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Preschool Teachers' Perceptions of Obesity at Ages 3-5 Years

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Philadelphia College of Osteopathic Medicine

Department of Psychology

PRESCHOOL TEACHERS' PERCEPTIONS OF OBESITY AT AGES 3-5 YEARS

By Jessica D. MacKinney

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Submitted in Partial Fulfillment of the Requirement of the Degree of
Doctor of Psychology

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DEPARTMENT OF PSYCHOLOGY**

Dissertation Approval

This is to certify that the thesis presented to us by Jessica D. MacKinney
on the 18th day of May, 2010, in partial fulfillment of the
requirements for the degree of Doctor of Psychology, has been examined and is
acceptable in both scholarship and literary quality.

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I hope the information in this dissertation provides information that is useful to other school psychologists and school professionals and makes a difference in how obesity is addressed in schools.

ABSTRACT

The purpose of this study was not only to investigate the knowledge of preschool teachers on the topic of obesity, but also to determine whether or not they find obesity to be a significant problem facing 3-5 year old children. Results indicate that preschool teachers agree that obesity is a concern; however, they are unclear on the causality of obesity. Preschool teachers feel the long-term consequences of being obese at ages 3-5 years affect future academic, social, and physical growth, but they do not feel intervention should take place at the preschool level. This study contributed to a better understanding of the current knowledge that preschool teachers hold on the topic of obesity. This information could be used for future teacher training and for intervention school-based programs.

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CHAPTER 1

INTRODUCTION

Statement of the Problem

The number of children between 3 and 5 years of age diagnosed as overweight or obese has increased steadily in the United States over the past 20 years, across socioeconomic status (SES), race, and sex. Being overweight or obese is typically determined by using the Body Mass Index (BMI), which is a measure of weight in relation to height that can be used in the English or metric system. Overweight is defined as BMI at or above 85th percentile for children of same height and sex. A BMI above the 95 percentile is considered obese by the Center for Disease Control (CDC, 2008a).

Ludwig (2007) found that in the 1970s, children began to weigh more across all SES, racial and ethnic groups, and regions. According to Ludwig, this increase in overweight children was unnoticed by health professionals, because overweight children can remain healthy for many years. Serious weight problems are now prevalent throughout the country. Current research indicates that approximately 5.3 million children in the United States are overweight relative to their weight and height (Keenan, 2004).

The Journal of the American Medical Association (JAMA) estimates that 32% of school aged children in the United States are overweight, with 8% of that number falling into the obese range (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). According to Kimbro, Brooks-Gunn, and McLanahan (2007), the number of overweight children in

America has increased by 100% since 1971. In the year 2000, 10.4% of American children and adolescents ages 4-15 years were considered overweight. Because obesity rates in American youth appear well documented, the published research in psychological and medical journals continues to focus on elementary and high school aged children with little focus on problem identification or intervention in children under age 5 years.

The National Health and Nutrition Examination Survey (NHANES) reported that in 2004, 13.9 % of 2-5 year olds were overweight. This was a significant increase from the 5% of 2-5 year olds who reportedly fell into this category in 1980. This age group has also experienced the most recent, significant increase in weight gain. The NHANES reported that during 1988- 1994, 7.2% of American children between the ages of 2-5 years were overweight, an increase of 2.2% from the 1980 survey. When surveyed again in 2003-2004, the rate had increased to 13.9% (CDC, 2008b). Edmunds (2005) compared 3- year -olds born in the mid 1990's to 3 -year- olds born in 1990. He found that those born in the mid 1990's were more likely to be overweight than those born in 1990. Canadian studies indicate that 18% of 2-3 year olds are considered overweight and 27% are considered obese. Between the ages of 4-5 years, 17% of Canadian children are found to be overweight and 23% fall into the obese category (Willows, Johnson, & Ball, 2007). A longitudinal study in Greenland indicated that 8.8% of children born during the years 1972-1976 were overweight at age 5 years. Of children born during the years 1997-2001, 16.6% were overweight by age 5 years (Niclasen, Petzold, & Schnohr, 2006). However, using BMI as the sole criterion for measuring overweight and obesity is a flawed measure that can lead to unrealistically high

statistics. In sum, a review of the current literature acknowledges that although the statistics vary, the literature does support the fact that overweight and obesity are manifested in children as young as age 3 and that very little is being done to address it. Addressing the issue of obesity in children is important because of the long-term social-emotional, academic, and medical consequences. Obese children are more highly at-risk than their peers of average weight to experience significant stressors in all aspects of their life.

