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I am submitting herewithin a thesis written by Elizabeth T. Anderson entitled “An Examination of the Education, Credentials, and Functions of School Food Service Directors in Tennessee Public School Districts.” I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

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An Examination of the Education, Credentials, and Functions of School Food Service Directors in Tennessee Public School Districts

A Thesis Presented for
the Master of Science
Degree
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Elizabeth T. Anderson
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ABSTRACT

Childhood overweight and the associated health consequences have become a significant health problem in the United States and particularly in the state of Tennessee, with 14.8% of U.S. and 20.0% of Tennessee youth's aged 10-17 currently classified as being overweight (1). Environmental factors play a significant role in the etiology of overweight, and therefore need to be considered in efforts undertaken to address this problem. Schools are one such environment where U.S. children spend a great deal of time, making the school food environment, which includes all foods available in schools (such as foods served in the school meals, a la carte foods, school stores, and school vending machines), an important contributor to the nutritional health of today's children.

The school food environment may be influenced by the education, training, and experience of the school food service director as well as the functions and availability of a Registered Dietitian in the school district. Therefore, this research study was designed to examine the education and qualifications of school food service directors in public school districts in Tennessee and to investigate the characteristics of Registered Dietitians in the structure of school nutrition programs.

This research found that the requirements for the food service director position in Tennessee public school districts generally exceeds the average national position requirements and that food service directors in Tennessee have higher levels of education than their counterparts across the nation. However, certain characteristics of Tennessee school districts such as smaller size and rate of economic disability in the school district were associated with less desirable characteristics in the food service director position such as lower requirements for the position and lower education and credential levels of the individual in the food service director position.

Many changes are underway in school health and child nutrition programs in Tennessee and this research provides necessary baseline information on which legislation to establish education and credentials requirements for food service directors can be pursued.

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PART I
INTRODUCTION AND LITERATURE REVIEW

Introduction

The rate of overweight among U.S. children has grown so rapidly and dramatically (1, 2) that addressing this problem has become a major public health priority. Childhood overweight has many negative consequences on the physical and mental health of the individual child; it also has serious health and economic implications for the entire population. The nature of overweight in children is very complex, demanding multi-dimensional approaches to combat the problem, including evaluating the health of the school environment to maximize the ability for children to be healthy at school.

School-aged children spend a majority of their weekday in the school environment and consume a great deal of their daily energy intake while at school. The USDA National School Breakfast and School Lunch programs provide proper nutrition to children based on federal standards, however, until recently Tennessee school children had access to many other foods at school that provided many calories but little nutritional value, such as chips, cookies, and sugar sweetened beverages. School and government officials recently have begun to create positive change in the Tennessee school food environment by regulating the food and beverages that were available to children at school, giving children increased opportunities to make healthy dietary choices during the school day.

As part of maximizing the potential for a healthy school environment, it is important to assure that the individuals responsible for the school environment are trained adequately in their field and have the knowledge and skills necessary to create and maintain an environment in which children can be healthy. In regards to school nutrition, this individual is the school district food service director.

The literature, reviewed in detail in the following sections, shows that nationwide education and training requirements for school food service directors are often minimal considering that individuals in this position have a great deal of influence over the food choices that children are presented with at school. Legislators at the federal, state, and local levels have identified this problem and some efforts have been made to create standard requirements for this position, but additional efforts may be necessary.

The objectives of this research are to examine the current (baseline) education levels and characteristics of food service directors in Tennessee public schools and to investigate the characteristics of Registered Dietitians in the structure of school nutrition programs in Tennessee. Part I of this document provides a thorough review of the relevant literature related to this research, including information on the problem of childhood overweight, the school food environment, and the role of the school food service director in the school nutrition programs.

Literature Review

Obesity Rates in the U.S. and Tennessee

The National Survey of Children's Health is a nation-wide survey developed by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau which is conducted in coordination with the Centers for Disease Control and Prevention, National Center for Health Statistics. This survey was conducted most recently in 2005 and gathered information from a representative sample of U.S. parents on the health of their children and the health of their children's environment (1).

This survey measured many variables, but this literature review will focus only on results pertaining to children's weight status. Information on this variable was reported by the child's parents and then analyzed by the survey administrators at the national and state levels. Height and weight data on each child were obtained via parental report and calculated into a Body Mass Index (BMI) measurement by the survey administrators. In looking at these data it is important to note that because the data were reported by parents rather than via standardized measurement of the children, there is the potential for inaccurate reporting, leading to miscalculations of the child's BMI (1).

The BMI is a calculation based on height and weight that provides a general estimate of the body fatness of an individual. The BMI measurement is being recommended for use in evaluating body composition of children by the American Medical Association's Expert Committee on Childhood Obesity because it can be calculated in a timely and inexpensive manner and BMI scores correlate with adiposity, cardiovascular risk factors, and long term mortality (3). The formula for BMI is presented in Table 1.1.

Table 1.1: BMI Calculations and BMI Based Weight Categories for Children

BMI Calculations (4)	
BMI = Weight (kg) ÷ Height $(m)^2$	
Weight Categories for Children (1)	
Underweight	BMI-for-age: < 5^{th} percentile
Normal Weight	BMI-for-age: 5^{th} percentile to <85^{th} percentile
At Risk for Overweight	BMI-for-age: 85^{th} percentile to <95^{th} percentile
Overweight	BMI for age: ≤95^{th} percentile

When applying BMI to children, a BMI-for-age is used. BMI-for-age is preferred when assessing children because it takes into the account age, gender, and growth patterns of the child (4) and is based on gender-specific growth charts from the Centers for Disease Control and Prevention (5).

The weight of a child can be categorized based upon the BMI calculation into four different categories: underweight, normal weight, at risk for overweight and overweight. The underweight category includes all children who have a BMI-for-age less than the 5th percentile. The normal weight category includes all children who have a BMI-for-age that is at or above the 5th percentile but is less than the 85th percentile. Children in the at risk for overweight category have a BMI-for-age that is at or above the 85th percentile but less than the 95th percentile (equivalent to the overweight category in adults). Finally, the overweight category includes all children who have a BMI-for-age that is at or above the 95th percentile (equivalent to the obese category for adults) (1).

Traditionally, we have called children at “at risk for overweight” and “overweight” instead of “obese”, because labeling a child as obese was thought to have a negative psychosocial impact on the child. However, the most recent recommendations from the American Medical Association’s Expert Committee on Childhood Obesity suggests changing this terminology to match the adult terminology, including labeling children above the 95th percentile on the BMI growth charts as obese. This change in terminology is being recommended to reinforce the serious health consequences associated with children having BMI’s over the 85th and 95th percentiles (3). However, in this paper the traditional BMI Based Weight Categories (listed in Table 1.1) will be used.

In 2005, 14.8% of U.S. children aged 10 to 17 years old were classified as overweight (1). However, the numbers of children who are overweight are not evenly distributed throughout this population. The proportion of children who are overweight

varies due to a number of factors such as sex, age, and ethnicity. Among U.S. children a higher proportion of males than females are overweight, a higher proportion of younger children (10 to 11 years) than older children (15 to 17 years) are overweight, and higher proportions of African American and Hispanic children are overweight when compared to non-Hispanic white children (1). Additionally, socioeconomic status was found to play a role in children's weight. The survey found that a higher proportion of children who live in households where the family incomes are below 100% of the federal poverty level were overweight when compared to children who lived in households that had higher income levels (1).

The National Survey of Children's Health found that Tennessee has an even greater problem with childhood overweight than does the rest of the nation with 20.0% of Tennessee's children aged 10 to 17 years having BMIs categorized as overweight (1), meaning that one out of every five children (aged 10 to 17) in Tennessee is at or above the 95th percentile of their BMI-for-age. This is 5.2% higher than the national average of 14.8% of children being classified as overweight (represented in Figure 1.1) (1). These data indicate that the entire U.S. population needs comprehensive action taken to reduce overweight among the school-aged population, particularly in states with higher rates of overweight children, such as Tennessee.

Healthy People 2010 objective 19-3 recognizes the considerable risks and complications that are associated with childhood overweight and sets the goal of reducing the proportion of children and adolescents who are overweight or obese from the baseline of 11% (in 1988-1994) to a target of 5% (6). As the data presented above indicate, the U.S. is not making progress toward obtaining this goal, instead we are moving further away from the goal, with the current U.S. rate of childhood overweight

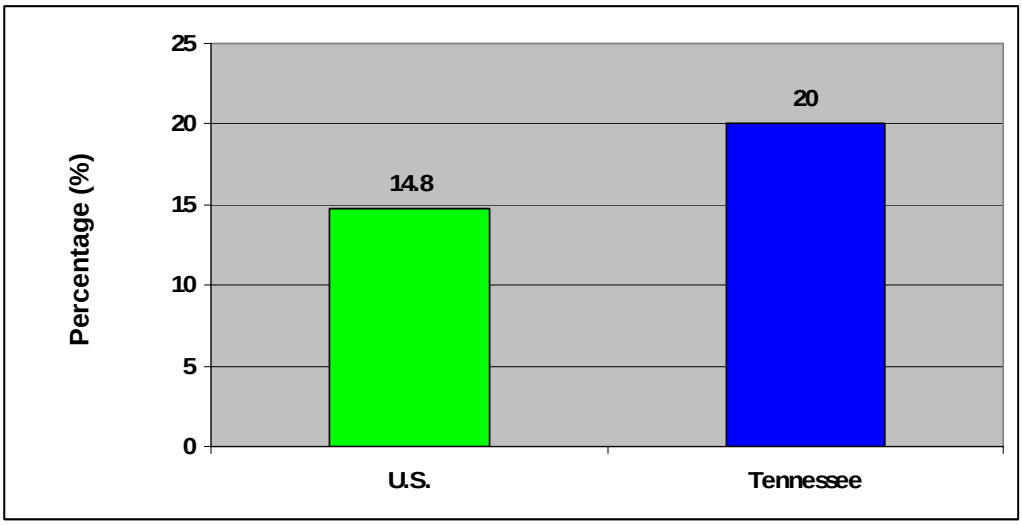


Figure 1.1: Overweight among Children Aged 10 to 17 Years in the U.S. and in Tennessee (1)

continuing to climb upward (1). Research and analysis of the data from other on-going national nutrition surveys confirm that, similar to the increasing prevalence of adult overweight and obesity, the number of children who are overweight or at risk for overweight has increased markedly over the past few decades and continues to increase (2) with no indications of slowing.

A literature review by Wang and Beyoun (7), collected obesity prevalence data from the National Health and Nutrition Examination Surveys (NHANES), which is a series of cross sectional, nationally representative surveys conducted by the National Center for Health Statistics (8), and other health surveys in order to report on the trends in childhood obesity over the last few decades. They found that in all age groups of U.S. youths, from toddlers to adolescents, the prevalence of overweight and at risk for overweight has increased since the 1960s (7).

The annual rate of increase was approximately .05 percentage points between 1976-1980 to 2003-2004 for children and adolescents (aged 2 to 19 years), with slight variations among the age groups (7). This review found that in children aged 6 to 11 years the prevalence of overweight almost tripled, going from 6.5% to 15.8% and in children aged 12 to 19 years, the prevalence more than tripled going from 5.0% to 16.1%, according to the data reviewed from the NHANES surveys (7). Figure 1.2 represents these findings.

Health Consequences of Childhood Overweight

The increasing prevalence of overweight in children is a major public health concern because childhood overweight increases the risk of serious health problems during childhood and into adulthood (9). Many of the body's major systems

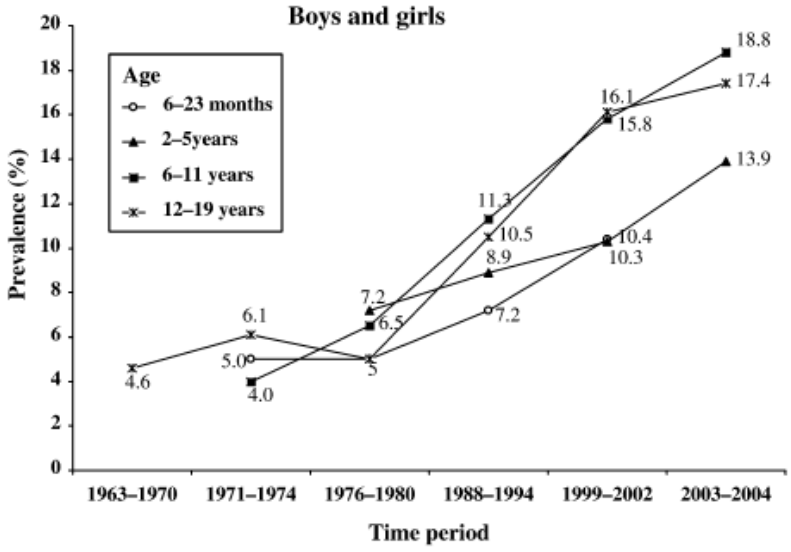


Figure 1.2: Trends in the Prevalence of Overweight in U.S. Children and Adolescents, from the National Health and Nutrition Examination Survey, 1963 to 2004, as from Wang and Beyoun (7)

are adversely affected by excess body weight and body fat in childhood including the cardiovascular, pulmonary, skeletal, gastrointestinal, and metabolic systems (10). Table 1.2 (10) gives a brief description of the health consequences of childhood overweight associated with each body system.

In addition to all of the specific health risks of childhood overweight listed in Table 1.2, there is significant concern for the future health of overweight children because they are at higher risk of becoming overweight or obese as adults (9). The overweight child is more likely to develop these health consequences (many of which used to be considered adult-onset diseases), early in life and continue to battle them, and potentially battle additional weight-related problems, in their later years.

Unfortunately, physiological problems are only part of the consequences of childhood overweight. Being overweight in youth can have negative psychosocial effects on the developing child as well. A study by Strauss and associates found that overweight youths had decreased self-esteem associated with loneliness, sadness, and nervousness (11). Additionally, a study by Falkner and associates found that among middle and high school students, weight status was associated with students' perceived social relationships, school experiences, and psychological well-being. In this study they found that students who were overweight were less likely to report spending time with friends, more likely to have negative social experiences, and more likely to believe that they are poor students (12). These studies show that the potential mental and emotional health effects of childhood overweight can be just as detrimental to the child's health as physiological problems.

Beyond the effects on physical and mental health, the economic consequences of overweight and obesity also have a significant impact on all members of society. A national study of health costs estimated that in 1998 medical expenses related to

Table 1.2: Health Consequences and Disorders Related to Childhood Overweight, by Body System

Cardiovascular System	
Health Disorder	***Explanation***
Hypertension	Elevated blood pressure
Left Ventricular Hypertrophy	Increased muscle thickness in the heart's main pumping chamber
Atherosclerosis	Hardening of the walls of blood vessels
Metabolic System	
Health Disorder	***Explanation***
Insulin Resistance	Body cells become less sensitive to the action of the hormone insulin
Dyslipidemia	Abnormal changes in the blood levels of lipids, specifically increases in triglycerides and LDL cholesterol and decreases in HDL cholesterol
Metabolic Syndrome	The collective term for a combination of risk factors including: increased waist circumference, elevated blood pressure, increased triglyceride and decreased HDL cholesterol levels, and elevated plasma glucose levels
Type 2 Diabetes	A condition in which the body produces too little insulin or can not efficiently use the insulin produced, leading to raised blood glucose levels
Gastrointestinal System and Accessory Organs	
Health Disorder	***Explanation***
Non Alcoholic Fatty Liver Disease	Storage of excess fat in the liver causing inflammation
Gastrointestinal Reflux	Reflux of acidic stomach contents back into the esophagus
Pulmonary System	
Health Disorder	***Explanation***
Asthma	Pulmonary disorder characterized by the reversible constriction or obstruction of the airways
Obstructive Sleep Apnea	Pulmonary disorder characterized by the interruption of normal breathing patterns during sleep
Skeletal System	
Health Disorder	***Explanation***
Tibia Vara (Blount's Disease)	Bowing of children's legs due to growth disturbances in the tibia
Slipped Capitol-Femoral Epiphysis	Disorder of the hip's growth plate
Source of Table 1.2: Daniels SR. The Consequences of Childhood Overweight and Obesity. *Future Child*. 2006; 16 (1): 47-68.	

overweight and obesity accounted for 9.1% of total health cares costs, roughly equaling 78.5 billion dollars (13). Approximately half of this amount was paid by Medicare and Medicaid funds, transferring the costs of overweight and obesity to the entire population. These significant financial burdens will continue to grow, and impact the U.S. economy as long as overweight and obesity is on the rise (13).

The Development of Overweight

Body weight is maintained by the balance of the energy consumed (as calories) in the diet and energy expended by the body through various methods (such as metabolic processes and physical activity). Alterations in this balance such as increased dietary energy intake or decreased energy expenditure, as in increased sedentary behavior, can cause weight gain (14). Over time, if an individual is in positive energy balance (where energy consumption exceeds energy expenditure) significant weight gain could occur, possibly leading to overweight and obesity.

To address overweight in school-aged children, it is important to consider factors that contribute to children consuming more calories than they expend. Factors such as diet, physical activity, genetics, metabolism, behavior, environment, culture, and socioeconomic status (15) can directly or indirectly impact the amount of energy consumed and utilized by the body. Some of these factors, such as genetics and metabolism, cannot be controlled. However, others such as diet, physical activity, and environment can be adapted to promote a healthy weight.

This literature review will primarily focus on two factors, diet and environment, because these factors can be improved by positive change and can be promoted within the school setting.

The School Food Environment

According to a joint Position Paper on Nutrition Services by the American Dietetic Association, Society for Nutrition Education, and American School Food Service Association (now the School Nutrition Association) "a healthy school environment provides youth the skills they need to (a) adopt healthy eating behaviors, (b) obtain positive nutritional status, and (c) achieve improved academic success" (16). Each of these three factors are essential to consider when assessing the school food environment.

The school food environment includes all foods and beverages that children have access to during the school day, which encompasses much more than the meals served through the school lunch and school breakfast programs. The school food environment also involves foods obtained from vending machines, a la carte food sales, school stores, snack bars, school fundraisers, or foods obtained in the classroom as rewards or as part of school parties.

For most children, a majority of each weekday is spent at school and this is reflected by their dietary consumption. Many children consume breakfast, lunch, and snacks at school which equals 35% to 40% of a child's daily energy intake (17). With more than one third of their daily nutrition being consumed at school, the school food environment and the food options children are presented at school play a pivotal role in the health of the school-aged child.

