses will provide BMI assessment if the student is overweight. This is a positive indicator of our hypothesis.
Research Question 2

Do school nurses notify parents about weight concerns and if so, do they measure the BMI of student and measure it using the BMI table?

Spearman’s rho correlation coefficient was calculated to determine the correlations between contacting parents regarding students’ weight concerns and checking the BMI if school nurses think they are overweight. There was a significant correlation between the variables and it showed contacting parent with weight concern ($r^2 = 1.00, p = .00$, 2-tailed). There was a significant correlation with school nurses checking BMI if they thought the student was overweight ($r^2 = .409, p = .00$, 2-tailed). This also noted a significant correlation for school nurses checking BMI for students that are overweight and supported the hypothesis.

Research Question 3

Do school nurses provide classroom health teaching on nutrition and provide written information?

Spearman’s rho correlation coefficient was calculated to determine the correlations between school nurses providing classroom nutrition health teaching ($r^2 = 1.000, p = .00$, 2-tailed). This indicated a significant correlation that school nurses were providing classroom nutrition health teaching. There was a significant correlation with school nurses providing written information to parents ($r^2 = .450, p = .000$, 2-tailed). This data supported the hypothesis.
Research Question 4

Do school nurses have adequate time to monitor obesity and is he/she prepared to oversee obesity prevention?

Spearman's rho correlation coefficient was calculated to determine the correlations between school nurses having time to monitor obesity efforts and school nurses being prepared to oversee obesity prevention. Spearman’s rho showed a significant correlation for school nurses having time to monitor obesity prevention efforts ($r = 1.00, p = .0$, 2-tailed). There was also a significant correlation noted on school nurses preparation to oversee prevention ($r = .299, p = .00$, 2-tailed). These correlations were both significant in supporting the hypothesis of school nurses having a positive perception of obesity management in the school setting.

Summary

Several contradictions were discovered in this study. A majority of 43% of school nurses believed obesity prevention is necessary at school sites. Forty-seven percent of school nurses believed annual BMI assessments is obligatory at school sites. Finally, 38% of school nurses responded that they were prepared to oversee obesity prevention. The quantitative statistics would address that school nurses’ perception of their role in obesity management within the school setting is right on target and that it is occurring at the school sites. This information showed the contradiction when research questions were identified under school nursing practice.

When ordinal data was reviewed there were clear observable contradictions. Ordinal data was given a score of 1 to 11 and daily school nursing practices were to be
ranked from 1 to 11 with 1 being the most important and 11 being the least important. Health education within the school setting ranked at 10 by 19% of school nurses and 11 by 17% of school nurses. The most important daily school nursing practice identified case management with chronic health problems with 26% of school nurses responding with this as their number one choice. The second most important daily task identified paperwork as number one with 22% of school nurses responding. This reflected that although school nurses believed obesity prevention was necessary it was not happening within the school setting due to case management and the paperwork that needed to be completed.

The research question asked school nurses' perceptions of their role in the management of obesity in the school setting. Three of the most important questions collected asked participants if a child had their weight monitored if there was a concern. The data noted that 33% of school nurses responded sometimes, 36% responded rarely, and 28% responded never. The survey also questioned if a child had their BMI measured if they were overweight and the data showed 27% of school nurses responded sometimes, 29% responded rarely, and 34% responded never. The third question asked school nurses if they used BMI to assess weight status and there were 4 significant answers. Twenty-two percent of school nurses replied they often used BMI monitoring, 31% responded sometimes, 19% responded rarely, and 27% replied never. This data again provided evidence that although obesity overall appears to be important to school nurses the simple tasks of monitoring overweight, checking BMI, and using BMI to assess weight status was not being done on a continuous basis.
Many of these contradictions, could be surmised due to schools without mandates requiring BMI monitoring. Literature review also showed that many school nurses did not know how to accurately measure and assess BMI and did not have the support of administrators or staff. A need for written policy and procedures became evident at the completion of this survey because while school nurses feel they should be providing obesity management, should be the ones responsible to oversee it, and provide annual BMI assessments the data shows otherwise. The question that needs addressing is if mandated BMI monitoring within the school districts would make a difference. This will only become possible with appropriate policy and procedure and the collaboration of all the players.