Two major realities drawn from childhood obesity research are the adverse effects of multiple early risk factors on later school functioning, and the effectiveness of early intervention to increase favorable outcomes, especially for vulnerable children living in high-risk environments, such as those at poverty level (Fantuzzo, Rouse, McDermott, Sekino, & Childs, et al., 2005). When examining the research, however, there is little information about how to address appropriate management of obesity with children ages 3-5 years. To date, research studies concerning preschool aged children have focused on school readiness. Studies of obesity have neglected the 3-5 year age group and have concentrated on children ages 6 years through adolescence. Therefore, there is a lack of awareness about the risk factors of being overweight or obese at ages 3-5 years. In order to implement obesity prevention measures, there must be an awareness and knowledge of the seriousness of obesity among the teachers working with the preschool population. Before programs addressing students who are overweight can be implemented at the preschool level, further research must be conducted on the current perceptions of preschool personnel regarding students who

are obese. This national health issue cannot be addressed if those working with the population do not acknowledge the need for intervention.

Purpose of the Study

The purpose of the study was to gain an understanding of the perceptions of preschool teachers on the long- term implications of overweight and obesity at ages 3-5 years. The method used to obtain data was a survey. Preschool teachers were asked to answer survey questions related to obesity and its effect on preschool age children. The participants were preschool teachers working in public school systems in the state of New Jersey. Data were collected from public preschool programs that provide special education services and general education programs. The districts surveyed included SES status, ranging from upper middle class to lower middle class as indicated by the participant responses. Race, gender, levels of training, highest degree of education, and number of years teaching were accounted for through a demographics component of the survey. These demographics were used to determine if there were differences in the perceptions of obesity between groups.

Teacher contact information was obtained through accessing district Web sites. The survey was distributed to the participants through the Web-based program SurveyMonkey.com. Participants were asked to rate their knowledge of the risk factors of obesity. They were also asked to rate their perceptions of the long- term medical, social/emotional, and academic effects of obesity on preschool aged children. The survey also asked teachers when intervention and prevention programs should be implemented in school settings.

A portion of the survey asked teachers to provide information about their current classroom practices regarding obesity risk factors, including the use of edible reinforcers, the inclusion of physical activity during the day, and promotion of healthy eating habits. These questions provided insight on current practices regarding healthy eating and physical activity. The majority of the survey items used a 5- point Likert scale, with responses ranging from “strongly disagree” to “strongly agree.” Data were then analyzed by comparing teacher responses by group. The goal of this study was to determine those risk factors associated with preschool age obesity that appear to be of concern for teachers working with this population. This information could be used to provide education to preschool personnel regarding the importance of addressing weight issues at the preschool level. Intervention strategies could be introduced once there is an awareness of the importance of healthy eating and of physical activity within preschool environments.

Definition of Obesity

Overweight, in general terms, is the imbalance of caloric intake and the calories a child uses for normal growth, development, metabolism, and physical activity (CDC, 2008c). The CDC indicates that genetic characteristics of the human population have not changed in three decades, but the prevalence of overweight school children has tripled, indicating that genetic factors are not the sole cause of the increase in childhood obesity.

Childhood obesity is defined by using the BMI. It is the most widely accepted method to screen for obesity because obtaining height and weight is easy, non-invasive,

and correlates with body fatness (CDC, 2008a). The results of BMI are plotted on CDC growth charts to determine corresponding BMI for age percentile. Overweight is defined as BMI at or above 85 percentile for children of same height and sex. A BMI above the 95 percentile is considered obese (CDC, 2008c). Although further medical tests are often used, this is the most widely practiced measure of determining overweight and obesity in children.