Components of the School Food Environment

There are a variety of sources from which children can obtain food while at school. These sources will be further delineated in the following sections, beginning with a primary source of obtaining foods at school: the USDA school meal programs.

USDA School Lunch Program

The National School Lunch Program was established in 1946, making it the oldest and the second largest food and nutrition assistance program among the USDA's nutrition safety programs. At its creation, this program served two functions: (a) it safeguarded the nutritional health of American children and (b) it encouraged the domestic consumption of U.S. agricultural commodities and other foods (18). Currently, almost 99% of public schools and 83% of private schools participate in the National School Lunch Program, making the National School Lunch Program available to approximately 92% of all students nationwide (18).

Schools that choose to participate in the National School Lunch Program receive donated food commodities and financial reimbursement for each meal that they serve to students. However, the schools do not receive reimbursements from USDA for adult meals, second servings of meals, and a la carte items, even if these items are extra servings of a component of the school meal (18).

The National School Lunch Program assures that the lunches and snacks provided are nutritionally balanced by having a set of nutrition standards that must be met in order for that school to receive federal subsidies (18). The school lunches are required to meet one-third of the Dietary Reference Intakes (DRIs) for key nutrients including: calories, protein, Vitamin A, Vitamin C, iron and calcium (19). School lunches

must additionally meet the Dietary Guidelines for Americans (20), which indicate that no more than 30% of the individual's caloric intake should come from total fat and no more than 10% of total caloric intake should come from saturated fat (20). Although schools must meet these federal nutrition standards, local school authorities are free to decide what foods and meals they actually serve and how the meals are prepared (19). A traditional lunch provided by the National School Lunch Program would include: one serving of meat or meat alternative, two or more servings of fruit, vegetables, or full strength juices, one or more servings of bread or grains, and one serving of milk (19). Meals served through the National School Lunch Program ideally should provide students with healthy, nutrient-rich food choices, if the school menus comply with the set nutrition standards.

These lunches are readily available to all students in schools that participate in the National School Lunch Program, because children of lower income families can qualify to receive the lunch for free or reduced prices (19). Children from households where the income is equal to or below 130% of the federal poverty rate are eligible for free lunches. Children from households with incomes between 130% to 185% of the federal poverty rate are eligible for reduced price lunches, where the student would not be charged more than 40 cents for the meal. Children from households whose income is above 185% of the poverty level are required to pay full price for school lunches (19).

The National School Lunch Program is a widely used nutrition resource among school-aged children in the U.S. In the Fiscal Year 2005, over 29.6 million children received their lunch through the National School Lunch Program on an average school day, allowing the program to serve more than 4.9 billion lunches annually, 59.4% of which were sold at free or reduced prices (21).

USDA School Breakfast Program

The School Breakfast Program began as pilot program to "nutritionally needy" schools (schools in areas of lower socioeconomic status and schools in which students had to travel long distances to school) in 1966. The success of this pilot project resulted in permanent implementation of the program in 1975. Similar to the School Lunch Program, the School Breakfast Program operates through public and private, non-profit schools to increase the nutritional adequacy of school-aged children's diets (22).

Meals served in the School Breakfast Program are required to meet certain nutritional requirements. School breakfast meals must meet all of the recommendations in the Dietary Guidelines for Americans (20) and they must provide at least one-fourth of the Dietary Reference Intakes (DRIs) for several macronutrients and micronutrients including: energy, protein, calcium, vitamin A, vitamin C and iron (22).

The School Breakfast Program is administered in the same manner as the National School Lunch Program in that the school can receive subsidies from the USDA for each meal served, as long as the meals are offered for free or at a reduced price to eligible children and as long as the meals meet the nutrition standards. As in the School Lunch Program, a family must have an income below 130% of the federal poverty level for the child to receive free breakfast and between 130% to 185% of the federal poverty level to for the child to receive reduced price breakfast (22).

The number of children who participate in the school breakfast program has continually grown over the years, with 9.3 million children participating in the program in the 2005 fiscal year. Out of the 9.3 million school breakfast participants, 82% (7.6 million) children qualified for free or reduced price meals (22). These numbers provide evidence that the school breakfast program is making an impact on the nutritional health

of the school-aged child and reaching the students whose families may not be financially able to obtain alternative sources of breakfast.

Competitive Foods

Although the school meal programs are designed to provide students with all of the nutrition they need during the school day, there are additional sources of food in the school environment. The USDA defines competitive foods as all foods that are offered at school that are not part of the USDA school breakfast, lunch, or snack programs (23). Competitive foods can include food items offered through a la carte food sales, vending machines, school stores, canteens, snack bars, foods sold as part of school fundraisers, and foods offered as a reward in the classroom (17).

Two sub-sets of competitive foods include: foods of minimal nutritional value and all other foods that are sold individually (not as part of a school meal) (23). Individually sold foods can consist of things such as chips, candy bars, cookies, and doughnuts (24). Foods defined as being of minimal nutritional value have high sugar contents and offer little nutrition. Examples of foods of minimal nutritional value include items such as: soda water, water ices, chewing gum, hard candies, jelly candies, marshmallow candies, fondant, spun candy, and candy coated popcorn (25). Foods of minimal nutritional value are not permitted to be sold in the cafeteria during meal times, but there are no other federal restrictions on the sale of these foods (23).

Competitive foods are readily available in schools. The School Health Policies and Programs Survey (SHPPS) found that 43% of elementary schools, 73.9% of junior high schools, and 98.2% high schools have a vending machine, school store, canteen, or snack bar from which students could purchase competitive foods or beverages (26). Although competitive foods increase the number of food choices available to students

during the school day and can increase food sales revenue for the school, they are not entirely beneficial. This is because there are little to no federal nutrition standards placed on the sale of competitive foods, like there are on the foods served as part of the school meals (24). The SHPPS study found that the most commonly available competitive foods included sugar sweetened soft drinks, sports drinks, fruits juices (that were not 100% fruit juice), salty snacks that are not low in fat, and cookies and baked goods that are not low in fat (26).

The widespread availability of competitive foods in schools negatively impacts the nutritional quality of children's diets at school. According to research findings, this is primarily because the sale of competitive foods can contribute to increased dietary fat and sugar intakes (27). Additionally, competitive foods discourage the consumption of school meals, which have been shown to have many nutritional benefits for children such as increased consumption of vegetables, milk, meat and protein-rich foods, and decreased consumption of sweetened beverages (23). However, at the state level, Tennessee has recognized this problem and established nutritional standards for competitive foods (28), which are explained in detail later in this literature review.

Current Legislation Regarding the School Food Environment

The school environment has been targeted heavily as an arena for the implementation of strategies to combat childhood overweight. Government officials at all levels have realized the link between school nutrition and healthy eating and have responded by creating some recent legislation aimed at the school food environment. Three major pieces of school health legislation impacting Tennessee children include: the mandatory implementation of school wellness policies on the federal level (29), the nutrition standards for competitive foods passed on the state level in Tennessee (28)

and the Coordinated School Health and Physical Activity Law which increased grant funding for Tennessee schools to implement Coordinated School Health Programs (30).

School Wellness Policies

Section 204 of the Child Nutrition and WIC Reauthorization Act of 2004 outlines the requirements for local school systems to develop and implement wellness policies for their school districts if they participate in the National School Lunch and Child Nutrition Programs. Each of the school districts were required to implement such a policy by the beginning of the 2006-2007 school year (29). The legislation requires that the school wellness policies include several components:

(a) goals for nutrition education, physical activity, and other school-based activities that are designed to promote student wellness (29)

(b) locally selected nutrition guidelines for all foods available on school campuses during the school day, in efforts to promote student health and reduce childhood obesity (29)

(c) the establishment of mechanisms for assuring that the guidelines on the school meals served meet or exceed the nutrition guidelines set by the Child Nutrition Act and the National School Lunch Act (29)

This legislation also states that many stakeholders need to be brought together to collaborate in the development of these policies at the local level including, but not limited to: parents, students, representatives of the school food authority (school food service director at the district level, school food service mangers at the individual school level), school board members, school administrators, and the community (29). The legislation also requires that methods for measuring the implementation of the school wellness policy must be included in the drafting of the policy, including the designation of

at least one person within the school district to be responsible for ensuring that the school is meeting the goals and guidelines set in the wellness policy (29).

Tennessee State Vending Laws

Beyond the school wellness policies, that were mandated at the federal level, the Tennessee State Board of Education passed additional school nutrition regulations. This legislation is entitled the "Minimal Nutrition Standards for Items Sold or Offered for Sale During the School Day in Grades K-8 Rule" (28) but it is often referred to as the "Vending Machine Law" and applies to all K-8 schools that participate in the USDA National School Lunch Program.

In this legislation, the state developed specific nutrition standards that apply to all competitive foods and beverages that are sold during the school day, which is defined as 45 minutes before school starts until 30 minutes after school ends. The law states specific guidelines for the portion size and the amount of total fat, saturated fat, sodium and sugar permitted in the foods and beverages (28). These guidelines are listed in Table 1.3.

This legislation was required to be completely adopted by schools containing grades 1 though 5 by the beginning of the 2006-2007 school year. Schools containing grades 6, 7 and 8 must implement at least 50% of the nutrition standards by the beginning of the 2006-2007 school year and implement 100% of the standards by the following 2007-2008 year (23). Currently, this legislation does not include nutrition standards for competitive foods sold in schools containing grades 9 through 12.

Table 1.3: Tennessee Minimal Nutrition Standards for Items Sold or Offered for Sale During the School Day in Grades K-8 (28)

Guidelines for Beverages	· A beverage cannot have a serving size over 8 ounces, except plain water · Milk must be served as a fluid, can be flavored or unflavored and must be reduced fat, low fat, or nonfat (soy milk is not currently permitted) · Only 100% fruit or vegetable juices are allowed, blends of 100% juices are acceptable · Water that is non-flavored, non-sweetened, and non-carbonated is acceptable · Low calorie beverages can be served. This includes drinks that are flavored, non-carbonated, do not contain additional caloric sweeteners, and do not have more than 15 calories per serving
Guidelines for Foods	· Foods cannot have more than 35% of their total calories from fat, except snacks that are nuts, seeds, and nut butters · Foods cannot have more than 10% of their total calories from saturated fat · Foods cannot have more than 35% of their total weight coming from sugar, this excludes fresh, dried or frozen fruits · Chips, cereals, crackers, french fries, baked goods, and snack items cannot have more than 230 milligrams of sodium per serving · Pasta, meats, and soups cannot have more than 480 milligrams of sodium per serving · Pizza, sandwiches, and main dishes cannot have more than 600 milligrams of sodium per serving
Guidelines for Portion Sizes	· Servings of chips, crackers, popcorn, cereal, trail mix, nuts, seeds, dried fruits, or jerky must be 1.25 oz. or less · Servings of cookies must be 1 oz. or less · Servings of cereal bars, granola bars, pastries, muffins, doughnuts, bagels, and other bakery items must be 2 oz. or less · Serving of non-frozen yogurt must be 8 oz. or less · Servings of pure cheese must have less than 3.5 grams of fat and must be 1 oz. or less · Servings of frozen desserts must be 4 fluid oz. or less · The portion sizes of a la carte entrée and side dish items shall not exceed the size of comparable portions of foods offered as part of school meals
Guidelines for Fruits and Non-Fried Vegetables	· Fruits and vegetables may be served fresh, frozen, canned or dried and they must be found in the USDA's Food Buying Guide for Child Nutrition Programs · The following are examples of foods that cannot be sold as servings of fruit or vegetables: snack foods made from fruits or vegetables (potato chips, banana chips), pickle relish, jam, jelly, tomato catsup and chili sauce · Fruits and non-fried vegetables are exempt from portion size limits

Coordinated School Health

Coordinated School Health (CSH) refers to the eight-component model developed by the Centers for Disease Control and Prevention in the late 1980s. This model is based on the idea that all people involved in a child's life should work together to maximize the health and wellness of that child (31). The eight components in this model include various aspects of school life and are illustrated in Figure 1.3.

The underlying premise in Coordinated School Health is that by incorporating these eight components to promote student health the students will have fewer physical, emotional, and social problems, and in turn will have improved school performance (30).

The Coordinated School Health Improvement Law of 2000, provided $1 million in funds to introduce CSH in Tennessee. This money went to 11 school districts that served as pilot testing sites for the development of CSH programs. Academic and



Figure 1.3 Eight Components of the Coordinated School Health Model
Graphic from The Centers for Disease Control and Prevention (31)

health indicators (including BMI data) were monitored in these school districts, and marked improvements in both areas were reported for students and staff members (30).

In 2006, the success of these pilot programs was recognized and the Coordinated School Health Expansion and Physical Activity Law was passed. This law expanded the funding for CSH to $15 million in grant monies available to school districts state wide. Additionally, this law set standards and guidelines for Tennessee CSH programs (32). In relationship to this research, one of the most significant standards set by this law was that each school district receiving funding must have a Registered Dietitian employed in some capacity, serving as the nutrition expert for that school system (33).

The State Coordinated School Health Office has recently awarded preliminary grant funding to all active districts in Tennessee (34), meaning that eventually RDs will be incorporated into all Tennessee public school districts. However, the Coordinated School Health programs are currently in the very beginning of the implementation phase, and the timeframe to meet the standards is unclear (34).

Roles and Responsibilities of the School Food Service Director

The food service director position may be referred to as the school nutrition director, school food service coordinator or school food service supervisor, depending on the position title in a particular school district. For the purpose of clarity, the position will be referred to as the school food service director (FSD) throughout this document. This position is at the school district level and responsibilities include both oversight of *all aspects* of the school district's Child Nutrition Program (35) and supervision of personnel in the school district's food service department (36).

The food service director position encompasses a broad spectrum of activities, creating the need for the person in this position to have a wide variety of skills. The position demands that the FSD be business savvy in order to manage the financial, marketing, administrative, and personnel issues in the school nutrition programs. He or she must have a solid knowledge of quantity food production in order to properly order, procure, prepare, and serve meals to a great number of students and staff. The food service director also must have an understanding of nutrition in order to design menus that meet the requirements of the school meal programs and the nutritional needs of the general student body and students with special dietary needs. Finally, the director must have the community nutrition skills to provide outreach and nutrition education to the students, school staff, parents, and community (35, 36).

Although specific position requirements for the FSD will vary from district to district, general job requirements for the FSD position as defined by the American Dietetic Association and the National Food Service Management Institute include the following roles: food procurement and preparation, nutrition and menu planning, nutrition education, general management, personnel management, financial management, and marketing/outreach (35, 36). Table 1.4 provides detailed information on the essential functions of the school food service director within each of these roles.

Credentialing

As evidenced by the extensive list of roles and responsibilities in Table 1.4, the food service director position is one that requires many skills. There are several credentialing options that an individual in this position can hold relating to the nutrition and food production skills necessary to function as a food service director. These include the Registered Dietitian credential, the Dietetic Technician Registered credential,

Table 1.4: The Primary Roles and Functions of the School District Food Service Director as Defined by the American Dietetic Association and the National Food Service Management Institute (35, 36)

Food Service Director Role:	Description of Primary Functions within Role:
Food Procurement and Preparation	· Implementing and monitoring cost-effective food procurement systems · Assuring that foods purchased reflect customer preferences, school food service program needs, food and nutrition policies, and school district nutrition objectives · Implementing a system that assures safe procurement and storage of all food and non-food supply items used in school food service and regular inventorying of these items · Monitoring food production areas and food preparation procedures to assure food safety · Developing procedures and regulations for the safe handling of food and proper food preparation · Monitoring of food service operations procedures to assure effective and efficient food production and distribution
Nutrition and Menu Planning	· Developing cost-effective menus that are nutritionally adequate and meet all local, state, and federal requirements · Considering customer preferences, industry trends and current nutrition research when planning menus · Planning appropriate menus for children with special nutrition needs by collaborating with students, parents, physicians, school staff, and teachers
Nutrition Education	· Promoting comprehensive nutrition education through multiple aspects of the school setting including the classroom and the cafeteria · Planning and promoting nutrition education activities throughout the district for students, school staff and teachers, parents, and community members · Acting as a resource person for nutrition information

Table 1.4 Continued: The Primary Roles and Functions of the School District Food Service Director as Defined by the American Dietetic Association and the National Food Service Management Institute (35, 36)

Food Service Director Role:	Description of Primary Functions within Role:
General Management	· Establishing quality standards for the meals served in the schools and a quality control system for the food service program · Implementing a system-wide, customer-driven service policy that focuses on value and satisfaction · Assuring that the school food service program meets all local, state, and federal regulations · Participating in strategic planning for the school food service program, including setting short and long term program goals that support the philosophy and policies of the Board of Education · Reviewing current research/monitoring industry trends and developments to make necessary and innovative changes in the food service program based upon this information · Determining equipment and personnel needs that are consistent with effectively running the food service program, within budget constraints · Reviewing and revising of nutrition and food service policies and procedures as needed
Personnel Management	· Developing position descriptions and job performance standards to monitor employee performance · Developing and supervising procedures for hiring, training, and evaluating school food service personnel · Developing procedures for disciplining employees and filing grievances · Establishing policies and procedures for employee safety · Conducting activities and policies that promote teamwork and empowerment among food service personnel · Communicating and consulting with school board members and school administrators about food program policies, procedures, and requirements

Table 1.4 Continued: The Primary Roles and Functions of the School District Food Service Director as Defined by the American Dietetic Association and the National Food Service Management Institute (35, 36)

Food Service Director Role:	Description of Primary Functions within Role:
Financial Management	· Planning, preparing and following an annual operating budget for the school district's food service program · Identifying, implementing and monitoring ways to reduce costs and increase productivity in the school food service programs · Monitoring and evaluating the food production system design and food service equipment to make recommendations for changes and new purchases to assure productivity and high quality food production · Implementing procedures to keep proper financial records and documentation in accordance with all district, state, and federal regulations · Actively pursing state and federal funding for commodities, meal reimbursement, and other funding
Marketing and Outreach	· Developing and continually monitoring and improving a marketing plan to entice students, teachers, school staff, parents, and community members to participate in school nutrition programs · Securing support for school nutrition programs by communicating program information to Board of Education members, school administrators, teachers, parents, students, and the community · Actively promoting a positive image of the school food service programs among the community

the School Foodservice Nutrition Specialist credential, School Nutrition Association certification, the Certified Dietary Manager credential, State-Level certification and the ServSafe certification. Each of these credentialing and certification options is described in detail in the following paragraphs, additionally, a summary table of these options is located in Appendix A.