Literature review provided information that the subject of obesity management in schools needs more exploration and more research is essential. Hootman (2002) notes that research is vital and makes it very clear that school nurses need to have a proactive, philosophical, personal, and professional involvement. Hootman also notes that school nurses give significant information about student's health and make recommendations on their care but school nurses are also leaders in the community and within the school setting and have the potential to be trend setters and change agents. School nursing provides a multitude of possibilities and it just takes leadership and perseverance along with collaboration to get a program going.
Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

Overview

This study identified school nurses' perceptions of their roles in the management of obesity within the school setting. Utilizing a survey tool that consisted of five sections including school nursing practice, child-level obesity prevention tasks, school-level obesity prevention, support from others and personal and school demographics provided a means to gather data to achieve an understanding of what school nurses believed their role to be in obesity management within the school setting. A convenience sample was used and distributed to three separate school districts and at the CSNO conference for data collection purposes. The health belief model (HBM) provided a framework for examining perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy for school nurses and their perceptions of the management of obesity within the school setting.

Important Findings

The study demonstrated that school nurses do not believe that health education regarding obesity prevention or intervention is part of their role. Due to the design of this study, it is not known why school nurses do not perceive this as part of their role. This may indicate that school nurses would benefit from more information regarding research on the topic of school nurses' perception of obesity management in the school setting. According to Hootman (2002) research is complex in nature and involves multiple fields of knowledge, such as conceptual and theoretical frameworks, such as ethics, and
research design. School nursing practice is likewise complex. It demands a broad knowledge base to work effectively with many schools, community team members, and to meet students’ health needs. The findings indicated that school nurses need education to become familiar with obesity promotion and prevention programs. The potential role of the school nurse could be a huge factor in preventing the spread of the epidemic of childhood obesity. Hill and Trowbridge (1998) note that we are facing a future generation of obese adults even more than this current generation of adults in the United States, of whom one third (approximately 58 million) are obese. This condition presents an enormous obstacle to our health care system. School nurses are well situated in the school system and can be the change agent by collaborating with community organizations, school physicians, and community physicians (The American Academy of Pediatrics Policy Statement, 2008).

A school nurse has the perceived notion that health education is not a part of their role however; this does change when a school nurse has the task of weighing a student and notes that they are obese. Using the HBM information indicates that when a student has increased weight and it is abnormal parents are notified which is a cue to action to make sure this information is disseminated to the parent or guardian.

When school nurses do find an overweight child research noted that BMI monitoring is not done, nor are students, staff, or parents educated on a plan to implement promotion, treatment, and prevention. This indicates that school nurses’ perceived roles in childhood obesity prevention is lacking. Education would provide the resources and remove barriers by providing school nurses with the necessary and vital information they
need due to the growing epidemic of obesity. The literature review provided information regarding mandated BMI screening in various school districts. School districts that were held accountable to annual BMI mandates had a significantly higher rate of participation in school based obesity promotion and prevention programs. Height and weight screening was noted as the lowest priority in the school nurses daily activities and BMI screening noted 100 out of 134 nurses did not participate at all. The benefit of having acceptance of a mandated BMI monitoring in a school district will make nutrition counseling and dissemination of important nutritional information to staff and families a route to reach self-efficacy and provide a wonderful prevention and promotion plan for school nurses to educate about obesity within the school setting.

The perceived barrier includes a lack of policy and procedure to implement such programs and a lack of funding to provide additional educational training on the correct measurement of BMI monitoring and how to get this important information disseminated to staff and parents so needed education can begin. Education would provide a benefit and remove barriers providing school nurses with the necessary and vital information they need to address the growing epidemic of obesity. Another perceived benefit identified in the literature review is mandated BMI screening. School districts that were accountable to mandates had met the HBM of self-efficacy, as the particular school district will have school nurses participate in mandated BMI screenings with proper follow-up plans.