According to Satter (2005), BMI and growth charts can be misleading when used for infants and children up to age 5 years. The key in monitoring the growth of young children in relation to obesity is the patterns of growth, not the percentile. For example, if an infant is at the 85th percentile for weight and the 75th percentile for height, this does not necessarily mean he/she will become obese. If the child's height and weight continue to remain consistent at the 85th and 75th percentiles over the course of early development (through age 5 years) without feeding interventions, then this is an appropriate weight for the child. A parent or physician should be concerned when a child's weight gain accelerates. If an infant is at the 65th percentile for weight at birth, and by age 2 years is at the 85th percentile, with steady increases at each doctor visit, this could be cause for concern. The child is gaining weight dramatically rather than gaining weight steadily, which would be consistent with growth in height (Satter). This is one example, indicating how the accepted definition of obesity can be misleading for young children. For the purpose of this study, obesity and overweight will be defined according to the CDC. However, Satter's clarification about weight for children up to age 5 years was taken into consideration when examining causality of obesity and overweight in children age 3-5 years.

Typical Early Childhood Development

Children experience the greatest range of growth (height and weight) from birth to 5 years of age. After infancy (birth to 2 years) the rate of growth slows to a nearly constant rate. At ages 4 to 5 years, the average weight gain over the course of a year is approximately 4 pounds and height may increase 2-3 inches (Sun, 2006). Gender differences in height and weight during birth to age 5 years are minimal. These are general guidelines for monitoring the growth of children during the preschool years.

Food intake and feeding practices can vary during age 3-5 years. Satter (2005) has developed guidelines based on a positive attitude towards food and structured meal times. Preschoolers are excellent at regulating food intake, but external influences can reduce this ability to self-regulate. Preschoolers will eat larger portions than their bodies require if coerced or pressured. Developmentally, children ages 3-5 years aim to please their parents and other adults. If they are encouraged to, "clean their plates", children will often consume larger amounts of food even if they are not hungry. Children at this age can be encouraged to try new foods and to learn from a variety of meals. Preschoolers are capable of making food choices and participating in family meal times. This is a critical time period to promote healthy eating habits and appropriate meal time behaviors. Although there is no formula for portion size at this age, a typical 3-5 year old child will eat 3 meals a day with additional snacks. It is important to provide small portions and allow the child to self-regulate hunger (Satter).

In addition to nutrition, sleep is important for healthy growth and development of young children. The National Sleep Foundation (2009) suggests that preschool -age children sleep 11-13 hours per night. Children ages 3 and 4 years should also have a 1-2

hour nap each day. Most children do not nap after 5 years of age. Preschool children can often experience difficulty falling asleep and remaining asleep for the entire night. Providing a bedtime routine and a consistent sleep schedule can help promote a full night's sleep.

The preschool years are often the first opportunity for a child to socialize with other children and adults outside the family unit. Children are active participants in socialization and want to understand what is demanded of them. The development of social categories takes place during the preschool years. The child and the environment determine the development of socialization (Fischer, Hand, Watson, Van Parys, & Tucker, 1983). Children learn through experience and through play. Fostering different social environments such as preschool, play groups, and organized activities enables children to develop social skills and learn through experience (Fischer, et al.). "During preschool, children will enjoy making new friends, but also learn how to deal with the emotions that can accompany fear and rejection" (Mayes & Cohen, 2002, p. 345). Childhood friendship is the foundation for future social interactions; it is the practice ground for dealing with the range of emotions of interpersonal relationships (Mayes & Cohen). In general, a 3-5 year old child should be exploring all aspects of the environment. By encouraging a preschooler to try new opportunities through food, play, and socialization, he/she will continue to self-regulate and develop positive habits. Positive reinforcement from adults and a structured environment for all activities, including sleep, is beneficial and appropriate at this age (Satter, 2005).

Causes of Childhood Obesity

There is no one cause of obesity in children. Genetics, diet, and physical activity play a role in determining a child's weight. Family practices such as cultural norms regarding diet and food practices can influence a child's weight and nutrition.

Parenting style and environmental factors contribute to foods that are readily available and to the way in which meals are eaten. All of these factors can influence the weight gain of a developing child.

Biological contributors. One emerging area of research on causality of obesity includes the biochemical make-up of overweight children. Pediatric medical studies have found that an average child digests sugar and experiences a "high" as the biochemicals in the body react. Obese children do not have the same biochemical reaction as children of typical weight (Lustig, 2008). Rather than experiencing a surge of energy as typically developing children do, an overweight child experiences a chemical reaction that results in a desire for more food. This is caused by the chemical leptin, which is released when sugar enters the digestive system. Lustig's findings indicated that in normal children, leptin signals the hypothalamus which then triggers the sympathetic nervous system, which in turn increases physical activity. In children who are overweight, the leptin does not trigger the hypothalamus when food is ingested; it makes the brain "think" it is starving rather than being fed. This reverse reaction in the body should not be novel to pediatricians, argues Lustig, because the effect is also seen in individuals with diabetes, insipidus, narcolepsy, and schizophrenia. It is still unclear if obesity leads to the dysfunction of leptin or the dysfunction of leptin

leads to obesity. However, further research could lead to effective intervention and prevention plans for children dealing with overweight and obesity.