Credentialing Option: Registered Dietitian (RD)

Registered Dietitians (RDs) are considered to be experts in the field of food and nutrition and, therefore, people holding this credential are considered to be well qualified to handle the nutrition related aspects of the food service director position. The American Dietetic Association is the national professional organization for Registered Dietitians and serves as the primary governing body for RDs (37).

There are several requirements for obtaining RD status, the minimum being the completion of a bachelor's degree from a U.S. college or university that has an education program accredited by the Commission on Accreditation for Dietetics Education (CADE), which is a division of the ADA. Areas of study within CADE accredited programs include: food and nutrition sciences, food service systems management, business, economics, computer science, culinary arts, communication, and the sciences (such as biochemistry, physiology, microbiology, and anatomy) (37).

The individual must also complete a CADE-accredited supervised practice program, which is commonly referred to as the dietetic internship. These internships consist of at least 900 hours of entry-level practice at a health care facility, community agency, or food service corporation (37), and provides the RD candidate with exposure to a variety of practice settings. Alternatively, coordinated programs offer the opportunity for concurrent undergraduate coursework and supervised practice experience. Once the

internship or coordinated program is complete, the candidate must pass a national credentialing exam. This exam is administered by the Commission in Dietetic Registration (CDR), which is similar to CADE and is associated with ADA. Once the credentialing exam is passed the individual can practice as a Registered Dietitian, as long as he/she completes the continuing professional education requirements set by the ADA. (37).

Credentialing Option: Dietetic Technician, Registered (DTR)

Dietetic Technicians, Registered (DTRs) are formally trained in the practice of food and nutrition and have specific credentials provided by the American Dietetic Association (38). Because DTRs work so closely with health care teams and dietitians they have very specific education and professional training requirements, including the completion of at least a two-year associate's degree at a U.S. regionally accredited college or university and the completion of a dietetic technician training program that is accredited by CADE. The dietetic technician training program consists of a minimum 450 hours of supervised practice experience in the health care, community, and food service settings (38) and is similar in structure to the dietetic internship for the RD credential.

Upon completion of the degree and training program, the individual must pass a national examination that is administered by CDR. Once the credentialing exam is passed the individual can practice as a Dietetic Technician, Registered, as long as he/she completes the continuing professional education requirements set by ADA (38).

Credentialing Option: School Foodservice Nutrition Specialist (SFNS)

The School Foodservice Nutrition Specialist credential was developed specifically for individuals in the school food service practice arena and was created to enhance the professional image of school food service and nutrition professionals (39). This credential is obtained by passing a national credentialing exam administered by the School Nutrition Association (SNA). The requirements to sit for this exam include: an associate's degree or the educational equivalent to an associate's degree (consisting of 60 college semester hours), one year of experience in school food service and nutrition that has occurred in the past five years at the school, district, university, state, or federal level and completion of 30 semester hours of specialized training, beyond the associate's degree in food service management, business, nutrition or a related field (39).

The SFNS credential is valid for a three-year period, and can then be renewed after three years as long as the individual is eligible for renewal. Requirements for renewal of the credential include the completion of 45 hours of SNA approved continuing education units over the three year period and payment of the $25 annual maintenance fee (39).

Credentialing Option: SNA Certification

In addition to the SFNS credentialing option, the School Nutrition Association offers school food service and nutrition professionals several certification options at different levels of practice, making professional development possible for individuals who work in various tiers of the school food service field (40).

An individual can become certified by the School Nutrition Association by completing the certification application, paying a certification fee, and documenting that

they meet the requirements specified for the level in which they are applying for certification (40).

Level 1, the most basic level of certification, requires at least one year of work experience related to food service and at least 30 hours of specialized training in food sanitation and safety, nutrition, or other related areas. The Level 1 certification lasts for three years and can be renewed as long as the individual has completed a minimum of 15 hours of approved continuing education in that three year period and has paid the annual renewal fee. The Level 1 certification can also be achieved by completing the online training provided on the SNA website through the Child Nutrition U program (40).

Level 2 certification is more advanced than the Level 1 certification. It requires that the applicant have at least one year of related work experience, a high school diploma or GED, a minimum of 90 hours of specialized training in food sanitation and safety, nutrition, administration, communication and marketing, or other related topics (40). Level 2 certification lasts for three years and can be renewed after this period if 30 hours of approved continuing education have been completed and annual renewal fees have been paid (40).

Level 3 is the highest level of certification offered. It requires the applicant to have at least one year of related work experience, some post-secondary education (which includes the completion of at least 1 college-level course prior to application), and a minimum of 150 hours of specialized training in the topics of food safety and sanitation, nutrition, administration, or related topics. The 150 hours of specialized training could be substituted for nine hours of college credit in sanitation and safety microbiology, nutrition, or food service management. Similar to the other levels of certification the Level 3 certification lasts for three years and can be renewed as a long

as a minimum of 45 hours of approved continuing education have been completed and annual renewal fees have been paid (40).

An individual can advance from a lower level to a higher level of certification when the eligibility requirements of the higher certification level are met and documented to the SNA (40).

Credentialing Option: Certified Dietary Manger, Certified Food Protection Professional

The Certified Dietary Manager, Certified Food Protection Professional (CDM, CFPP) credential is offered by the Dietary Managers Association (DMA). The Dietary Managers Association is a non-profit association of food service management professionals (41). The CDM, CFPP credential is earned by passing a nationally-recognized credentialing exam. The exam covers a variety of topics that pertain to food service such as nutrition screening, the nutrition care process, nutrition education, managerial duties (such as hiring and supervision of employees, personnel development, and communications), the procurement of food, food production management, food storage, and safety and food preparation techniques (41).

There are several “pathways” an individual can take to make him or herself eligible for the CDM, CFPP credentialing exam. For Pathway I, the individual must complete a DMA approved dietary manager course which is provided at schools across the country (41). For Pathway II, the applicants for the exam must have a two- or four-year college degree in food service management or nutrition, a two-year degree in culinary arts, or a two-year degree in hotel/restaurant management (41). For Pathway III, the individual must have graduated from a 90 hour food service management course

or a state-approved food service management course and have at least two years of food service management experience (41). For Pathway IV, the individual must be a current or former member of the U.S. military and have graduated from a military-approved dietary manager training program (41).

Once an individual has passed the credentialing exam and has obtained the CDM, CFPP credential they must complete 45 hours of continuing education every three years, with five of those hours being in food sanitation and safety and pay an annual fee to maintain the credential. (41).

Credentialing Option: ServSafe Certification

A more general credential that could be held by any school food service personnel is ServSafe certification. ServSafe is a certification program offered by the National Restaurant Association Education Foundation that focuses on comprehensive food safety training for anyone in the food service industry, such as cafeteria and restaurant managers (42).

The ServSafe program includes an education component that can be delivered through classes taught by a registered ServSafe instructor or through web-based training classes. Once the classes are completed the individual must pass the ServSafe exam (42). Once the exam has been successfully completed, the individual's ServSafe certification is valid for five years, or less dependant upon the local regulations in the area that the individual resides (42).

The ServSafe program provides beneficial information on food safety, which is vital for a food service director, however, this credential is limited in scope because it provides training focused only on food safety and does not give the food service director the education necessary to adequately fulfill other requirements of the position (42).

Credentialing Option: State Certification

Certain states offer individually developed licensure or credentialing for food service personnel employed in school districts in that state. This certification can vary greatly in eligibility requirements and strength of content between the states. As of 2000, only 17.6% of states offered a state-level certification and only 5.9% of states required that newly hired food service directors obtain this certification (26). Currently, the state of Tennessee offers a state level school food service worker certification, but this certification is not required by the state for newly hired school food service directors (43).

To obtain state certification in Tennessee, the individual must meet the minimum requirements and complete an application for certification with the Tennessee Department of Education (44). To meet requirements for this certification an individual must be a licensed educator with a minimum of a bachelor's degree or have a bachelor's degree with a minimum of 18 semester hours in education, sociology, or psychology. The individual must have a total of 12 semester hours of training in personnel management, nutrition, accounting, and computer spreadsheets. Additionally, the individual must have a minimum field experience of (a) 6 semester hours in school food service under the supervision of a licensed Food Service Supervisor of an accredited college or University or (b) 120 clock hours of school food service experience under the supervision of a licensed school food service supervisor (44).

The Tennessee state certification is valid for 10 years as long as the requirements for renewal are met. The requirements for renewal of the certification include: working in a Tennessee public or private school as the school food service director for at least five years during the validity of the certificate, and college degree based renewal requirements set by the State Board of Education (44).

National Education and Credentialing Requirements for the Food Service Director Position and Characteristics of Food Service Directors

Despite the availability of numerous credentialing options, many school districts do not require this level of preparation and only have minimal education requirements according to a national survey. The most recent School Health Policies and Practices Study (SHPPS) was conducted in 2000 and collected national data on many aspects of school health at the state, district, and school level. Data on food service operations at the state level was collected from all 50 states, whereas district and school level food service data was collected from a nationally representative sample of public and private districts and schools (26).

Position Requirements for Education

According to the SHPPS study, slightly less than half (47%) of all school districts have absolutely no education requirements for the school food service director position. Thirty-four percent of schools require that the individual in the food service director position have at least a high school diploma or graduate equivalent degree (GED), 11.2% require a bachelor's degree in a nutrition or a related field, 4.9% require an associate's degree in nutrition or a related field, and only 2.8% require the food service director to have a graduate degree in nutrition or a related field (26).

The SHPPS study found that some food service directors exceeded the low levels of education required by their school district for their position. Thirty-five percent of food service directors surveyed reported that they had obtained a bachelor's degree and 11.7% reported having a graduate degree (26). Data on the percentages of food service directors having attained a maximum education level of a high school diploma or

an associate's degree were not collected. It is important to note that although 35.4% and 11.7% of food service directors indicated having bachelor's and graduate degrees, respectively; these individuals did not indicate the field in which their degree was earned. This means that these individuals could have degrees in any field and are not necessarily trained in nutrition or food service (26).

In actuality, among those food service directors with an undergraduate degree only 27.9% received a degree in nutrition or dietetics, the majority (45.1%) majored in education, 20.3% majored in home economic or family and consumer sciences, and 17% majored in business. Among those food service directors who reported having a graduate degree most (45.6%) received their graduate degree in education, 23.4% received their graduate degree in nutrition or dietetics, 22.7% received their graduate degree in business, and 20.6% received their degree in food service administration/management (26). Figure 1.4 represents the school district education requirements for the FSD position versus the actual education levels reported by FSDs reported in the SHPPS study.

Position Requirements for Credentialing

Similar to the requirements for education, the SHPPS study found that school districts have low credentialing requirements for the school food service director position (26). Almost three-fourths (74.4%) of school districts have no credentials that are required for the food service director position. Approximately nineteen percent of school districts require food service directors to have the highly variable state certification, 9.2% of school districts require School Nutrition Association certification (level of certification was unspecified), 3.8% of school districts require the School Foodservice Nutrition

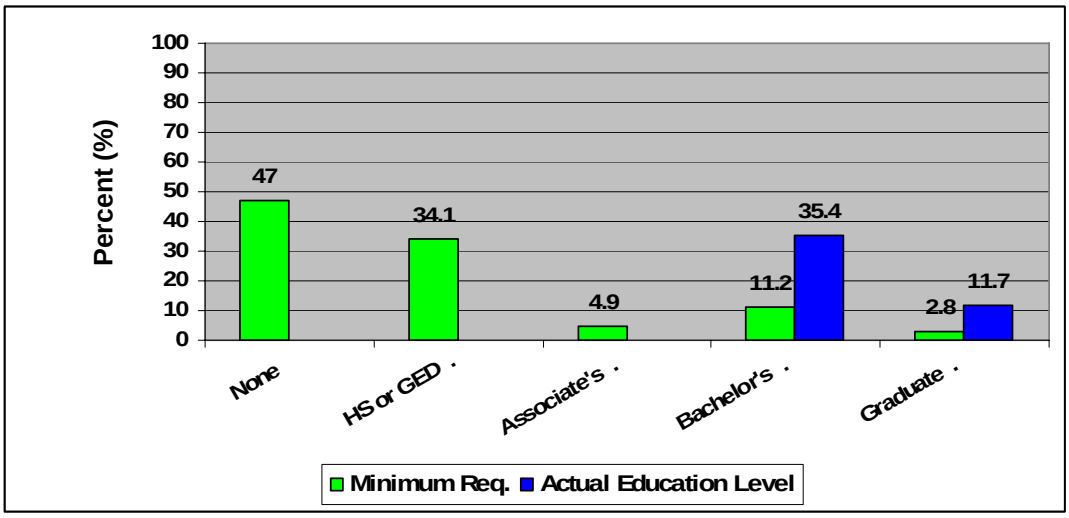


Figure 1.4: Minimum Educational Requirements Set at the District Level for FSDs in the U.S. and Actual Percentages with Bachelor's and Graduate Degrees

Note: Actual undergraduate and graduate degrees of FSDs have unspecified majors and may or may not be related to nutrition or food service.
Source: School Health Policies and Programs Study 2000 (26)

Specialist credential, and only 2.6% of school districts require food service directors to have Registered Dietitian credentials (26).

The actual credentialing levels held by food service directors reported in the SHPPS study found that 52.8% of food service directors held one or more of the following credentials: School Nutrition Association certification, state certification, or other professional certification (26). However, the percentage of school food service directors with credentials that are more rigorous to obtain decreases greatly, with only 7.2% having the School Foodservice Nutrition Specialist credential and 5.8% having the Registered Dietitian credential (note that some individuals may hold both the RD and SFNS credentials and are therefore may be dually represented in these percentages) (26). These data are represented in the Figure 1.5.

Recommendations for Education and Credentialing Legislation

Although education and credentialing requirements for school food service directors at the district level are currently low, as evidenced by the data presented in the SHPPS study (26), several organizations and legislative bodies have recognized that having a person who is appropriately trained in the school food service director position is necessary, because the person in this position is responsible for creating and maintaining a healthy school food environment and therefore, has a direct effect on the nutritional health of school-aged children.

In March of 2006, the Tennessee State Comptroller's Office released a report entitled "Weighing the Costs of Obesity in Tennessee" (45). This report provided data on the high obesity rates in Tennessee and provided specific recommendations on how to combat this growing problem, several of which are aimed at improving the school

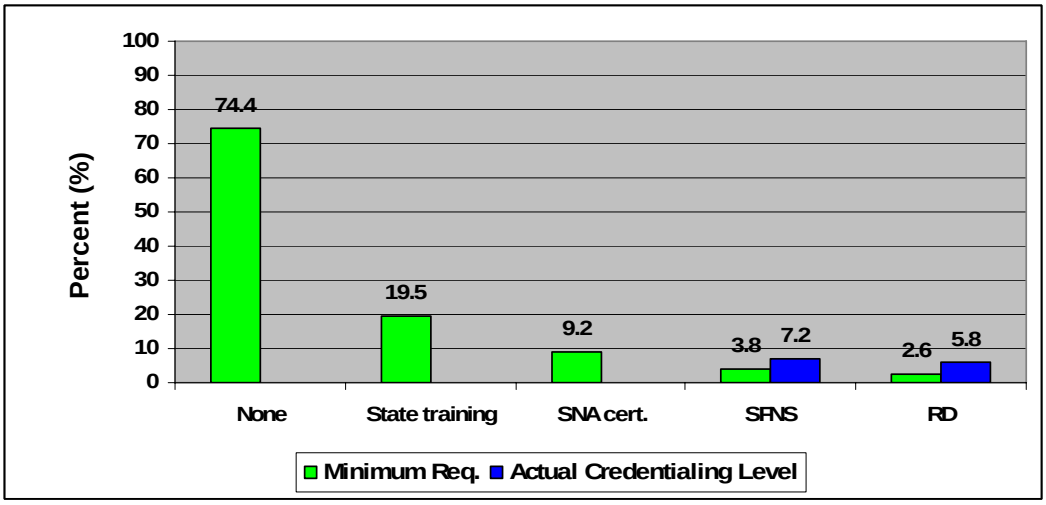


Figure 1.5: Minimum Credentialing Requirements for the FSD Position in U.S. School Districts and Actual Percentage of FSDs with the SFNS or RD Credentials

Source: School Health Policies and Programs Study 2000 (26)

environment (45). This report encouraged legislation that would require food service directors to obtain some form of certification or credentialing in nutrition.

Acknowledging that credentialing requirements are needed by the state government is very beneficial; however, these recommendations did not specify what level of credentialing should be required (45). The report did, however, indicate some potential credentialing options by explaining that the state of Kentucky passed similar legislation in 2005 that required school food service directors to obtain the School Foodservice Nutrition Specialist credential or certain levels of certification from the School Nutrition Association and maintain these credentials by performing continuing education activities for the duration of their time as food service director (45).

A joint position statement issued by the American Dietetic Association, Society for Nutrition Education, and American School Food Service Association (currently known as the School Nutrition Association) also recognized that the current professional requirements for the school food service director are highly variable and this position needs some form of required professional preparation (16). These organizations recommended that school food service directors have at least a bachelor's degree in nutrition, food service management, dietetics or a related field, credentialing/certification in food service from the School Nutrition Association, or state-level certification. These organizations also emphasized that having mandatory credentialing or certification for the food service director position would be more beneficial because this would require the food service director to complete continuing education to maintain the credential (16).

At the state level, the Tennessee Dietetic Association has taken an active role in pursuing education and credentialing requirements for the food service director position. The Child Nutrition Task Force, a sub-committee of the Tennessee Dietetic Association,

has recommended that school food service directors have highly accomplished credentials in nutrition (such as the RD credential) or that each school district at least have a Registered Dietitian consult with the school system on the school nutrition programs and other nutrition-related issues (45).