Benefits will need to encompass the entire school with collaboration of students, staff, parents, and community leaders to promote obesity prevention and treatment. The
benefit of having acceptance of a mandated BMI monitoring in a school district will make nutrition counseling and dissemination of important nutritional information to staff and families a route to reach self-efficacy and provide a wonderful prevention and promotion plan for school nurses to educate about obesity within the school setting.

An interesting finding was that school nurses when asked if they were prepared to oversee obesity prevention the majority strongly agreed. This was also found when the question was posed if school health should not be used for obesity prevention and the majority of nurses strongly disagreed noting that obesity management is a significant problem and school nurses consider this as one of their responsibilities. The results demonstrated that height and weight screening was listed as a less frequent item. Paperwork was listed as being the most frequent item that is done within the school setting. The majority of school nurses never provided nutritional health teaching. The majority of nurses were aged forty-nine to fifty-eight with the majority possessing a Bachelor’s degree with the majority of school nurses with ten years of experience. Again, while school nurses did find obesity health education important and wanted to oversee this in the school settings they could not meet these demands.

Multiple barriers were identified by the study participants and included lack of policy and procedure that is necessary to implement a promotion, treatment, and prevention plan. A lack of funding to provide additional educational training for nurses on the correct measurement of BMI monitoring also posed a problem because many of the school nurses had a lack of knowledge on what the proper standards and protocol was for correct BMI measurement. Another barrier is dissemination of information regarding
the BMI and its relative significance to health. This is important because parents or guardians need to have an adequate understanding of what a BMI is and how it can affect their student and the risks that are associated with obesity and how the school is going to assist with the problem and what follow-up will be done.

Limitations of Study

This study used a convenience sample. Participation from different counties of school districts would have provided a larger sample and would have provided a different perspective from other counties. This would allow for increased generalizations of findings. However, the study sample did closely reflect the demographics of school nurses in California. There were questions that were not included that would have provided more insight. The data was self-reported and some of the nurses could have underreported or over reported. Part time or full time status could have been included and made a difference in the reported data. The sensitive nature regarding obesity might have influenced the way some respondents replied and may have given desirable responses to a sensitive subject. The survey questions with permission from the author had modifications and the directions for completion seemed confusing to some individuals especially with ordinal values. There were also questions from school nurses in specialty programs that found it difficult to respond, as they were not in an actual school nurse position at this time. It took several explanations for them to grasp how to complete the survey.
Implications for Theory Building

The Health belief model was used to understand school nurses’ perceptions of their roles in the management of obesity within the school setting. This framework provided a formal process to examine the data and identify the responses that study participants provided. Perceived susceptibility provided a starting point to examine the data because school nurses did not believe they should provide health education in the school setting but did believe they were capable of overseeing obesity prevention if time allowed. Gathering statistical data and participant’s responses on perceived susceptibility was a valuable tool to ascertain data and classify it into different categories.

Research provided information to support the conclusion that perceived barriers hinder best practice. School nurses felt that time and support were factors that contributed to implementing prevention and promotion on obesity. Local school districts could provide the groundwork for implementing policy and procedure for mandated BMI monitoring which would meet the ultimate goal of self-efficacy. With constituents, community leaders, and parents in agreement, board policies and appropriate education and training could provide a framework for nurses to participate and to have the collaboration of staff at the varying school sites making obesity management a team effort. With the removal of barriers, best practice will play a significant role in the management of obesity within the school setting. It was determined that the use of the HBM could provide California public schools with many benefits with the most important being the implementation of mandated BMI screening with standardized policy
and procedure to measure, monitor, and educate school nurses on obesity management within the school setting.