Familial contributors. Familial factors include cultural differences as well as genetics. Overweight has increased among all children with some disparities among racial groups (CDC, 2008b). A genetic link has been found in children of First Nation descent or Native Americans. First Nation refers to the first people known to have inhabited Canada. Willows et al. (2007) found that among First Nation children, ages 2-3 years, 34.6% of boys and 45.2% of girls were regarded as overweight or obese. The difference between racial groups also appears to vary within age groups. For example, Caucasian boys, ages 12-19 years seem to have a higher prevalence of overweight than Hispanic boys of the same age (CDC, 2008b). However, in a sample of 3 year olds, Hispanic children had higher rates of obesity than their Caucasian peers (Kimbrow, Pietrobelli, Johnson, & Faith, 2007).

Parenting style may be a contributing factor to obesity in children ages 3-5 years. Parents who perceive their child as being overweight tend to restrict his or her food intake. Restrictive feeding impedes a child's ability to self-regulate energy intake, promotes eating in the absence of hunger, and often leads to overeating, thus increasing the overweight status of the child (Keller, 2002). Satter (2005) argues that restricting or forcing food, even in infancy, can lead to distorted eating patterns by 3 years of age. Whether or not a parent believes his/her child is under or overweight, obesity can result from feeding habits forced upon an infant or toddler. With the exception of infants born with developmental or genetic disorders, humans are born with the

natural reaction to eat when hungry and stop when satiated. This is a realization that parents must rely on when feeding their young children (Satter).

High birth weight also appears to be a risk factor for childhood obesity, especially if the mother is obese (Kimbrow, et al., 2007). There is a link between maternal BMI and birth weight in predicting childhood obesity, but there is no link with paternal BMI (Watkins, et al., 2007). Maternal hyperglycemia during pregnancy strongly predicted BMI in offspring at 5-7 years, indicating a type of prenatal programming (Ludwig, 2007). If a child has a high birth weight, and is primarily cared for by an overweight mother, it appears that the unhealthy eating habits of the mother are passed to the child who then in turn becomes overweight as well.

Sibling studies led by Keller et al. (2006) focused on families in which one sibling was overweight and the other(s) maintained a healthy weight. Sedentary behavior is one example of how children can differ within a family. A child that spends time watching television and playing video games is displacing physical activity time. Children also have a tendency to snack while engaged in sedentary behavior and are influenced by media advertising. Sedentary behavior also lowers the metabolic rate and can influence unhealthy food habits (CDC, 2008a). It has been noted that television watching and sedentary behavior does not appear to have a significant effect on weight until after age 4 years. At age 5 years, sedentary behavior appears to play some role in overweight status and by age 6 years it is a well-established factor (Kondro, 2008). Watkins, Clark, Foster, Welch, and Kasa-Vubu (2007) found that a critical component in this behavior is that parents do not seem to recognize sedentary behavior as a contributing factor to their child's overweight problem, especially if the parents are

overweight themselves. A low level of physical activity in preschoolers has been associated with an increased amount of subcutaneous fat by first grade (Hassink, 2007, p 71).

Culturally, Hispanic families are more highly inclined to give children a bottle when putting them to sleep; this is a risk factor for being overweight. Hispanic families tend to consume more fat-containing foods and whole milk, which could contribute to the higher percentage of 3- year- old children who are overweight, compared with non-Hispanic white and black children of the same age (Kimbrow, et al., 2007). Hispanic mothers also tend view underweight children as experiencing a failure to thrive but overweight children are perceived as healthy (Keller, et al., 2006). Diet and an imbalance(??) of fatty foods are influential to a child's weight management. However, a common perception is that children are gaining weight due to television and video games rather than to diet.