Most recently, the state took action to assure that highly qualified nutrition professionals were in place in the school systems by requiring each school district receiving Coordinated School Health grant funding to have (at least) the consultation services of a RD. In the Request for Grant Proposals for Coordinated School Health it is clearly stated that in order to comply with the standards for the Coordinated School Health grants "the school will employ or contract services with a Registered Dietitian" (33). This legislation proves that the state is acknowledging the RD as a nutrition expert and that the RD had a role in school nutrition. Since all of the public school districts in Tennessee are receiving funds, RDs should be well established in the school nutrition programs. However, the ability of this legislation to assure that RDs are actively involved in school nutrition and the school food environment is weakened by the fact that it does not explicitly state the role of the RD in the school district or the extent to which the services of the RD have to be integrated into the school nutrition program.

Problem Statement and Specific Aims of this Research

Problem Statement

In an effort to improve the school food environment in Tennessee Public Schools, the Tennessee Dietetic Association (TDA) has set forth a Child Nutrition Task Force charged with the mission of improving the nutrition environment of Tennessee public

schools. In efforts to create positive change in the school food environment, TDA is turning to the key stakeholders involved in school nutrition. Undoubtedly, one of the most significant people in the shaping of the school food environment in Tennessee public school districts is the school food service director. The significant nutritional issues surrounding school-aged children, such as the skyrocketing rates of childhood overweight presented earlier in this paper, has lead the Child Nutrition Task Force to pursue legislation that would require the school food service directors to have strong training or credentialing in nutrition such as an RD or SFNS credential.

Currently, there is little to no information compiled on the education and credentialing requirements of school district food service director positions in Tennessee public school districts. Additionally, there are little data available on the actual education and credentialing levels of school food service directors in the state of Tennessee.

Along with the lack of information about the school food service director position, there is an additional lack of information regarding the availability of RDs in Tennessee public school nutrition programs and the characteristics of the RDs that currently work in Tennessee public school districts.

Although the Coordinated School Health Legislation now requires a Registered Dietitian to be involved in each school system that receives Coordinated School Health funding, the extent to which the RD will be involved in the school system and school nutrition programs has not been established as of yet, and could be highly variable.

Specific Aims

In order to rectify these problems there are two specific aims that this research project will address:

(1) To examine the current (baseline) education and characteristics of school food service directors in public school districts in Tennessee.

(2) To determine the characteristics of Registered Dietitians in school nutrition programs in Tennessee.

Addressing these specific aims will provide valuable information toward determining factors that contribute positively or negatively to the school food environment in Tennessee public schools. Also, this research will provide information that is necessary for the researchers to develop recommendations for legislation involving the school food service director position.

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PART II
AN ASSESSMENT OF THE EDUCATION, CREDENTIALS, AND FUNCTIONS OF SCHOOL FOOD SERVICE DIRECTORS IN TENNESSEE PUBLIC SCHOOL DISTRICTS

Introduction

Children during their school-aged years are in a period of critical growth and development. Adequate and appropriate nutrition during this time is vital for optimal health in the school-aged child. Over the past few decades the number of children who are overweight and at risk for overweight has dramatically increased. This marked increase has caused great concern among health care professionals leading to a demand for numerous, multi-dimensional approaches to reducing these rates.

The school setting and the school food environment are readily targeted in programs designed to improve the nutrition and health of the school-aged child. School systems are often used as an arena for nutrition interventions because schools reach a very high percentage of U.S. children and because children consume a great deal of their daily nutrition at school. Because the school food environment makes such a great contribution to the nutritional status of children, it is necessary to assure that the individual in the school food service director position has adequate education and training to be competent in their role.

Although the impact of the individual in the school service director position is evident from the relevant literature on school nutrition and the school food service director position, research has shown that traditionally the education and credentialing requirements for the school food service director position are very low, if there are any requirements at all. The low requirements for the food service director position do not reflect the high level of responsibility and the great ability to influence children's nutritional health that are associated with this position.

In order to increase understanding of the issues surrounding school nutrition and the school food service director position in Tennessee public schools, this research

project involved surveying both school district superintendents and school district food service directors to obtain baseline data on the education and credentialing requirements for the school food service director position in Tennessee public school districts and the actual education and credential levels of individuals currently working in these positions. Obtaining this information provides us with increased knowledge and understanding of the school food service director position from the perspective of the school administrators and the individuals working in this position and allows for the identification of factors that may positively or negatively affect school nutrition.

Methods

Subjects

Individuals recruited to participate in this study consisted of two groups: (a) all school district superintendents (n=137) and (b) all school food service directors (n=137) in Tennessee public school districts. These two groups were selected as participants for this research because members of each group were able to provide information necessary to achieving the specific aims of this research.

A list of names and contact information (phone numbers and email addresses) for individuals in the school superintendent group was obtained through the Tennessee State Department of Education website (1). Names and contact information for the food service director group were provided by the Tennessee State Board of Education, School Nutrition Services Department. Institutional Review Board approval for this research project was obtained from the University of Tennessee, Knoxville to assure the protection of these subjects.

The school district superintendents were selected to be participants in this research because the person in this position has access to documents (such as the job description) that would include the education, credentialing, and other position requirements for the school food service director position in their respective school district. Additionally, as a supervisor of the school food service director, the school district superintendent would be able to provide insight on some of the qualities and characteristics that the school district desires in the person fulfilling the food service director position.

The school district food service directors were selected to participate in this research because the individuals in this position can readily provide information on their own personal education, credentialing, and other training. This information is needed to gain understanding of the current characteristics of individuals in food service director positions in Tennessee public schools, which will aid in the development of recommendations for legislation. The school food service directors also can provide valuable information on the knowledge and skills they feel are necessary to be successful in their position.

Data Collection Methods

Web-based surveys were developed in order to obtain the information needed to fulfill the specific aims of this research. Web-based surveys were deemed appropriate in this research because they provided several advantages over other survey methods such as the ability to obtain large amounts of data with decreased costs, decreased need for postage and stationery, and decreased time spent performing data entry (2).

One of the biggest disadvantages of conducting web-surveys is that not all individuals have access to the internet or have the technological skills needed to

complete the web-based surveys (2). In this research, however, this was of less concern because the populations surveyed were assumed to have computer access and basic computer skills due to their professional positions and their having an email address available for communication.

Survey Instruments

To gather the information desired in this research project, two survey instruments were developed, one designed for completion by the school district superintendent in each Tennessee public school district and the other designed for completion by the school food service director in each district. The surveys were designed and administered using the SPSS mrInterview™ electronic survey software (3). This software was provided to the researchers by The University of Tennessee, Knoxville. The SPSS mrInterview™ software allowed participants to access the surveys via the World Wide Web and allowed for all data collected from the electronic surveys to be directly downloaded into the SPSS statistical analysis software (4) for data analysis.

The SPSS mrInterview™ electronic survey software has settings in which the participants are required to answer of each of the questions before being permitted to proceed to the next question. In each of these surveys, the participants were required to respond to each question; however many of the questions had responses such as “don’t know” or “I do not wish to answer this question.” These design settings were selected to assure that the survey data collected was as complete as possible, yet still prevented participant frustration due to being forced to provide information they did not have knowledge of or care to disclose.

The survey questions were developed while keeping in mind proper question structure as outlined in Fink and Kosecoff’s *How to Conduct Surveys* (5) and Dillman,

Tortora & Bowker's *Principles for Constructing Web Surveys* (2). The development of the content of the survey questions drew upon several sources, including: information collected from a review of the relevant literature dealing with the school food environment and the role of the school food service director, suggested position descriptions for the school food service director from the American Dietetic Association and the National Food Service Management Institute (6, 7), the SHPPS study questionnaires (8) and the National Food Service Management Institute's *Competencies, Knowledge and Skill Statements for District School Nutrition Directors/Supervisors* (9). Additional survey content was developed based on the specific aims of this research project and recommendations provided by nutrition and survey administration experts who reviewed the survey instruments. Copies of each of the surveys are available in Appendix B.

School Food Service Director Survey

The survey designed for school food service directors to complete included four main content areas: (a) school district information, (b) qualifications and characteristics of the school food service director, (c) school meal menu planning, and (d) an assessment of school food service director's rated importance of nutrition related knowledge and skill statements for the school food service director position.

In the school food service director's survey, the school district information collected included the number and type (elementary, junior high, high school, etc.) of schools that the food service director is responsible for. This section also sought to determine if these schools participate in the USDA breakfast, lunch, and after-school snack programs.

The section of the survey on qualifications and characteristics of the current food service director contained questions designed to determine the education and credentialing levels, work history, and professional affiliations of the current food service director. This section also sought information on the salary and the number of hours per week the food service director works. This section of questioning contributed significantly to identifying characteristics of the current food service directors in Tennessee public schools.

The menu planning section of this survey contained questions designed to determine the individual who is responsible for planning the school meal menus and the education and credentialing levels of the menu planner (if this individual is someone other than the school food service director). This section also collected information that determined if a Registered Dietitian was involved in the menu planning process.

The fourth and final section of this survey contained questions that asked the food service director to rate the importance of nutrition related knowledge and skill statements for someone in their position. The survey asked the respondent to score the knowledge and skill statements on a five point Likert scale, from being "not at all important" to being "extremely important" that the food service director possesses the knowledge or skill. The content for the 10 selected knowledge and skill statements was taken from the National Food Service Management Institute's *Competencies, Knowledge, and Skill Statements for District School Nutrition Directors/Supervisors* (9) and focused on nutrition related aspects of the position.

This section was repeated in the last section of the school district superintendent survey, and asked the superintendents to rate the importance of the school food service director having the same 10 nutrition related knowledge and skill statements. These sections were included in the surveys because valuable insight can be gained from

gathering information on the how important nutrition related knowledge and skill statements are to the food service director position from both the individuals working the position and the superintendents who are responsible for supervising and evaluating individuals in the food service director position.

School District Superintendent Survey

The survey developed for school district superintendents also was divided into four content areas, including: (a) school district information, (b) food service director position requirements, (c) nutrition education and characteristics of Registered Dietitians in the school district and (d) an assessment of the superintendent's rated importance of nutrition related knowledge and skill statements for the school food service director position.

The school district information content area of this survey differed from the similarly named content area on the school food service director survey. In this survey, the school district information content area functioned to identify the total population of residents within the school district, the number of students enrolled in the school district, and the percentage of students who are eligible and participate in the USDA free and reduced price meal programs.

The food service director position requirements content area of the superintendent survey included questions that served to determine the education, credentialing, and continuing education requirements for the food service director position in that school district. This content area also requested information on the pay scale of the position. Collecting data on the education and credentialing requirements of the food service director position in the school district superintendent survey, allowed the researchers to make comparisons to the actual education and credentialing levels held

by individuals currently in these positions. The latter data were collected in the food service director survey to determine if the individuals in this position had more, less, or the minimum required levels of education and credentialing outlined in the respective position descriptions.

The nutrition education and characteristics of Registered Dietitians in the school district section of this survey was designed to gather information regarding the number of Registered Dietitians (if any) that work within the school district, and what duties the Registered Dietitians perform in the school district. In addition, this section sought to determine if nutrition education is being provided in the school district and to identify the individuals or groups who are responsible for providing the nutrition education.

The final section of the school district superintendent survey, as described previously, asked the school district superintendents to rate the importance of the school food service director having certain nutrition related knowledge and skills based upon the National Food Service Management Institute's *Competencies, Knowledge, and Skill Statements for District School Nutrition Directors/Supervisors* (9).

Survey Instrument Review and Validation

These survey instruments were validated via review by nutrition experts from the Tennessee Dietetic Association's Child Nutrition Task Force and the University of Tennessee, Department of Nutrition. The surveys were reviewed by the TDA Child Nutrition Task Force by using an adapted version of the Delphi Technique (10). The surveys were sent via an email attachment to the TDA Child Nutrition Task Force members and feedback was collected from these experts. The surveys were revised based upon the feedback received and underwent further review.

The surveys were also reviewed by nutrition experts with experience in survey development at the University of Tennessee. Further modifications to the content and design of the surveys were made based upon recommendations from these experts to assure that the surveys would collect the necessary information in the most efficient and accurate manner possible. Both surveys were reviewed and received approval by the appropriate Institutional Review Board processes at the University of Tennessee. Institutional Review Board approval for this research is on file at the University of Tennessee.

Additionally, the surveys were pilot tested in sample populations similar to the research participants, which is described in detail in the Pilot Test section of this document. Feedback from this test was used to modify the survey structure and administration methods.

Pilot Test

After the surveys were refined via the processes described above, they underwent pilot testing in a small sample of similar participants in South Carolina school districts.

The pilot test of the school food service director survey was administered through a third party contact at the state level in South Carolina. In this test, the survey emails were sent to a sample of 20 South Carolina school food service directors via the third party administrator. The survey email contained a description of the survey, directions for completing the survey, an ID name for accessing the survey, and the survey web address. The administrator was asked to send a follow-up reminder about the survey to this sample approximately five business days after the initial survey email was sent.

This test yielded 8 of 20 responses. These respondents reported no problems with accessing or completing the survey.

For the pilot test of the school superintendent survey, 20 South Carolina school district superintendents were chosen randomly to participate. The contact information for these individuals was taken from the South Carolina Association of School Administrators web site (11). In this test the participants received the survey email directly from the researchers, inviting them to complete the survey. This survey email included the same components as the food service director pilot test survey email. The participants in this sample were sent a follow up email five business days after the initial email, reminding them to participate in the survey. Two of these surveys were completed in entirety. Neither of the participants who participated in this pilot test reported any problems completing the survey. However, after the pilot test the superintendent survey was modified to include "don't know" responses to most questions, to increase the ease of completing the survey for the superintendent participants.

The low response rates to the pilot tests also indicated that increased recruitment measures would be needed to achieve adequate response rates for the surveys, particularly for the school district superintendents. Increased follow up measures including additional email reminders and a telephone call were then added to the survey administration protocol.

Survey Administration

The two surveys were administered separately, but each was administered by the same protocol. The food service director participants and the school superintendent participants were initially invited to participate in the survey through a personalized email

for each individual that contained: an explanation of the purpose of the survey, an estimate of the time needed to complete the survey, directions on how to complete the survey, a unique ID name for each participant, the link to the survey website, and contact information for the researchers at the University of Tennessee. In addition to all of the previously listed information, the superintendent survey included a statement explaining that the school food service director was the individual in charge of the school breakfast and lunch programs for the school district and a statement that clarified that this particular survey was to be completed by the superintendent, from the administrative point of view.

Several avenues were pursued to maximize response rates for each of the surveys. Primarily, individuals in administrative positions at the state and regional levels were recruited to provide encouragement to the survey participants to complete the surveys (such as the Director of the Tennessee Coordinated School Health Program and the Executive Director of the Tennessee Organization of School Superintendents). Many of these administrators declined to be involved; however several regional supervisors for the school nutrition programs encouraged the food service directors to participate in the survey by emailing the food service directors in their respective districts to remind them to participate.

Incentives to participate in the surveys also were provided. Participants who completed the surveys in their entirety were offered a chance to win nutrition education materials for their school districts.

Non-responders to each of the surveys received follow up reminders encouraging them to complete the surveys in form of emails and a telephone call. The follow up emails provided additional encouragement to participate in the survey and included the participant's unique ID name and the web link to the survey. The follow up

telephone call served to remind the participant to complete the survey and to provide support for any questions or concerns that the participant had for completing the survey.

If a participant of either survey group had not responded after 3 follow up contacts, the incentives for them to participate were increased to include a chance to win a $15 gift certificate in addition to the chance to win nutrition education materials for their school district. The addition of the gift certificate incentive was the final recruitment measure taken for the surveys.

After this final recruitment effort was made, the survey responses were downloaded into the SPSS statistical software from the SPSS mrInterview™ software for data analysis.

Data Analysis

All statistical analyses were performed using SPSS version 15.0 for windows statistical software (4). Statisticians at The University of Tennessee Statistical Consulting Center provided technical support and guidance for the statistical analyses performed (12).

Data collected for several of the variables included in the surveys had to be re-categorized to provide more meaningful statistical analyses. The school district size variable was condensed into three categories: school districts with less than 2,000 students, school districts with 2,000 to 4,999 students, and school districts with 5,000 or more students. The rate of economic disability variable was added to the data set from the Tennessee Department of Education 2006 School Report Cards (13), this rate is equal to the percentage of students receiving free or reduced price lunches, and provides an overall estimate of the socioeconomic status of the school district. This variable was grouped into four categories: schools with rates of economic disability less

than 40%, schools with economic disability rates of 40% to 49%, schools with economic disability rates of 50% to 59%, and schools with economic disability rates of 60% or more.

The food service director education related variables were categorized into two groups: having a college degree and not having a college degree. The food service director credentialing related variables were categorized into two groups according to which survey the data was collected from. The data collected from the superintendent survey for the credentialing of the FSD position requirements was dichotomized into two groups: having credential requirements and having no credential requirements. The data for the actual credentialing level of the food service directors taken from the FSD survey was dichotomized into having high nutrition credentials (which includes the RD and/ or SFNS credential) and low nutrition credentials (which includes having any other nutrition credentials or having no credentials at all). This was done because there were too few school districts that required the RD and/ or SFNS credentials to separate the data into the high and low nutrition credentialing categories.

Descriptive statistics were performed on all applicable variables included in the surveys. This was done to determine frequency distributions of the data collected, which in turn allowed the researchers to gain understanding of the position requirements and actual education and credentialing levels of Tennessee public school district food service directors. Additionally, descriptive statistics were used to gain understanding of the characteristics of Registered Dietitians in Tennessee school nutrition programs.

Chi Square tests and Fisher's Exact tests were used to determine if relationships existed between the variables, particularly in regard to characteristics of the school district (defined as school district size and rate of economic disability in the school district). The Fisher's Exact tests were used because many of the analyses had small

sample sizes. In these analyses the school district characteristics variables were measured against: the education requirements for the food service director position, the actual education level of the school food service director, the credential requirements of the school food service director position, the actual credential level of the school food service director, and the availability of a Registered Dietitian in the school meal menu planning process. Additional Fisher's Exact Tests were used to determine if there were associations between the salary level of the food service director and characteristics of the food service director and the food service director position.

Multivariate analyses of variance (MANOVA) tests were performed on the data collected from the final sections of each of the surveys, which included the 5 point Likert scale where the respondents rated the importance of nutrition related knowledge and skills for the food service director position. The Likert scale data were compared to many variables, including: the size of the school district, the rate of economic disability in the school district, the ability of the school district to access a Registered Dietitian, education requirements for the food service director position, actual education level of the school food service director, credentialing requirements for the food service director position, actual credentialing level of the food service director, and others. If the MANOVA analyses of these variables yielded statistically significant results, individual analyses of variance (ANOVA) tests were performed on each Likert item to determine which differed.