Implications for Research

Further research is indicated to understand the role of school nursing and obesity prevention. Key roles that need further research include how the school nurse can provide accurate monitoring and measurement of BMI and the necessary supports are for BMI monitoring. Further understanding of the school nurses role in the school setting is needed and this information will provide perspective on what policies and practices may need to be modified or initiated in the school setting to provide the best outcome for this group of children. Research is needed to supply school nurses with the fundamentals of BMI measuring and monitoring so they can have an understanding of proper weight monitoring. This should be a high priority as the numbers of childhood obesity continue to rise.

Implications for Practice

School nurses would benefit from an extensive education training on the measurement and monitoring of BMIs. There are new tools that are available and the proper technique is necessary for nurses to understand how to correctly measure and monitor using different devices and scales. According to Hendershot et al. (2008), research has indicated that school nurses’ perceptions, activities perceived barriers and benefits, as they relate to the measurement of BMI, may facilitate future labors and programs by school nurses and schools. An important statistic noted by Hendershot et al. was that nurses who had a mandate were identifying at risk groups at 77% and compared
to only 23% of schools where no mandate was required. This was similar to the findings of this research study. If a school nurse happened to weigh a student and calculated an abnormal BMI then parents were notified, but this was only if a student came in for a measurement and this was not done on a consistent basis as the data demonstrated.

Hendershot et al. also provided interesting information related to nursing implications. It was established that at schools with a BMI mandate in place the school nurses perceived considerably fewer barriers to measuring their students’ BMI compared to schools where nurses were not mandated to measure BMI. California schools can mandate BMI measurement however; each school district has the authority to mandate BMI at different grade levels. Currently, BMI is only mandated at the fifth grade level. This positive result noted that nurses who have administrative support perceived fewer barriers, which would be indicative of the need for a policy and procedure to be in place.

School nurses should take an active role in the fight against childhood obesity. BMI monitoring is one of the first measurements that can help assess potential health and possible psychological problems. School nurses are in a prime position to take the lead, provide awareness of the problems of childhood obesity, and educate staff, parents, and students.

Summary

California school nurses participated in a convenience study to determine school nurses’ perceptions of their role in the management of obesity within the school setting. Research indicated that school nurses believe 77/163 (47%) that schools should provide annual BMI assessment and 62/163 (38%) of school nurses are prepared to oversee
obesity prevention. Ironically, though these results are posed in a positive light the flip side showed that 29 nurses on a scale of 1 to 11 with 11 being the least important noted that 29/156 (19%) of nurses which was a large number felt this was the least important assessment they perform on a daily basis. School nurses were questioned if they should provide classroom nutrition health teaching and the result came back 67/163 (41%) stating they never performed this type of teaching. This data indicates that school nurses recognize the importance of monitoring weight and BMI, however; due to a host of other activities such as paperwork which was 34/157 (22%) and listed as number 1 on a scale of 1 to 11 did not permit time to measure or monitor BMI or teach health classes. This indicates that obesity management is important but there is a lack of time to participate in this monitoring unless a mandate was set forth. Hill & Trowbridge (1998) note that childhood obesity is a major crisis facing the United States and it is important that control be taken. Educational efforts need to be directed towards parents, staff, policy makers, community leaders, and health care professionals. The health of the U.S. population indicates that childhood obesity has become a vast hazard and is now being compared to teen pregnancy, AIDS, and breast cancer and school nurses are positioned to make a significant difference in preventing obesity (Hill & Trowbridge).

Summary of Study

Several contradictions were discovered in this study. A majority of 43% of school nurses believed obesity prevention is necessary at school sites. Forty-seven percent of school nurses believed annual BMI assessments is obligatory at school sites. Finally, 38% of school nurses responded that they were prepared to oversee obesity prevention. The
quantitative statistics would address that school nurses’ perception of their role in obesity management within the school setting is right on target and that it is occurring at the school sites. This information showed the contradiction when research questions were identified under school nursing practice.

When ordinal data was reviewed there were clear observable contradictions. Ordinal data was given a score of 1 to 11 and daily school nursing practices were to be ranked from 1 to 11 with 1 being the most important and 11 being the least important. Health education within the school setting ranked at 10 by 19% of school nurses and 11 by 17% of school nurses. The most important daily school nursing practice identified case management with chronic health problems with 26% of school nurses responding with this as their number one choice. The second most important daily task identified paperwork as number one with 22% of school nurses responding. This reflected that although school nurses believed obesity prevention was necessary it was not happening within the school setting due to case management and the paperwork that needed to be completed.

The research question asked school nurses’ perceptions of their role in the management of obesity in the school setting. Three of the most important questions asked participants if a child had their weight monitored if there was a concern. The data noted that 33% of school nurses responded sometimes, 36% responded rarely, and 28% responded never. The survey also questioned if a child had their BMI measured if they were overweight and the data showed 27% of school nurses responded sometimes, 29% responded rarely, and 34% responded never. The third question asked school nurses if
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Many of these contradictions could be surmised due to schools without mandates requiring BMI monitoring. Literature review also indicated that many school nurses did not know how to accurately measure and assess BMI and did not have the support of administrators or staff. A need for written policy and procedures became evident at the completion of this survey because while school nurses feel they should be providing obesity management, should be the ones responsible to oversee it, and provide annual BMI assessments the data shows otherwise. The question that needs addressing is if mandated BMI monitoring within the school districts would make a difference. This will only become possible with appropriate policy and procedure and the collaboration of all the players.

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setting and have the potential to be trend setters and change agents. School nursing provides a multitude of possibilities but requires leadership and perseverance along with collaboration to get a program going.
California School Nurses’ Perceptions of Obesity Management in School

Section A: School Nursing Practice

1. The following are common services delivered by school nurses. Please rank the list from 1 to 11, with 1 being the most common service you provide and 11 being the least common service. If you do not provide the service, enter 0.

   a. Medication administration
   b. Immunization monitoring
   c. Case management of students with chronic health needs
   d. Skilled care (i.e. tube feeding, catheterization)
   e. Hearing and vision screening
   f. Assessment of non-acute health conditions
   g. Assessment of acute health conditions
   h. Health education in group setting
   i. Supervision of ancillary staff
   j. Height and weight screening
   k. Paperwork

2. At my school(s), health screening of students is: (check only one)

   a. Not offered   b. Provided upon individual request, only   c. Provided on an annual basis

   Go to question 3

Annual health screening at my school includes:

<table>
<thead>
<tr>
<th>Service</th>
<th>1. Screened?</th>
<th>Yes, if not normal</th>
<th>Yes, all</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Vision</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Hearing</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Height</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Weight</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Body Mass Index (BMI)</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. BMI Percentile, based on CDC growth charts</td>
<td>Yes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Go to question 9
Section B: Child-level obesity prevention tasks
During the school year, how often do you...

9. Contact a parent because you have a concern about a child's weight?
   Never  |  Rarely  | Sometimes  |  Often
   1      |  2       |  3         |  4

10. Recommend that a parent contact a health provider for a child-related weight concern?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

11. Provide counseling to a parent regarding a child-related weight concern?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

12. Provide counseling to a child for his/her weight-related concerns?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

13. Provide consultation to a teacher about a student-related weight concern?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

14. Monitor a child's weight because of a weight concern?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

15. Check the blood pressure of an overweight child?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

16. Check the body mass index of a child you "think" might be overweight?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

17. Use body mass index percentile, based on CDC age & gender growth charts to assess a child's weight status?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

Section C: School-level obesity prevention
During the school year, how often do you...

18. Provide written information to parents, teachers and/or students about nutrition and physical activity?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

19. Provide consultation to school administrators about health-related school policy?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

20. Participate as a member of a school health council?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

21. Provide classroom health teaching on nutrition?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4

22. Provide classroom health teaching on physical activity?
    Never  |  Rarely  | Sometimes  |  Often
    1      |  2       |  3         |  4
23. Monitor school nutrition practices, like the food used in fundraising and as incentives and/or rewards for students?  

24. Monitor school physical activity practices like whether children have access to space and equipment for play before and after school?  