Results

Survey Response Rates and Comparison of Survey Sample to Entire Population of Tennessee Public School Districts

The final response rates for the surveys were 63.5% (87 of 137) for the food service director survey and 46.7% (64 of 137) for the superintendent survey. In 40 of the 137 school districts, both the food service director and the school superintendent of that district responded to the surveys. In only 26 of the 137 public school districts (18.9%) did neither the school food service director nor the school superintendent respond the surveys, meaning that in a total of 111 of 137 public school districts (81%) some data were collected from the school food service director, the school superintendent, or both.

When comparing the sample of the 111 school districts who provided survey data to the entire population of public school districts in Tennessee, the survey respondents had a similar distribution of school district characteristics (school size and rates of economic disability) to the entire population (represented in Tables 2.1 and 2.2).

Table 2.1: Comparison of Survey Sample to Survey Population, by School District Size

	All Public Districts in Tennessee			Schools in Survey Sample			Difference in Percentage Points Between Sample and Population
School Size	Freq.	%	Cumulative %	Freq.	%	Cumulative %	
Less than 2000	41	29.9	29.9	31	27.9	27.9	-2.0
2000 – 4999	54	39.4	69.3	45	40.5	68.4	+1.1
5000 or more	42	30.7	100.0	35	31.5	99.9	+0.8
Total	137	100.0		111	99.9		

Table 2.2: Comparison of Survey Sample to Survey Population, by School District Economic Disability Rate

Economic Disability Rate	All Public Districts in Tennessee			Schools in Survey Sample			Difference in Percentage Points Between Sample and Population
	Freq.	%	Cumulative %	Freq.	%	Cumulative %	
Less than 40%	37	27.0	27.0	35	31.5	31.5	+4.5
40%-49%	47	34.3	61.3	43	38.7	70.2	+4.4
50% -59%	34	24.8	86.1	21	18.9	89.1	-5.9
60% or more	19	13.9	100.0	12	10.8	99.9	-3.1
Total	137	100.0		111	99.9		

One sample Chi Square analyses were performed to compare the survey sample to the survey population. For school size the Chi Square with 2 degrees of freedom was .206 and the p=.902. For economic disability the Chi Square with 3 degrees of freedom was 3.792 and the p=.285, showing no significant differences between the survey respondents and the survey population in regards to either of these school district characteristics. This indicates that the data collected from the survey respondents are readily representative of the entire population statewide.

Additionally, Figure 2.1 shows the distribution of the survey respondents by geographic location across the state. As represented in Figure 2.1, survey respondents are evenly and widely distributed across the state, minimizing the chances of regional differences in the survey sample and total population of school districts.

Characteristics of School Food Service Directors in Tennessee Public Schools

One of the specific aims set for this research project was to determine the current (baseline) education levels and characteristics of school food service directors in

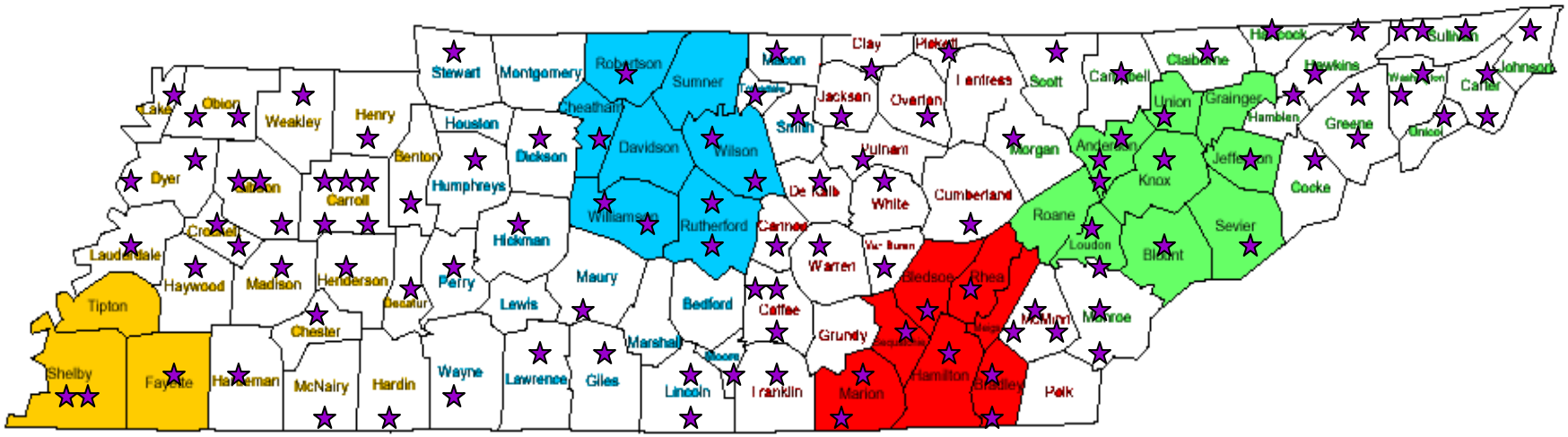


Figure 2.1: Geographic Distribution of Survey Sample Responses Across the State of Tennessee

Map taken from: http://www.tnnac.org/ (14)

Tennessee public school districts. In order to describe these characteristics, frequencies were performed on all appropriate variables on which data was collected in these surveys. These data are described in the following sub-sections.

FSD Education Requirements and Actual Education Levels of FSDs

A comparison of the school district minimum education requirements for the food service director position and the highest level of education attained by the food service director are represented in Figure 2.2.

The majority (57.8%) of school superintendents reported that in their school districts the food service director position has a minimum education requirement of a bachelor's degree; the next most frequently reported minimum education requirement was a high school diploma or GED, with 26.5% of school superintendents reporting this as the minimum education level requirement.

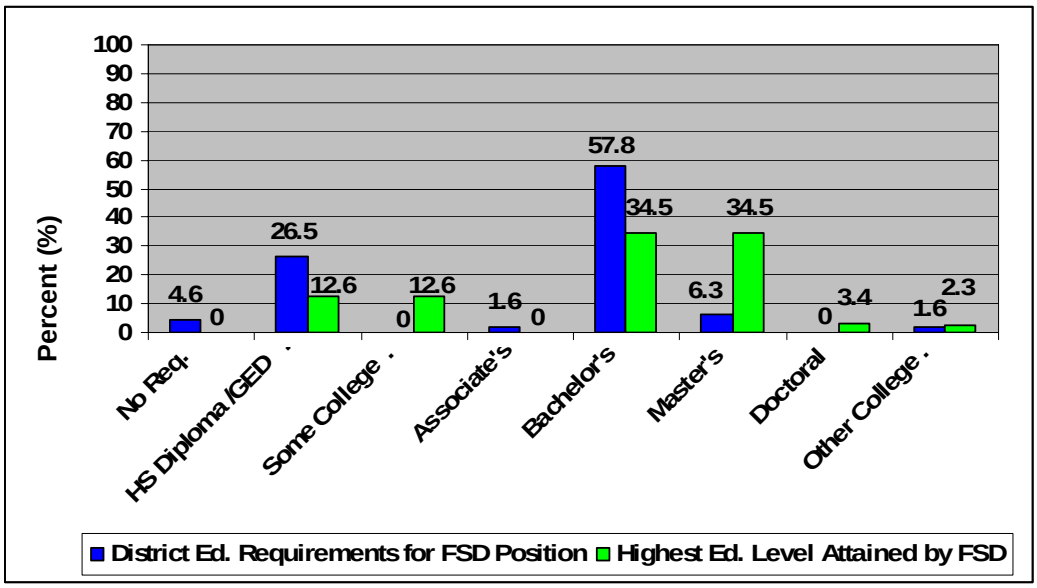


Figure 2.2: FSD Highest Level of Education Attainment versus the Minimum Education Requirement for the FSD Position

The actual education level of the school food service directors in Tennessee public school districts generally exceeded the minimum education requirements. At 34.5%, equal percentages of FSDs reported having bachelor's degrees and master's degrees. The next most frequently reported education levels by school food service directors was having completed some college or a high school diploma or GED with each of these education levels being reported by 12.6% of FSDs. It is important to note in reviewing these data that the college degrees reported here could be in any field, and may or may not be related to the food service director position.

In actuality, among the food service director respondents with a college degree, only 20.0% majored in nutrition or dietetics, the majority (32.3%) majored in home economics. Additionally, 29.3% majored in education, 9.2% majored in business, and 9.2% majored in other fields.

FSD Credentialing Requirements and Actual Credentialing Levels of FSDs

Figure 2.3 illustrates the credentialing requirements for the FSD position as compared to the actual credentials held by FSDs reported in this research. Fifty percent of school superintendents reported that their school district has no minimum credentialing requirements for the food service director position. Another 25% of the school district superintendents reported that their school district only requires the food service director to have the Tennessee State certification. Only a small percentage of school districts require more rigorous credentials such as the School Foodservice Nutrition Specialist credential, the Registered Dietitian credential, or the Certified Dietary Manager credential.

The actual credentials held by food service directors in Tennessee public schools exceed what is required. The most frequently reported credential among Tennessee

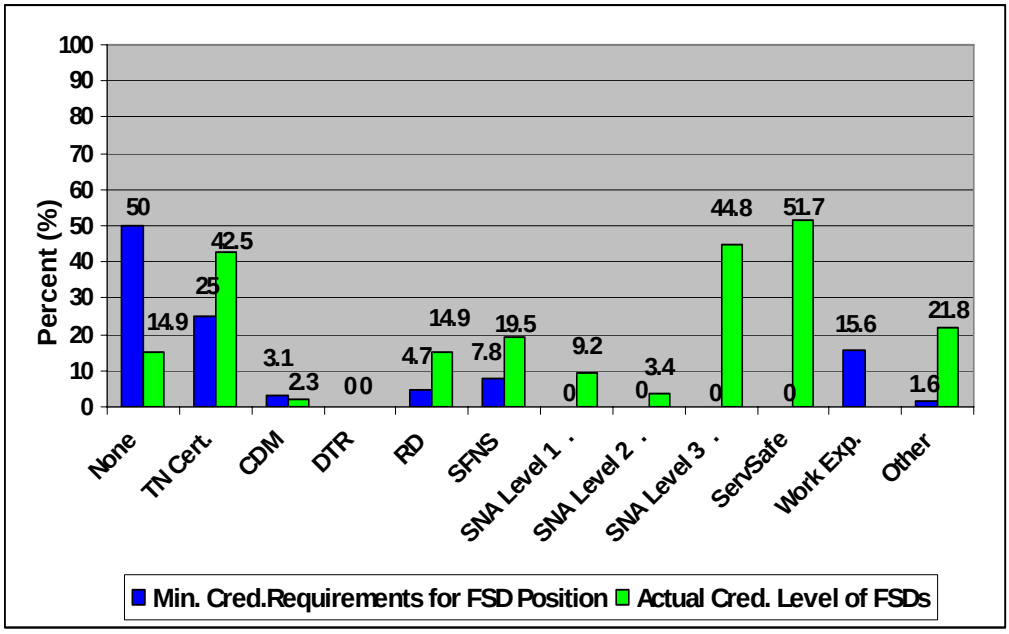


Figure 2.3: FSD Actual Credential Levels Versus the Minimum Credential Requirements for the FSD Position

Note: Some FSDs and School Districts can hold or require more than one credential, making it possible that one individual or district is represented in multiple categories.

food service directors is the ServSafe credential, with 51.7% of FSDs having this. Nearly 45% of food service directors reported having the School Nutrition Association Level 3 Certification, and 42.5% of the school food service directors reported holding the Tennessee state certification. An additional 19.5% and 14.9% of food service directors have the more intensive SFNS and RD credentials, respectively, with 3.4% of FSDs holding both the SFNS and RD credentials.

Additional Characteristics of School Food Service Directors in Tennessee Public School Districts

Additional frequencies and percentages of characteristics of the current school food service directors were calculated based on the data reported in the school food service director survey. This includes frequencies and percentages for the following

variables: the number of schools that the food service director oversees, the number of hours per week the current school food service director spends in the FSD position, and the relevant work experience of the food service director expressed as the number of years the FSD has been in their current position and the overall number of years of school food service experience the FSD has. Other frequencies used to describe the current FSDs in Tennessee public schools include: the current salary level of the FSDs who work at least 31 hours per week in the FSD position, the professional organizations the FSDs belong to (if any), and the job the FSDs held prior to obtaining their current position. The actual values for each of these variables are available in Table 2.3.

Most frequently the food service directors in Tennessee public schools reported that they were responsible for overseeing 6 to 10 schools, spent more than 40 hours per week working in the FSD position, have had more than 15 years of experience in school food service, and have spent more than 15 years in their current position as the food service director. Additionally, FSDs most frequently reported that they held a teaching position prior to becoming the school food service director and most frequently reported earning $40,000 to $49,999 in their current position. The most frequently reported professional organization FSDs belong to is the School Nutrition Association.

Associations between the Salary Level of the FSD and the Characteristics of the FSD and the FSD Position

Associations between many of the variables for which data were collected upon in the surveys and the salary level of the school food service director were examined. To more accurately examine these associations, only data from respondents that worked 31 hours per week or more in the food service director position were included, which

Table 2.3: Descriptive Statistics on the Characteristics of Food Service Directors in Tennessee Public Schools

		Frequency	Percent
Number of Schools Overseen by the FSD	3 or less	21	24.1
	4 – 5	10	11.5
	6 – 10	31	35.7
	11 – 20	15	17.2
	20 or more	10	11.5
Hours per Week Spent in FSD position	0-10	2	2.3
	11-20	1	1.1
	21-30	4	4.6
	31-40	22	25.3
	Over 40	58	66.7
Years of School Food Service Experience	0-3	11	12.6
	4-5	8	9.2
	6-7	5	5.7
	8-10	5	5.7
	11-15	15	17.2
	More than 15	43	47.7
Years in FSD Position	0-3	17	19.5
	4-5	11	12.6
	6-7	11	12.6
	8-10	7	8.0
	11-15	16	18.3
	More than 15	25	28.7

Table 2.3 Continued: Descriptive Statistics on the Characteristics of Food Service Directors in Tennessee Public Schools

		Frequency	Percent
FSD Current Salary (Note: This data includes FSDs that reported working 31 or more hours per week)	Less than $30,000	10	13.2
	$30,000-$39,999	9	11.8
	$40,000-$49,999	21	27.6
	$50,000-$59,999	18	23.7
	$60,000 or more	18	23.7
Position Held Prior to becoming FSD	Teacher	31	35.6
	Other Food Service Employee	9	10.3
	School Cafeteria Manager	9	10.3
	Other School Food Service Employee	7	8.0
	Restaurant Manager	7	8.0
	School Administrator	6	6.9
	Other**	42	48.3
Percentage of FSDs Belonging to School Nutrition Related Professional Organizations (Note: Respondent could choose all answers that applied)	SNA[1]	79	90.8
	ADA[2]	12	13.8
	NEA[3]	9	10.3
	ACDA[4]	3	3.4
	AASBP[5]	1	1.1
	Other	17	19.5
	None	7	8.0

** "Other" positions included working in: clinical nutrition, health care food service, state extension programs, and school secretarial positions

[1]SNA – School Nutrition Association

[2]ADA – American Dietetic

[3]NEA – National Education Association

[4]ACDA – American Commodity Distribution Association

[5]AASBP – American Association of School Business Professionals

allowed the researchers to examine data from 76 of the food service director respondents. Data from FSDs that worked less than 31 hours per week in the FSD position were not analyzed due to a very small sample size. The variables examined included: school district size, rate of economic disability in the school district, the credentialing requirements for the food service director position, numbers of years the school food service director been in the FSD position, the actual education of the food service director, and the actual credential level of the food service director.

A significant relationship was found between the food service director's salary level and the size of the school district. In school districts with a greater number of students enrolled, a higher percentage of food service directors reported receiving higher salaries than in smaller districts, with less than 2,000 students enrolled (represented in Table 2.4). Also, a significant relationship was found between the food service director's salary level and the actual education level of the school food service director. A higher percentage of food service directors that have college degrees reported having higher salary levels than food service directors that did not have a college degree. These data are represented in Tables 2.4 and 2.5.

Characteristics of Registered Dietitians in the School Nutrition Programs in Tennessee

Of the 87 Tennessee school district food service directors that responded to this survey, 13 (14.9%) reported that they have the Registered Dietitian credential. For the food service directors who reported having RD credentials, only 1 works in a school district with less than 2,000 students, 8 work in school districts that have 2,000 to 4,999 students, and 4 work in school districts that have more than 5,000 students enrolled.

Tables 2.4: The Association between School District Size and Salary of the School Food Service Director

			School District Size, by Number of Students Enrolled			
			Less than 2000	2000 – 4999	5000 or more	Total
FSD Salary Level	Less than $30,000	Count	8	2	0	10
		% within Salary Level	80.0%	20.0%	.0%	100.0%
	$30,000-$39,999	Count	2	7	0	9
		% within Salary Level	22.2%	77.8%	.0%	100.0%
	$40,000-$49,999	Count	6	8	7	21
		% within Salary Level	28.6%	38.1%	33.3%	100.0%
	$50,000-$59,999	Count	1	10	7	18
		% within Salary Level	5.6%	55.6%	38.9%	100.0%
	$60,000 or more	Count	0	7	11	18
		% within Salary Level	.0%	38.9%	61.1%	100.0%
Total		Count	17	34	25	76
		% within Salary Level	22.4%	44.7%	32.9%	100.0%
Fisher's Exact Test = 32.836, degrees of freedom = 8, p <.001						

Tables 2.5: The Association between the Actual Education Level of FSDs and the Salary Level of FSDs

			FSD Education Level		
			No college degree	College degree	Total
FSD Salary Level	Less than $30,000	Count	9	1	10
		% within Salary Level	90.0%	10.0%	100.0%
	$30,000-$39,999	Count	4	5	9
		% within Salary Level	44.4%	55.6%	100.0%
	$40,000-$49,999	Count	5	16	21
		% within Salary Level	23.8%	76.2%	100.0%
	$50,000-$59,999	Count	1	17	18
		% within Salary Level	5.6%	94.4%	100.0%
	$60,000 or more	Count	0	18	18
		% within Salary Level	.0%	100.0%	100.0%
Total		Count	19	57	76
		% within Salary Level	25.0%	75.0%	100.0%
Fisher's Exact Test = 31.421, degrees of freedom = 4, p <.001					

Additionally, of the food service directors with the Registered Dietitian credential, 6 work in school districts with rates of economic disability that are less than 40%, 5 work in school districts with 40 to 49% rates of economic disability and only 2 work in school districts with rates of economic disability that are more than 60%. These data are further represented in Figures 2.4 and 2.5.

Of the RD food service directors, all hold college degrees (which is required for the RD credential), 6 hold bachelor's degrees, 4 hold master's degrees, 2 hold education specialist degrees and 1 holds a doctoral degree. Additionally, 7 hold the Tennessee State certification, 3 hold the School Foodservice Nutrition Specialist credentials, and 8 hold the School Nutrition Association Level 3 certification. All of the RD food service directors work at least 31 hours per week in the FSD position, with 10 reporting that they work over 40 hours per week.

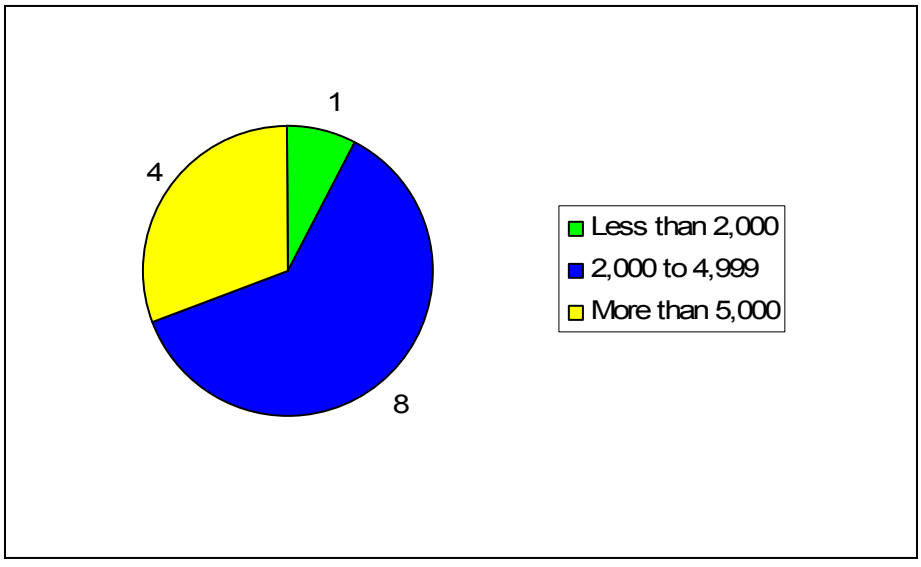


Figure 2.4: Number of RD Food Service Directors in Tennessee Public School Districts According to School District Size

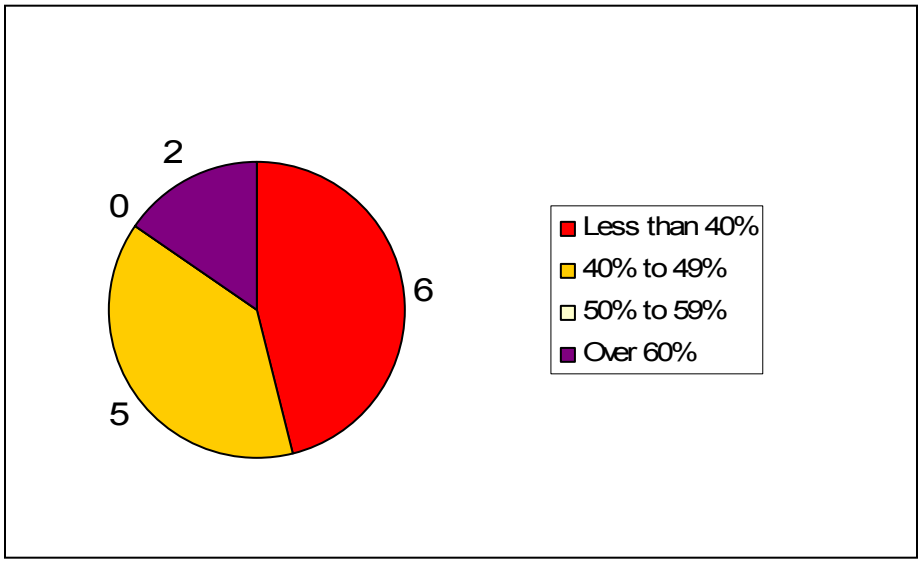


Figure 2.5: Number of RD Food Service Directors in Tennessee Public School Districts According to School District Rate of Economic Disability

In school districts where the food service director did not report having the Registered Dietitian credential, 57.3% of food service directors reported that they would be able to consult with a Registered Dietitian in the process of planning the school meal menus, if needed (although it was not specified in what capacity the RD would be consulted). Among the sample of respondents who did not have the ability to consult with a Registered Dietitian in the menu planning process only 35.7% stated that they desired access to a Registered Dietitian's services, the other 64.3% reported that they did not desire to work with a Registered Dietitian or were unsure of whether or not they wanted to work with a Registered Dietitian in the menu planning process.

The superintendent survey also collected data on the characteristics of RDs in Tennessee school nutrition programs. Twenty percent of the superintendent respondents reported that a Registered Dietitian, full or part time, was employed by their

school district (in these districts the Registered Dietitian may or may not be the individual in the food service director position). In school districts that reported employing a Registered Dietitian, 84.6% reported that the RD consults on food and nutrition-related issues, 61.5% reported that the RD provides nutrition education, 53.8% reported that the RD provides nutrition counseling services, 92.3% reported that the RD plans the menu for the school meals, and 11.8% reported that the RD performs other, unspecified tasks.

Data Analysis by School District Characteristics

Fisher's Exact tests were performed on variables from both surveys to determine if there were relationships between the characteristics of the school districts (school district size and rate of economic disability in the school district) and the school district requirements for the food service director position and the characteristics of the actual food service director. The results of these analyses are described in the following sections.

Association of School District Size with the Requirements for the Food Service Director Position and the Characteristics of the School Food Service Director

The association between school district size and the education requirements for the food service director position was examined. A lower percentage of school districts with less than 2,000 students required a college degree (in any field) for the food service director position than school districts that had greater numbers of students. In the survey sample, only 25% of school districts with less than 2,000 students had a minimum education requirement of a college degree for the food service director

position, where over 80% of school districts with 2,000 or more students required a college degree for this position (Table 2.6).

The association between school district size and the credentialing requirements for the food service director position was examined. The credentialing requirements for the school food service director position were dichotomized into 2 categories for this analysis: having any required credentials and having no required credentials. A lower percentage of school districts with less than 2,000 students required any credentials for the food service director position than school districts that had more students. Of school districts with less than 2,000 students, only 25% required any credentials for the food service director position, in contrast to school districts with a greater number of students, where more than 45% required credentials for the food service director position (Table 2.7).

Table 2.6: Association of School District Size and the Education Requirements for the Food Service Director Position

			Education Requirement for the FSD Position		Total
			No college degree	College degree	
School District Size, by Number of Students	Less than 2000	Count	12	4	16
		% within school district size	75.0%	25.0%	100.0%
	2000 – 4999	Count	4	21	25
		% within school district size	16.0%	84.0%	100.0%
	5000 or more	Count	4	18	22
		% within school district size	18.2%	81.8%	100.0%
Total		Count	20	43	63
		% within school district size	31.7%	68.3%	100.0%

Fisher's Exact Test = 17.025, Degrees of Freedom = 2, $p < .001$

Table 2.7: Association of School District Size and the Credentialing Requirements for the FSD Position

			There ARE Credentialing Requirements for the FSD Position	There are NOT Credentialing Requirements for the FSD Position	Total
School District Size, by Number of Students	Less than 2000	Count	4	12	16
		% within school district size	25.0%	75.0%	100.0%
	2000 – 4999	Count	18	8	26
		% within school district size	69.2%	30.8%	100.0%
	5000 or more	Count	10	12	22
		% within school district size	45.5%	54.5%	100.0%
Total		Count	32	32	64
		% within school district size	50.0%	50.0%	100.0%
Fisher's Exact Test = 7.943, Degrees of Freedom = 2, p = .018					

The association between school district size and the actual education level of the school food service director was examined. In school districts with less than 2,000 students, a lower percentage of FSDs reported having a college degree (in any field) than school districts with a greater number of students. In school districts with less than 2,000 students only 54.2% of food service directors had a college degree, where in districts with a greater number of students more than 80% of food service directors had a college degree. This information is represented in Table 2.8.

The association between school district size and the actual credentialing level of the school food service director was analyzed. For this analysis, the credentialing level of the school food service director was dichotomized into 2 categories: high nutrition credentials and low nutrition credentials. High nutrition credentials were defined as having the SFNS credential, the RD credential, or both the RD and SFNS credentials. Low nutrition credentialing is defined as having any other credentials or having no

Table 2.8: Association of School District Size and the Actual Education Level of the FSD

			Actual Education Level of the FSD		Total
			No college degree	College degree	
School District Size, by Number of Students	Less than 2000	Count	11	13	24
		% within school district size	45.8%	54.2%	100.0%
	2000 – 4999	Count	7	30	37
		% within school district size	18.9%	81.1%	100.0%
	5000 or more	Count	4	22	26
		% within school district size	15.4 %	84.6	100.0%
Total		Count	22	65	87
		% within school district size	25.3%	74.7%	100.0%
Fisher's Exact Test = 6.842, Degrees of Freedom = 2, p = .031					

credentials. No differences were found between the size of the school district and the actual credentialing level (high or low) of the school food service director.

The association between school district size and the ability of the school district to have access to or consult with a Registered Dietitian in the school meal menu planning process was examined. No differences were found between the school district sizes and the ability of the school district to consult with a RD in the school meal menu planning process.

Association of School District Rate of Economic Disability with the Requirements for the Food Service Director Position and the Characteristics of the School Food Service Director

The association between the rate of economic disability in the school district and the education requirements for the food service director position was examined. This

examination found significant differences in the education requirements for the food service director position across the rates of economic disability in the school districts. These results are represented in Table 2.9.

The association between the rate of economic disability in the school district and the credentialing requirements for the food service director position was examined. No significant differences were found between these two variables.

The association between the rate of economic disability in the school district and the actual education level of the school food service director was examined. No significant differences were found between the rate of economic disability in the school district and the actual education level of the food service director.

The relationship between the rate of economic disability in the school district and the actual credentialing level of the school food service director was analyzed. Again in

Table 2.9: Association of the Rate of Economic Disability in the School District and the Education Requirements for the FSD Position

			Education Requirement for the FSD Position		Total
			No college degree	College degree	
Rate of Economic Disability in the School District	Less than 40%	Count	3	19	22
		% within economic disability level	13.6%	86.4%	100.0%
	40%-49%	Count	13	7	20
		% within economic disability level	65.0%	35.0%	100.0%
	50% -59%	Count	4	11	15
		% within economic disability level	26.7%	73.3%	100.0%
	60% or more	Count	0	6	6
		% within economic disability level	.0%	100.0%	100.0%
Total		Count	20	43	63
		%	31.7%	68.3%	100.0%

Fisher's Exact Test = 15.279, Degrees of Freedom = 3, p = .001

this analysis, the credentialing level of the school food service director was dichotomized into the categories of having high nutrition credentials or having low nutrition credentials. This examination found differences in the actual credentialing level (high or low) of the food service director across the different rates of economic disability in the school districts. These results are represented in Table 2.10.

Additionally, the association between the rate of economic disability in the school district and the ability of that school district to have access to or consult with a Registered Dietitian in the school meal menu planning process was analyzed. It was found that there are no differences in the rate of economic disability in the school district and the ability of the school district to access the services of a RD in the menu planning process.

Table 2.10: Association of the Rate of Economic Disability in the School District and the Actual Credential Level of the FSD

			Actual Credential Level of the FSD		Total
			Low	High (RD and/ or SNFS)	
Rate of Economic Disability in the School District	Less than 40%	Count	17	14	31
		% within economic disability level	54.8%	45.2%	100.0%
	40%-49%	Count	24	8	32
		% within economic disability level	75.0%	25.0%	100.0%
	50% -59%	Count	14	1	15
		% within economic disability level	93.3%	6.7%	100.0%
	60% or more	Count	5	4	9
		% within economic disability level	55.6%	44.4%	100.0%
Total		Count	60	27	87
		%	69.0%	31.0%	100.0%
Fisher's Exact Test = 8.557, Degrees of Freedom = 3, p = .030					

Perceived Importance of Nutrition Related Knowledge and Skills Among School District Superintendents and School Food Service Directors

To begin to analyze the data gathered in the questions using a five point Likert scale to assess the food service director's and school superintendent's rated importance of 10 nutrition related knowledge and skill statements, mean scores were calculated to determine which of the 10 nutrition related knowledge and skill statements the superintendents and the food service directors rated as the most and least important for the individual in the food service director position.

To further analyze the Likert scale data, Multivariate Analysis of Variance (MANOVA) statistical analyses were performed. MANOVA tests were used because in these data there were multiple dependent variables and the dependent variables were not independent of each other. Analyses were performed separately on the data collected from the school district superintendents and the school food service directors. These analyses are described in the following sections.

Highest and Lowest Rated Nutrition Related Knowledge and Skills Among Superintendents and Food Service Directors

By examining the mean scores of the school superintendent and food service director ratings of the 10 nutrition related knowledge and skill statements for the food service director position, both the school superintendents and the food service directors, on average, rated the statements as being on the higher half of the scale (as being of higher importance).

The school superintendents rated that "the FSD knows governmental nutrition standards and the role they play in the development of healthful eating habits for

children" as being the most important knowledge or skill statement with a mean score of 4.67 (standard deviation of .565) on a scale of 5 being the highest rating. The school food service directors, however, rated that "the FSD applies principles of good menu planning that incorporates choices and meets the needs of students" as the most important knowledge or skill statement with a mean score of 4.56 (standard deviation of .642) on a scale of 5.

Both the school superintendents and the school food service directors rated the statement that "'the FSD promotes activities to increase nutrition awareness among students, faculty, staff, and the community" as being the least important knowledge or skill statement for the food service director position, with mean scores of 4.11 (standard deviation of .799) and 3.90 (standard deviation of .953), respectively. Table 2.11 shows the mean scores for the school superintendent ratings and Table 2.12 shows the mean scores for the food service director ratings of the 10 nutrition related knowledge and skill statements for the food service director position.

Associations of Superintendent Ratings with Multiple Independent Variables

Associations of the superintendent's rated importance of nutrition related knowledge and skills with school district and FSD characteristics as well as the ability of the school district to access a Registered Dietitian in the school meal menu planning process were analyzed. Of all of the variables tested, the school superintendent's rated importance of nutrition knowledge and skill statements only significantly differed across groups in the school size variable. Results from the MANOVA analyses of these variables are represented in Table 2.13.

Table 2.11: Mean Scores and Standard Deviations of Superintendent Ratings of Nutrition Related Knowledge and Skill Statements for the Food Service Director Position

Nutrition Related Knowledge or Skill Statement	Mean Score	Std. Deviation
The FSD knows governmental nutrition standards and the role they play in the development of healthful eating habits for children.	4.67	.565
The FSD knows the relationship of good nutrition and educational performance.	4.66	.570
The FSD develops procedures to accommodate nutritional needs of children who are unable to consume regular meals/snacks because of a medical order or other special dietary needs.	4.63	.549
The FSD applies principles of good menu planning that incorporates choices and meets the needs of students.	4.63	.604
The FSD plans meals that include a variety of foods, which enable customers to choose foods that are lower in fat, cholesterol, sugar, and sodium.	4.53	.666
The FSD knows the importance of proper nutrition and physical activity as vital elements in disease prevention and long-term good health.	4.53	.642
The FSD ensures that all foods served in the schools make a significant contribution to the development of healthy eating habits.	4.42	.708
The FSD coordinates with school officials and the school community to develop and maintain a nutrition integrity policy based on current research.	4.27	.802
The FSD serves as a resource to instructional staff and school lunch personnel for nutrition education activities in all areas of the school, including cafeterias and classrooms.	4.14	.957
'The FSD promotes activities to increase nutrition awareness among students, faculty, staff, and the community.	4.11	.799
Note: Scores are based on a 5 point Likert scale, with a score of 5 being “extremely important” and a score of 1 being “not at all important”		

Table 2.12: Mean Scores and Standard Deviations of School Food Service Director Ratings of Nutrition Related Knowledge and Skill Statements for the Food Service Director Position

Nutrition Related Knowledge or Skill Statement	Mean Score	Std. Deviation
The FSD applies principles of good menu planning that incorporates choices and meets the needs of students.	4.56	.642
The FSD knows the relationship of good nutrition and educational performance.	4.52	.745
The FSD knows the governmental nutrition standards and the role they play in the development of healthful eating habits for children.	4.52	.713
The FSD knows the importance of proper nutrition and physical activity as vital elements in disease prevention and long-term good health.	4.43	.787
The FSD develops procedures to accommodate the nutritional needs of children who are unable to consume regular meals/snacks because of a medical order or other special dietary needs	4.43	.802
The FSD plans meals that include a variety of foods, which enable customers to choose foods that are lower in fat, cholesterol, sugar, and sodium.	4.39	.737
The FSD ensures that all foods served in the schools make a significant contribution to the development of healthy eating habits.	4.29	.806
The FSD serves as a resource to instructional staff and school lunch personnel for nutrition education activities in all areas of the school, including cafeterias and classrooms.	4.10	.928
The FSD coordinates with school officials and the school community to develop and maintain a nutrition integrity policy based on current research.	4.06	.969
The FSD promotes activities to increase nutrition awareness among students, faculty, staff, and the community.	3.90	.953

Note: Scores are based on a 5 point Likert scale, with a score of 5 being “extremely important” and a score of 1 being “not at all important”

Table 2.13: Superintendent Rated Importance of Nutrition Related Knowledge and Skills

Independent Variable	F	Degrees of Freedom (Hypoth., Error)	Significance
School Size	1.788	20.0, 104.0	.031*
Rate of Economic Disability	1.155	30.0, 150.371	.282
Education Requirements for the FSD Position	1.535	10.0, 52.0	.154
Credentialing Requirements for the FSD Position	.843	10.0, 53.0	.591
School District Access to a Registered Dietitian	.768	10.0, 49.0	.558

*p<.05

Once significant differences were found, for the school district size independent variable (F(20.0,104.0) = 1.788, p=.031) individual analysis of variance (ANOVA) tests were performed on each Likert item to determine which differed. Mean scores for nine of the ten superintendent rated knowledge and skill statements were found to significantly differ across the different school sizes (represented in Table 2.14).