25. Assess the nutrient quality of foods and beverages offered students as part of school meals?  

26. Assess the nutrient quality of other foods and drinks sold to students at school, such as foods offered as a la carte, in vending machines and school stores and for fundraising?  

27. Write an article about healthy lifestyle habits for the school newsletter, website or other similar format?  

29. Schools should provide annual assessments of students’ weight, height and BMI and make that information available to parents.  

30. The school nurse has adequate time to oversee and monitor obesity prevention efforts at school.  

31. Teachers in my school will support obesity prevention efforts at school.  

32. School foodservice staff will support obesity prevention efforts at school.  

33. School administrators will support obesity prevention efforts at school.  

34. Health providers in the community will support obesity prevention efforts at school.
35. The school nurse is prepared to oversee and monitor obesity prevention efforts at school.

SECTION E: Personal and School Demographics

36. What year were you born?

19 ___

37. Are you male or female?

1 □ Male
2 □ Female

38. What is the highest academic degree you have received?

1 □ Bachelors Degree
2 □ Masters Degree
3 □ Doctoral Degree

39. What racial or ethnic group do you consider yourself? (Check all that apply)

1 □ American Indian/Alaskan Native
2 □ Asian
3 □ Black/African American
4 □ Hispanic/Latino
5 □ White/Caucasian
6 □ Other

40. How many years have you held your current position in this school?

___ years ___ months

41. How many total years of school nursing experience do you have?

___ years ___ months

42. How many total years of nursing experience do you have?

___ years ___ months

43. How many school are you responsible for?

1 □ One
2 □ Two
3 □ Three
4 □ Four
5 □ Five

44. How many students are you responsible for? If more than one school, enter the total number of students in all schools.

1 □ 500 or less
2 □ 501-1000
3 □ 1001-1500
4 □ More than 1500
45. What is the location of the schools you work in? Please check all that apply.

1 □ Urban
2 □ Suburban
3 □ Rural

46. What is the approximate racial/ethnic composition of the children in the schools you serve?
   (If more than one school, estimate an average across schools.)

   Don't know

   a. Blacks/African Americans
   b. Asian Americans/Pacific Islanders
   c. Whites/Europeans Americans
   d. Native Americans/Alaskan Natives
   e. Hispanic/Latin American
   f. Other (specify)
Project Title: Perceptions of School Nurses in California Related to Their Role in the
Management of Obesity in the School Setting

Names and affiliations of Researchers:

Pam Larios RN CSUS and Laurene Staggs RN CSUS

Telephone and e-mail addresses for researchers:

559 479-2691 pklarios@msn.com and 559 940-8381 staggsgirls@sbcglobal.net

Anticipated Starting Date: 12/08

Diane Baker- Faculty advisor

1. Who will participate in this research as participants (e.g., how many people, from what source, using what criteria for inclusion or exclusion)? How will their participation be recruited (e.g., what inducements, if any, will be offered)?

This study examines responses from credentialed school nurses in California consisting of Madera Unified School District Nurses (28), Fresno Unified School Nurses (46), and Clovis Unified School Nurses (28), and from members of the California School Nurse Organization obtained at the state conference (100).

Inclusion criteria for this study will include:

1. Credentialed school nurses that work in a school setting
2. Physical ability to comfortably endure filling out the questionnaire
3. Age greater than 18
4. Willingness to participate in the questionnaire

Exclusion criteria include:

1. Retired school nurses
2. Management positions including credentialed school nurse directors

3. School nurse educators

**Recruitment Methods:**

Permission will be obtained from the Health Directors in Madera, Clovis and Fresno Unified School Districts to survey their nurses at a staff meeting in February and a 46-item questionnaire will be administered for completion. A signed consent will be obtained from each nurse prior to completion of the questionnaire and collected and placed in a consent box. Approval for administration was granted by Barbara Miller with the California School Nurse Organization (CSNO). School nurses will be given 30 minutes to complete the questionnaire. Upon the return of the questionnaire, the participants will be given a personalized breast cancer pencil which states, “School Nurses Care”. The cost is $12.99 for 72 pencils and we will be purchasing 5 sets for a cost of $64.95.

2. How will informed consent be obtained from the subjects? Attach a copy of the consent form you will use. If a signed written consent will not be obtained, explain what you will do instead and why. (See Appendix B for examples of consent forms and a list of consent form requirements. Also see informed consent earlier in this manual.)

A brief synopsis of the purpose of the consent will be reviewed at the business meeting portion of the CSNO conference. The principal researcher will hand out the consent and both researchers will be available for questions. Informed written consent must be completed by each participant. Please see attached consent.
3. How will the subjects' rights to privacy and safety be protected? (See level of risk earlier in this manual.)

The subject's right to privacy and safety will be protected because the questionnaire will be anonymous. The consent and questionnaire will be stored in separate boxes and safety will be maintained by storing these in a locked cabinet. Responses from the questionnaires will be stored in a password protected computer file. Only aggregate data will be reported and no specific school district data will be released.

4. Summarize the study's purpose, design, and procedures. (Do not attach lengthy grant proposals, etc.).

The study's purpose is to determine California school nurses' perceptions of their role in the management of obesity within the school setting. This will be an exploratory cross-sectional descriptive questionnaire using convenience sampling. Our specific aims are:

1. What are school nurses' perceived responsibilities in the school setting?
2. What are school nurses' perceived responsibilities in childhood obesity prevention?
3. What are school nurses' perceived responsibilities in school-based obesity prevention?
4. What are school nurses' perceptions of support from others in obesity prevention?

The 46-item questionnaire will address:

1. School nursing practice
2. Child-level obesity prevention tasks
3. School-level obesity prevention
4. Support from others

5. Describe the content of any tests, questionnaires, interviews, etc. in the research. Attach copies of the questions. What risks of discomfort or harm, if any, is involved in their use?

The questionnaire is an adaptation of the Minnesota School Nurse Survey which was constructed by Dr. Martha Kubik. The adapted version California School Nurses’ Perceptions of Obesity Management in School contains 46 questions of which 35 are survey questions and 11 are demographic. The questionnaire is broken down into five sections. The first section contains eight questions related to school nursing practice. The second section addresses child-level obesity prevention tasks and contains nine questions. The third section is school-level obesity prevention and contains 10 questions. The fourth section is support from others and contains eight questions. The final section is personal and school demographics and contains 11 questions. Permission was granted by Dr. Martha Kubik, Associate Professor at School of Nursing at the University of Minnesota. She can be contacted at 5-160 Weaver, Densford Hall, and 308 Harvard Street SE, Minneapolis, MN 55455 by mail. Her email address is kubik002@umn.edu or by phone @ (612) 625-0606.

6. Describe any physical procedures in the research. What risks of discomfort or harm, if any, is involved in their use?

There will be no physical procedures involved in this study.
7. Describe any equipment or instruments and any drugs or pharmaceuticals that will be used in the research. What risks of discomfort or harm, if any, is involved in their use?

There will be no equipment, instruments, drugs or pharmaceuticals utilized in this research study.

8. Taking all aspects of this research into consideration, do you consider the study to be “exempt”, “no risk”, “minimal risk”, or “at risk”? Explain why. (See Level of Risk earlier in this manual).

There will be no risk for participating in this study because there are no personal health behavior questions and participants may terminate participation at any time.

This information will be useful to identify school nurses’ perceptions of their responsibilities in delivering obesity prevention services in the school setting, and to assess school nurses opinions regarding school-based obesity prevention.
REFERENCES


House Bill (1583) an act to create a child health advisory board committee; to coordinate statewide efforts to combat childhood obesity and related illnesses; to improve the health of the next generation of Arkansans; and for other purposes. Retrieved January 12, 2009 from http://cnn.k12.ar.us/Healthy%20Schools%20Initiative/Act1220.pdf


http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html


http://www.cdc.gov/nccdphp/dnpa/obesity/defining


http://www.cdc.gov/nccdphp/dnpa/obesity/contributing_factors