When examining mean scores for these nine statements, superintendents in smaller schools districts, where there are less than 2,000 students, rated the importance of the school food service director having these nine nutrition-related knowledge and skills as less important than school superintendents in larger school districts.

Table 2.14: Superintendent Mean Likert Scores for Nutrition Related Knowledge and Skill Statements, by School District Size

	Mean Scores		
	School District Size, by Number of Students Enrolled		
Dependent Variable	Less than 2000 (n=16)	2000 – 4999 (n=26)	5000 or more (n=22)
The FSD knows the importance of proper nutrition and physical activity as vital elements in disease prevention and long-term good health.	4.063[b]	4.615[a]	4.773[a]
The FSD knows the relationship of good nutrition and educational performance.	4.188[b]	4.885[a]	4.727[a]
The FSD knows governmental nutrition standards and the role they play in the development of healthful eating habits for children.	4.438[a]	4.731[a]	4.773[a]
The FSD applies principles of good menu planning that incorporates choices and meets the needs of students.	4.188[b]	4.731[a]	4.818[a]
The FSD coordinates with school officials and the school community to develop and maintain a nutrition integrity policy based on current research.	3.813[b]	4.423[a]	4.409[ab]
The FSD ensures that all foods served in the schools make a significant contribution to the development of healthy eating habits.	3.938[b]	4.538[a]	4.636[a]
The FSD plans meals that include a variety of foods, which enable customers to choose foods that are lower in fat, cholesterol, sugar, and sodium.	4.063[b]	4.654[a]	4.727[a]
The FSD develops procedures to accommodate nutritional needs of children who are unable to consume regular meals/snacks because of a medical order or other special dietary needs.	4.375[b]	4.615[ab]	4.818[a]
The FSD promotes activities to increase nutrition awareness among students, faculty, staff, and the community.	3.625[b]	4.231[a]	4.318[a]
The FSD serves as a resource to instructional staff and school lunch personnel for nutrition education activities in all areas of the school, including cafeterias and classrooms.	3.563[b]	4.346[a]	4.318[a]

Note: Scores are based on a 5 point Likert scale, with a score of 5 being “extremely important” and a score of 1 being “not at all important”
[a b] Different superscripts indicate a statistical difference between groups at $p<0.05$

Associations of Food Service Director Ratings with Multiple Independent Variables

Associations of the food service director's rated importance of nutrition related knowledge and skills were examined with many variables collected in the present study. Independent variables tested against the food service director Likert score data included: the actual education level of the food service director, the field in which the food service director's degree was earned (for all FSDs with college degrees), the actual credentialing level of the school food service director, school district access to a RD in the menu planning process, number of years of school food service, and number of years that the FSD has held their current position. Of all of the variables tested, the food service director's rated importance of nutrition knowledge and skill statements only differed with the actual education level of the FSD (having a college degree versus not having a college degree). Actual credential level of the FSD and school district access to a RD approached, but did not attain, statistical significance. Results for these MANOVA tests are represented in Table 2.15.

Table 2.15: Food Service Director Rated Importance of Nutrition Related Knowledge and Skills

Independent Variable	F	Degrees of Freedom (Hypoth., Error)	Significance
Actual Education Level of the FSD	2.475	10.0, 76.0	.013*
Field in which FSD's College Degree was Earned	.939	40.0, 195.2	.588
Actual Credential Level of the FSD (High or Low Nutrition Credentials)	1.797	10.0, 76.0	.075
School District Access to a Registered Dietitian	1.894	10.0, 64.0	.062
Number of Years of School Food Service Experience	.675	20.0, 150.0	.846
Number of Years in the FSD Position	.504	20.0, 150.0	.962
*p<.05			

Once significant differences were found, for the actual education level of the of the food service director independent variable ($F(10.0, 76.0) = 2.475$, $p=.013$) individual analysis of variance (ANOVA) tests were performed on each item to determine which differed. Mean scores for two of the 10 FSD rated nutrition related knowledge and skill statements differed across the actual education levels of the FSDs. These data are represented in Table 2.16.

Results demonstrate that mean Likert scores were higher, among food service directors with a college degree, for the two nutrition related knowledge and skill statements that differed among groups. Therefore, the food service directors without a college degree rated these two nutrition knowledge and skill statements as being less important than their counterparts with college degrees.

Discussion

Application

This study reports on the characteristics of school food service directors in Tennessee public school districts, and on the district sanctioned minimum requirements for the food service director position. This information provides the researchers and school health authorities with baseline data upon which we can compare the food service director position in Tennessee public school districts to similar positions on the national level using the School Health Policies and Programs Study (SHPPS) data (15). This information also provides necessary data upon which changes to legislation can be suggested for this position.

Table 2.16: Food Service Director Mean Likert Scores for Nutrition Related Knowledge and Skill Statements, by FSD Actual Education Level

	Mean Scores	
	FSD Education Level	
Dependent Variable	No college degree (n=22)	College degree (n= 65)
The FSD knows the importance of proper nutrition and physical activity as vital elements in disease prevention and long-term good health.	4.318 [a]	4.462 [a]
The FSD knows the relationship of good nutrition and educational performance.	4.273 [a]	4.600 [a]
The FSD knows the governmental nutrition standards and the role they play in the development of healthful eating habits for children.	4.409 [a]	4.554 [a]
The FSD applies principles of good menu planning that incorporates choices and meets the needs of students.	4.455 [a]	4.600 [a]
The FSD coordinates with school officials and the school community to develop and maintain a nutrition integrity policy based on current research.	3.682 [a]	4.185 [b]
The Food Service Director ensures that all foods served in the schools make a significant contribution to the development of healthy eating habits.	4.318 [a]	4.277 [a]
The FSD plans meals that include a variety of foods, which enable customers to choose foods that are lower in fat, cholesterol, sugar, and sodium.	4.273 [a]	4.431 [a]
The FSD develops procedures to accommodate the nutritional needs of children who are unable to consume regular meals/snacks because of a medical order or other special dietary needs.	4.591 [a]	4.369 [a]
The FSD promotes activities to increase nutrition awareness among students, faculty, staff, and the community.	3.636 [a]	3.985 [a]
The FSD serves as a resource to instructional staff and school lunch personnel for nutrition education activities in all areas of the school, including cafeterias and classrooms.	3.727 [a]	4.231 [b]

Note: Scores are based on a 5 point Likert scale, with a score of 5 being “extremely important” and a score of 1 being “not at all important”

[a b] Different superscripts indicate a statistical difference between groups at $p<0.05$

The study data show that Tennessee public school districts have higher education requirements for the school food service director position than the nationally representative sample of school districts presented in the SHPPS survey. The SHPPS national sample of school districts reported 47% of districts had no education requirements (15), where as only 4.6% of Tennessee school districts in this research reported having no education requirements for the position. The majority (57.8%) of Tennessee public school districts who responded to this research study stated that a minimum of a bachelor's degree was required for the FSD position, which is much greater than 11.2% of school districts from the SHPPS national sample that reported requiring a bachelor's degree (15).

Tennessee school food service directors also reported having higher education levels than their counterparts across the nation. In Tennessee public school districts, 34.5% and 34.5% of food service directors reported having a bachelor's degree or master's degree, respectively. In the national sample, a similar rate of 35.4% of food service directors reported having a bachelor's degree, but only 11.7% of food service directors reported having a master's degree (15). These data show that in Tennessee, school districts have higher education requirements for the food service director position than the national average and that the food service directors in Tennessee do, in turn, have higher education levels.

In both Tennessee and across the nation, there is a high percentage of school districts that do not require the food service director to have any form of credentialing, with 50% of Tennessee school districts not requiring credentials and 74.4% of school districts nationwide not requiring credentials (15). In accordance with this, the percentage of school districts requiring the more rigorous RD credentials and/ or the SFNS credentials is low across the nation (15) and in Tennessee public schools.

Despite these low rates across the board, the percentage of school districts in Tennessee that require these credentials and the percentage of Tennessee FSDs that actually hold these credentials are higher than the national average. For example, the SHPPS study found that only 5.8% of school food service directors across in the U.S. reported having the Registered Dietitian credential (15), while this survey indicates that 14.9% of food service directors in Tennessee public school districts hold the Registered Dietitian credential. This suggests that the position requirements for credentialing and actual credentialing levels of food service directors are higher in Tennessee than the national average.

When comparing the data collected in this research and the data collected in the SHPPS study one might conclude that Tennessee is more advanced than the rest of the nation in both requiring higher education and credentialing levels for the FSD position and having individuals with higher levels of education and credentialing in these positions. However, it important to remember that this research found differences in the position requirements and the actual education and credentialing level of the food service director when evaluated by the characteristics of the school district. The most marked differences were found in the smaller school districts (with less than 2,000 students enrolled).

Fewer of the smaller Tennessee public school districts required the food service director to have a college degree or any additional credentials as compared to larger school districts. Accordingly, in these smaller school districts the percentage of food service directors that actually had a college degree was lower than in larger districts. Also, school superintendents in school districts that had less than 2,000 students rated a majority of the nutrition related knowledge and skill statements for food service director position as being of lesser importance than school superintendents in larger schools.

These differences across school district sizes create a great deal of variability in the characteristics of food service directors in Tennessee public school districts.

The food service directors with the highly nutrition related Registered Dietitian credentials are also unequally distributed in the school nutrition programs in Tennessee. This is evidenced by the finding that 12 of the 13 food service directors with the Registered Dietitian credential are employed by the largest school districts (those with 2,000 or more students, and only 1 of the 13 food service directors with the Registered Dietitian credential is employed by a smaller school district (less than 2,000 students).

These differences indicate that although the requirements for the education and credentialing of the food service director position and the actual education and credentialing levels of the individuals in these positions are higher in Tennessee public school districts than the national average, smaller school districts and districts with various rates of economic disability are less likely to have these same positive characteristics. This indicates that Tennessee public school districts would still benefit from legislation that would create state wide minimum requirements for the food service director position.

Limitations

This study was conducted in a manner that elicited the most accurate results possible within all practicality of this research. Although many steps were taken to assure that the best results were obtained, there are still limitations to this research.

The foremost limitation in this research was that responses were not received from every Tennessee public school district. Despite that, all of the superintendents and all of the food service directors in the 137 Tennessee public school districts were recruited to participate in the surveys, only a sample of this population actually

responded to the surveys in entirety. Although the sample of school food service directors and superintendents that responded to the survey was not significantly different from the entire population, not having a complete data set forced the researchers to assume that the data from the school districts who did not respond to the surveys are not different that those who did respond. This increases the risk of error in the data collected, because the missing data from the non-responsive school districts is unknown and has the potential to change the results of the statistical analyses performed.

One factor that may have discouraged some subjects from participating was the web-based administration of this survey. Although all participants had an email account, they may still have been limited in their computer literacy or had technical difficulties in accessing and completing the surveys. For example, one school district reported that the email server for all school district employees was malfunctioning and therefore this individual was temporarily unable to receive email. Additionally, some of the school based email addresses, which were used to contact the survey subjects, contained very powerful email filtering software, which blocked some of the recruitment and follow up emails for the surveys. This decreased the effectiveness of the survey recruitment methods and prevented individuals in school districts with more powerful email filtering software from being able to access and complete the surveys.

Additionally, it is important to remember that there could be errors in the data collected because the data were self-reported from individuals without any methods to assure that the information that they reported is accurate. In this survey the researchers asked individuals to report information that they should be able to report accurately upon, however there remains a chance of individuals inaccurately reporting data. The data collected in the superintendent survey is at a greater risk for this type of error because the information requested in this survey was more removed from the individual

in this position, decreasing their personal knowledge of the information. The food service director survey should have lesser amounts of this type of error because these individuals were asked more personal questions that should have been easily and accurately reported with their own personal knowledge.

Recommendations for Legislation

The school health and the school nutrition environments currently are undergoing a great deal of change; legislation in these areas is constantly being created and revised. This is evidenced by the changes in the school environment since the onset of this project a year and a half ago. An example of this is the announcement of the standards for the Tennessee Coordinated School Health Programs in February of 2007, which mandated the services of a Registered Dietitian in all school systems receiving Coordinated School Health funding (16). Legislators have taken notice of research findings such as these, which identify the problem of inconsistent education and credentialing standards for school nutrition professionals and have taken legislative action to improve this. Although the mandatory inclusion of RD services in the school systems is a very positive change for the school nutrition environment, this legislation is not a perfect solution to the problem.

As reported by the school district superintendents surveyed in this research, currently Registered Dietitians in the school nutrition programs in Tennessee perform several roles including: consulting on food and nutrition related issues, providing nutrition education, providing nutrition counseling, and planning the menus for the school meals.

All of these roles contribute to promoting a healthy school nutrition environment. However, there were no defined roles or functions, such as those listed above, for the Registered Dietitian in the school nutrition programs, provided in the Coordinated School

Health Expansion legislation. With each Tennessee public district receiving Coordinated School Health funds and therefore being required to incorporate a Registered Dietitian in the school nutrition program, there is the opportunity for great amounts of variability of the RD position in the school systems.

Although the requirements for the exact functions of the RD in the district cannot be set at the state level because there are many different needs among the public school districts in Tennessee, certain recommendations and guidelines need to be established as part of this legislation. For example, guidelines could be defined for the level of involvement that the RD has in the development of the school meal menus.

Since the Coordinated School Health legislation does not explicitly state the capacity and the functions of the RD in the school district and because there is a great deal of variability in the characteristics of food service directors in Tennessee public school districts, it would still be beneficial if legislation was pursued to create state level minimum requirements for the school food service director position. Based on the data collected in this research, on the minimum required education and credentials for the FSD position and the data on the actual education and credentialing level of the school food service director, it seems as though selecting a more rigorous credential, such as the SFNS or the SNA Level 3 certification would be most appropriate. These credentials would assure that the food service director has a certain level of nutrition knowledge and must continue to stay current on nutrition related issues by completing continuing education requirements in the field to maintain the credentials.

One issue that must be taken into consideration in making recommendations for legislation for requirements for the food service director position would be the effect that additional requirements would have on the salary level of the position. The ability to pass and/or implement legislation on position requirements would be decreased if the

suggested legislation created an additional financial burden to the school districts (especially the smaller school districts) by creating the need for increased salaries for the food service director position. Knowing this, creating credentialing requirements for the food service director position is an acceptable option because this research found that the salary level of the food service director in Tennessee public school districts did not differ among school districts that did or did not require credentials for the food service director position or among food service directors with different levels of credentialing.

The combination of the mandatory credentialing for the food service director position and the incorporation of RDs into the school districts would assure that adequately trained individuals are in place in school nutrition programs in Tennessee and should increase the ability of school districts to create a healthy school nutrition environment for students, faculty, staff, and visitors.

Recommendations for Future Research

Continued research in the area of school nutrition is heavily warranted for many reasons, primarily because the rates of childhood overweight continue to rapidly increase (17, 18) and there are more and more children facing negative health consequences because of these increasing rates (19). Research must be conducted to assure that the many changes that have been made in the school nutrition environment (such as the implementation of the school wellness policies, the vending machine laws, and the allotment of the Coordinated School Health grant money) are in fact creating the positive change in the school nutrition environment that they were initially designed to create.

As a part of the Coordinated School Health pilot programs, BMI data were collected in each of the 11 school districts. This data set was too small to perform meaningful statistical analyses with the data collected on FSD characteristics in the present study. When the Coordinated School Health programs are expanded to all public school districts in the near future, BMI data should be collected state-wide at the district level. The availability of BMI data in school districts across the state will create many opportunities for future research, including examining the relationships between the prevalence of overweight and at risk for overweight in the school system and the characteristics of the school food service director, such as the education and credentialing level.

Additionally, as the Coordinated School Health Programs progress and are implemented in counties across the state, additional research will be needed to determine the exact functions and roles of the Registered Dietitian in the school nutrition programs and the influence of the RDs on the nutritional status of Tennessee children.

All of this research should be conducted with the primary intention of improving the health and increasing the quality of life of Tennessee's youth.

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APPENDICES

Appendix A: Summary Table of Credentials

School Food Service Director Credentialing Options

Credential	Minimum Requirements for Obtaining Credential
Registered Dietitian (RD) Provided by the American Dietetic Association	· Bachelor's degree from a CADE accredited college or university program · Completion of a CADE accredited dietetic internship that consists of at least 900 hours of practice or completion of an accredited coordinated program · Passing of a national credentialing exam · Completion of continuing professional education requirements set by the ADA
Dietetic Technician, Registered (DTR) Provided by the American Dietetic Association	· Associate's degree from a CADE accredited college or university program · Completion of a CADE accredited supervised practicum that consists of at least 450 hours of practice · Passing of a national credentialing exam · Completion of continuing professional education requirements set by the ADA
School Foodservice Nutrition Specialist (SFNS) Provided by the School Nutrition Association	· Associate's degree or equivalent education (60 semester hours of college level courses) · One year of foodservice of experience in school foodservice, that has occurred within the last five years · 30 semester hours of specialized training (in addition to the Associate's degree) in foodservice management, business, nutrition or a related field · Passing of a national credentialing exam · Completion of continuing professional education requirements set by the SNA
School Nutrition Association Certification Provided by the School Nutrition Association	**Level 1 Requirements:** · One year of related work experience · 30 hours of specialized training in food sanitation and safety, nutrition or related areas · Completion of continuing professional education requirements set by the SNA OR · Completion of the Child Nutrition U online training program with continuing education requirements **Level 2 Requirements:** · One year of related work experience · A high school diploma or GED · 90 hours of specialized training in food sanitation and safety, nutrition, administration, communication and marketing or related areas · Completion of continuing professional education requirements set by the SNA **Level 3 Requirements:** · One year of related work experience · Some post-secondary education (defined as the completion of at least one college course) · 150 hours of specialized training in food sanitation and safety, nutrition, administration, communication and marketing or related areas OR nine hours of college credit in sanitation and safety microbiology, nutrition, food service management or a related field · Completion of continuing professional education requirements

School Food Service Director Credentialing Options, Continued

Credential	Minimum Requirements for Obtaining Credential
Certified Dietary Manager, Certified Food protection Professional (CDM, CFPP) Provided by the Dietary Managers Association	· Obtaining eligibility to take the national credentialing exam by: (a) Completion of an DMA approved dietary manager course (b) Completion of a two- or four-year degree in food service management or nutrition, a two-year degree in culinary arts, or a two-year degree in hotel/restaurant management (c) Completion of a 90 hour foodservice management course or a state-approved foodservice management course AND two years of foodservice management experience (d) Completion of a military approved dietary manager training program · Passing of a national credentialing exam · Completion of continuing professional education requirements set by the DMA
ServSafe Certification Provided by the National Restaurant Association Education Foundation	· Completion of the education component of program · Passing of the ServSafe examination
State Certification Provided by the State Government in select states	· Requirements vary from state to state
Tennessee State Certification Provided by the Tennessee State Department of Education	· A teaching license with a minimum of a bachelor's degree or a bachelor's degree with a minimum of 18 semester hours in education, psychology, or sociology · A total of 12 semester hours of education in personnel management, nutrition, accounting, and computer spreadsheets · Related field experience

Appendix B: Surveys

School Food Service Director Survey

INFORMED CONSENT STATEMENT

A Study of Food Service Directors in Tennessee Public Schools

INTRODUCTION

You are invited to participate in a survey conducted by researchers at the University of Tennessee. The purpose of this survey is to define the typical education and training of School Food Service Directors. You have been chosen to participate in this study because you are a School Food Service Director in a Tennessee Public School. Your input is vital to this research.

INFORMATION ABOUT PARTICIPATING IN THIS STUDY

Permission to conduct this study has been granted by the Institutional Review Board at the University of Tennessee, Knoxville. Participation in this study involves taking an online survey that should take approximately 5 to 10 minutes for you to complete. We value your input and hope you will be willing to help us.

BENEFITS

All participants who complete the entire survey will be entered into a drawing to win packets of nutrition education materials (posters, activities, and information sheets) for their school district.

RISKS

The risks involved in this study are that the researchers may be able to match your identity to your responses to the survey questions. However, this information will be used by the researchers only. No information connecting you or your school district to your survey answers will be released to the public. Your participation in the survey is voluntary and you may skip specific questions and/or discontinue the survey at any time without penalty.

CONFIDENTIALITY

The information in the study records will be kept confidential. The identifying information gained in the study will only be available to individuals who are involved in conducting the study, unless the participants in the study give permission in writing to do otherwise.

CONTACT INFORMATION

If you have questions at any time about the survey you may contact the researcher Melissa Hansen-Petrik, Ph.D, R.D., L.D.N. at the Nutrition Department at the University of Tennessee, 1215 West Cumberland Ave. Room 229, Knoxville, TN 37996-1920, or 865-974-6264. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at 865-974-3466.

PARTICIPATION

Your participation in this study is voluntary. We hope you decide to participate, however, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled.

CONSENT

I have read this form and printed a copy for my file. Clicking the NEXT button and answering the survey questions indicates that I willingly agree to take part in this study. If you do not wish to participate in this survey, you may exit out of your web browser now.

NEXT

Question 1:
What is the total number of schools that you oversee as the School Food Service Director?

How many of these schools are:

	Number
Pre Kindergarten	
Primary	
Elementary	
Intermediate	
Middle or Junior High	
High	

Question 2:
How many of the schools that you oversee participate in the United States Department of Agriculture (USDA) National School Lunch Program?

How many of these schools are:

	Number
Pre Kindergarten	
Primary	
Elementary	
Intermediate	
Middle or Junior High	
High	

Question 3:
How many of the schools that you oversee participate in the United States Department of Agriculture (USDA) National School Breakfast Program?

How many of these schools are:

	Number
Pre Kindergarten	
Primary	
Elementary	
Intermediate	
Middle or Junior High	
High	

Question 4:
How many of the schools that you oversee participate in the United States Department of Agriculture (USDA) After School Snack program?

How many of these schools are:

	Number
Pre Kindergarten	
Primary	
Elementary	
Intermediate	
Middle or Junior High	
High	

Question 5:
What is the highest level of education you have attained?
- o Some high school
- o High school diploma / GED
- o Some College
- o College degree

(If any response other than college degree was selected, the next two questions were automatically skipped)

Question 6:
What is the highest college degree you have earned?
- o Associate's degree
- o Bachelor's degree
- o Master's degree
- o Doctoral degree
- o Other

Question 7:
What major was that degree earned in?

Question 8:
What additional credentials do you have in nutrition, food service, management, or a related field? Choose all that apply:
- □ None
- □ Certification from the state of Tennessee
- □ Certified Dietary Manager (CDM)
- □ Dietetic Technician, Registered (DTR)
- □ Education Specialist
- □ Registered Dietitian (RD)
- □ School Foodservice Nutrition Specialist (SFNS)
- □ School Nutrition Association Certified Level 1
- □ School Nutrition Association Certified Level 2
- □ School Nutrition Association Certified Level 3
- □ ServSafe Certification
- □ Other, please list :

Question 9:
What position did you hold, prior to becoming the School Food Service Director? Choose all that apply:

- ☐ Restaurant manager/supervisor, please describe :
- ☐ Other food service employee outside the school system
- ☐ School cafeteria manager/supervisor
- ☐ Other school foodservice employee
- ☐ School administrator, title :
- ☐ Teacher, area of specialization :
- ☐ Other, please list :

Question 10:
Are you a member of any professional organizations? Choose all that apply:

- ☐ No, I am not a member of a professional organization
- ☐ American Association of School Business Professionals (AASBP)
- ☐ American Commodity Distribution Association (ACDA)
- ☐ American Dietetic Association (ADA)
- ☐ National Education Association (NEA)
- ☐ School Nutrition Association (SNA)
- ☐ Other, Please list :

Question 11:
How many hours per week do you spend working in the Food Service Director position?

- o 0-10
- o 11-20
- o 21-30
- o 31-40
- o Over 40

Question 12:
What is your current salary?

- o Less than $30,000
- o $30,000-$39,999
- o $40,000-$49,999
- o $50,000-$59,999
- o $60,000-$69,999
- o $70,000-$79,999
- o $80,000 or more
- o I do not want to answer this question

Question 13:
How many years of school food service experience do you have?

- o 0-3
- o 4-5
- o 6-7
- o 8-10
- o 11-15
- o More than 15

Question 14:
How many years have you held your current position as School Food Service Director?

- o 0-3
- o 4-5
- o 6-7
- o 8-10
- o 11-15
- o More than 15

Question 15:
Who is directly responsible for planning the breakfast and lunch menus for this school district?

- o School Food Service Director
- o Other, please describe :

(If School Food Service Director was selected, then next two questions were automatically skipped)

Question 16:
What is the highest level of education obtained by the menu planner?

- o Some high school
- o High school diploma / GED
- o Associate's degree in nutrition
- o Associate' s degree in any field
- o Bachelor's degree in nutrition
- o Bachelor's degree in any field
- o Master' s degree or higher, please list :
- o Other, please list :
- o Don't know

Question 17:
What other training does the menu planner have? Choose all that apply:

- □ None
- □ Certification from the state of Tennessee
- □ Certified Dietary Manager (CDM)
- □ Dietetic Technician, Registered (DTR)
- □ Education Specialist
- □ Registered Dietitian (RD)
- □ School Foodservice Nutrition Specialist (SFNS)
- □ School Nutrition Association Certified Level 1
- □ School Nutrition Association Certified Level 2
- □ School Nutrition Association Certified Level 3
- □ Other, please list :
- □ Don't know

Question 18:
If the school breakfast and lunch menus are NOT prepared by a Registered Dietitian, can the menu planner consult with a Registered Dietitian in the menu planning process?

- o Yes
- o No
- o Don’t know
- o The menus are prepared by an RD

(If the RD option was selected, next question was automatically skipped)

Question 19:
Would you like to be able to consult with a Registered Dietitian in the menu planning process?

- o Yes
- o No
- o Don't know

Question 20:
Please read the following statements and rate how important it is that you, as the School Food Service Director, have the following knowledge and skills:

	Not at all important	Somewhat important	Important	Very important	Extremely important
The Food Service Director knows the importance of proper nutrition and physical activity as vital elements in disease prevention and long-term good health.	o	o	o	o	o
The Food Service Director knows the relationship of good nutrition and educational performance.	o	o	o	o	o
The Food Service Director knows the governmental nutrition standards and the role they play in the development of healthful eating habits for children.	o	o	o	o	o
The Food Service Director applies principles of good menu planning that incorporates choices and meets the needs of students.	o	o	o	o	o
The Food Service Director coordinates with school officials and the school community to develop and maintain a nutrition integrity policy based on current research.	o	o	o	o	o
The Food Service Director ensures that all foods served in the schools make a significant contribution to the development of healthy eating habits.	o	o	o	o	o
The Food Service Director plans meals that include a variety of foods, which enable customers to choose foods that are lower in fat, cholesterol, sugar, and sodium.	o	o	o	o	o
The Food Service Director develops procedures to accommodate the nutritional needs of children who are unable to consume regular meals/snacks because of a medical order or other special dietary needs.	o	o	o	o	o

The Food Service Director promotes activities to increase nutrition awareness among students, faculty, staff, and the community.	o	o	o	o	o
The Food Service Director serves as a resource to instructional staff and school lunch personnel for nutrition education activities in all areas of the school, including cafeterias and classrooms.	o	o	o	o	o

Question 21:
Do you have any additional comments?

School Superintendent Survey

INFORMED CONSENT STATEMENT

A Study of Food Service Directors in Tennessee Public Schools

INTRODUCTION

You are invited to participate in a survey conducted by researchers at The University of Tennessee. The purpose of this survey is to define the typical education and training of School Food Service Directors in Tennessee. The School Food Service Director is the person at the district level who supervises the school lunch or breakfast programs. You, as the School District Superintendent, can provide us valuable information on this position.

INFORMATION ABOUT PARTICIPATING IN THIS STUDY

Permission to conduct this study has been granted by the Institutional Review Board at the University of Tennessee, Knoxville. Participation in this study involves taking an online survey that should take approximately 5 to 10 minutes for you to complete. We value your input and hope you are willing to help us.

BENEFITS

All participants who complete the entire survey will be entered into a drawing to win packets of nutrition education materials (posters, activities, and information sheets) for their school district.

RISKS

The risks involved in this study are that the researchers may be able to match your identity to your responses to the survey questions. However, this information will be used by the researchers only. No information connecting you or your school district to your survey answers will be released to the public. Your participation in the survey is voluntary and you may skip specific questions and/or discontinue the survey at any time without penalty.

CONFIDENTIALITY

The information in the study records will be kept confidential. The identifying information gained in the study will only be available to individuals who are involved in conducting the study, unless the participants in the study give permission in writing to do otherwise.

CONTACT INFORMATION

If you have questions at any time about the survey you may contact the researcher Melissa Hansen-Petrik, Ph.D, R.D., L.D.N. at the Nutrition Department at the University of Tennessee, 1215 West Cumberland Ave. Room 229, Knoxville, TN 37996-1920, or 865-974-6264. If you have questions about your rights as a participant, contact the Office of Research Compliance Officer at 865-974-3466.

PARTICIPATION

Your participation in this study is voluntary. We hope you decide to participate, however, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled.

CONSENT

I have read this form and printed a copy for my file. Clicking the NEXT button and answering the survey questions indicates that I willingly agree to take part in this study. If you do not wish to participate in this survey, you may exit out of your web browser now.

NEXT

Question 1:

What is the size of the total population of residents within your school district?

- Less than 10,000
- 10,000 to 19,999
- 20,000 to 29,999
- 30,000 to 39,999
- 40,000 to 49,999
- 50,000 to 74,999
- 75,000 to 99,999
- 100,000 to 149,999
- 150,000 to 199,999
- 200,000 to 249,999
- 250,000 to 299,999
- 300,000 to 349,999
- 350,000 to 399,999
- 400,000 to 449,999
- 450,000 to 500,000
- More than 500,000
- Don't know

Question 2:

How many students are enrolled in public schools in your school district?

- Less than 1,000
- 1,000 to 1,999
- 2,000 to 4,999
- 5,000 to 9,999
- 10,000 to 14,999
- 15,000 to 19,999
- 20,000 to 29,999
- 30,000 to 39,999
- 40,000 to 49,999
- 50,000 to 74,999
- 75,000 to 99,999
- More than 100,000
- Don't know

Question 3:
How many children in your school district are eligible for the free or reduced price school lunches?

- o Less than 10%
- o 10%-19%
- o 20%-29%
- o 30%-39%
- o 40%-49%
- o 50%-59%
- o 60%-69%
- o 70%-79%
- o 80% or more
- o Don't Know

Question 4:
Does your school district participate in the Coordinated School Health Program (CSHP)?

- o Yes
- o No
- o In the application process
- o Don't Know

Question 5:
Based on the policies adopted by your district, what is the minimum level of education required for a newly hired School Food Service Director?

- o There are no education requirements
- o Some high school
- o High school diploma or GED
- o Associate's degree in any field
- o Associate's degree in a nutrition-related field
- o Bachelor's degree in any field
- o Bachelor's degree in a nutrition-related field
- o Master's degree or higher, please list :
- o Other, please list :
- o Don't know

Question 6:
Based on the policies adopted by your district, what other credentials are required for a newly hired School Food Service Director? Select all that apply:

- ☐ There are no additional requirements
- ☐ Certification from the State of Tennessee
- ☐ Certified Dietary Manager (CDM)
- ☐ Dietetic Technician, Registered (DTR)
- ☐ Registered Dietitian (RD)
- ☐ School Foodservice Nutrition Specialist (SFNS)
- ☐ School Nutrition Association Certified Level 1
- ☐ School Nutrition Association Certified Level 2
- ☐ School Nutrition Association Certified Level 3
- ☐ ServSafe Certification
- ☐ Work experience, please list :
- ☐ Other, please list :
- ☐ Don't know

Question 7:
Are there any continuing education or further training requirements for the School Food Service Director once he/she has obtained the position?

- o No
- o Yes
- o Don't know

(If “no” or “don’t know” responses were selected, next question was automatically skipped)

Question 8:
Please describe the continuing education or further training requirements for the School Food Service Director position:

Question 9:
What is the minimum (entry level) salary for the School Food Service Director position in this school district?

- o Less than $30,000
- o $30,000-$39,999
- o $40,000-$49,999
- o $50,000-$59,999
- o $60,000-$69,999
- o $70,000-$79,999
- o $80,000 or more
- o Don't know

Question 10:
What is the maximum salary for the School Food Service Director position in this school district?

- o Less than $30,000
- o $30,000-$39,999
- o $40,000-$49,999
- o $50,000-$59,999
- o $60,000-$69,999
- o $70,000-$79,999
- o $80,000 or more
- o Don't know

Question 11:
How many Registered Dietitians (Full Time Equivalents) are employed by the school district?

- o 0
- o 0.1-0.9
- o 1.0-1.9
- o 2.0-2.9
- o 3.0-3.9
- o 4.0 or more
- o Don't know

(If 0 response was selected, then next two questions were automatically skipped)

Question 12:
What does the Registered Dietitian employed by the school district do? Select all that apply:

- □ Consulting on food and nutrition-related issues
- □ Provide nutrition education for students, teachers, staff, parents, and/or the community
- □ Provide nutrition counseling to staff, students, and student’s families
- □ Conduct menu planning for school meals
- □ Other
- □ Don't know

Question 13:
What other functions does the Registered Dietitian in the school district perform?

Question 14:
Is nutrition education or nutrition promotion provided in this school district?
- o Yes
- o No
- o Don't know

(If "no" or "don't know" responses were selected, next question was automatically skipped)

Question 15:
Who provides this nutrition education/promotion? Select all that apply:
- ☐ Cafeteria manager
- ☐ Classroom teachers
- ☐ Family and consumer science teachers
- ☐ Health and wellness teachers
- ☐ Physical education teachers
- ☐ Registered Dietitian (RD)
- ☐ School Food Service Director
- ☐ School nurse
- ☐ Tennessee Nutrition and Consumer Education Program (TNCEP) representatives
- ☐ Other, please list :
- ☐ Don't know

Question 16:
Please read the following statements and rate how important it is for the School Food Service Director in your school district to have the following knowledge and skills:

	Not at all Important	Somewhat Important	Important	Very Important	Extremely Important
The School Food Service Director knows the importance of proper nutrition and physical activity as vital elements in disease prevention and long-term good health.	o	o	o	o	o
The School Food Service Director knows the relationship of good nutrition and educational performance.	o	o	o	o	o
The School Food Service Director knows governmental nutrition standards and the role they play in the development of healthful eating habits for children.	o	o	o	o	o
The School Food Service Director applies principles of good menu planning that incorporates choices and meets the needs of students.	o	o	o	o	o
The School Food Service Director coordinates with school officials and the school community to develop and maintain a nutrition integrity policy based on current research.	o	o	o	o	o

The School Food Service Director ensures that all foods served in the schools make a significant contribution to the development of healthy eating habits.	o	o	o	o	o
The School Food Service Director plans meals that include a variety of foods, which enable customers to choose foods that are lower in fat, cholesterol, sugar, and sodium.	o	o	o	o	o
The School Food Service Director develops procedures to accommodate nutritional needs of children who are unable to consume regular meals/snacks because of a medical order or other special dietary needs.	o	o	o	o	o
The School Food Director promotes activities to increase nutrition awareness among students, faculty, staff, and the community.	o	o	o	o	o
The School Food Service Director serves as a resource to instructional staff and school lunch personnel for nutrition education activities in all areas of the school, including cafeterias and classrooms.	o	o	o	o	o

Question 17:
Do you have any additional comments?

VITA

Elizabeth T. Anderson was born in Cincinnati, Ohio on March 24, 1983. She was raised in Amelia, Ohio and went to grade school at Merwin Elementary School in Amelia, Ohio and Amelia Middle School in Batavia, Ohio. She graduated from Amelia High School in 2001. She then attended the University of Dayton and received a B.S. in dietetics in 2005. From there, she attended the University of Tennessee, Knoxville and received a M.S. in nutrition in 2007. Elizabeth is currently pursing her Registered Dietitian credential.