Greenland is a country that has not been greatly influenced by Western culture; therefore, sedentary behavior including viewing television and playing videogames are not factors when considering the rise in obesity. Greenland researchers such as Niclasen et al. (2006), however, focused on sugar-sweetened beverages and sweets. It has been indicated that 2-3 sugar-sweetened beverages or sweets a day are given to preschool age children which appears to be a significant contributor to the rise in obesity in Greenland.

Personal factors. Just as every human has unique physical and emotional features, each has his/her own eating habits. Some infants are born wanting to feed for long periods of time, gaining a significant amount of nourishment in one sitting, yet

others prefer small feedings more frequently (Satter, 2005). There is a common fear among parents that their children will not thrive if they do not eat enough, or they will become obese if they eat too much. Waking a child to eat is a common recommendation from physicians to parents of low birth weight infants. Restricting food for large babies is also advised. What is not noted is that this is necessary only for extreme cases and even then it should be monitored. According to Satter, children will grow at their own personal rates. Respecting their individual eating habits will promote healthy eating throughout their lives. Although preschool age children can be picky eaters, monitoring portion size can ensure appropriate nutritional intake. MyPyramid (United States Department of Agriculture, 2005) provides a guideline for portion size and nutritional recommendations for children. A child age 3-5 years does not need to eat the exact number of servings recommended on MyPyramid each day. However, over the course of 1-2 weeks, daily intake should average the number of recommended servings (Hassink, 2006).

Environmental factors. Although being overweight is prevalent among all SES levels and races, some of the contributing factors in low SES families include the inability to afford healthy meals or leisure activities that would promote physical activity (Kimbrow et al., 2007). If a family lives in an unsafe neighborhood the amount of physical activity that could be provided to a child is limited (CDC, 2008c). In addition, community access to physical activity and affordable, healthy food choices may be scarce, increasing the risk factors for obesity in young children. First Lady, Michelle Obama, has started an obesity campaign titled, *Let's Move*. *Let's Move* addresses the causes of obesity including access to healthy foods for all American children

(www.letsmove.gov/accessing, 2010). The Healthy Food Financing Initiative will invest \$400 million per year to bring grocery stores to underserved areas and help convenience stores and bodegas (???) carry healthier food options. More than 6.5 million American children live in areas where healthy, affordable food is limited. In addition, 16.7 million children live in households that experience hunger multiple times throughout the year. *Let's Move* aims to assist low-income neighborhoods that are dealing with this issue in order to provide affordable, nutritious food choices for millions of children across the country (www.letsmove.gov/accessing, 2010).

In addition to promoting healthier eating in the community, *Let's Move* is also intervening in schools. The Child Nutrition Act will be reauthorized with improvements based on the 2009 Institute of Medicine study regarding healthy eating for children. Over 31 million children participate in the National School Lunch program, providing an opportunity to educate children on healthy food choices and provide a nutritious meal (www.letsmove.gov/schools).

Physical activity and diet factors. As stated in *The Lancet*, "Berating people to eat less and exercise more is futile when energy-dense foods are cheaper and more readily available than healthier alternatives, and when cities have been designed for cars rather than exercise" (Devi, 2008, p. 106). In reality, obesity ought to be preventable and treatable. However, it is modern lifestyle (transportation and convenient-low nutrition foods) that predisposes individuals to obesity. A dietary factor that contributes to disorders in energy balance is increased consumption of sweetened beverages. In children 2- 3 years of age who have a BMI of 85%- 95%, one extra sweetened beverage a day can double their chances of having a BMI over 95% the following year (Hassink,

2007, p. 71). Communication about diet is crucial as preschoolers move into environments outside the home. Consuming an extra 150 calories per day at age 3-5 years can lead to a 15-pound weight gain the following year (Hassink, p. 72).

Although there are limited data on weight intervention programs for 3-5 year old children, information can be gained from programs implemented with school age children. Literature supports the fact that low-calorie diets have an adverse effect in the long-term. Braet, Tanghe, Decalwe, Moens, and Rossel (2004) focused a study on healthy eating, physical activity, and behavioral changes. Over a 10-month period, children ages 7-17 years were treated in an inpatient facility. The children included in this study had already failed to lose weight during an outpatient study. The participants were provided with 3 meals a day and 2 snacks that followed the MyPyramid guidelines for their age and equaled approximately 1400-1600 calories per day. They also had 14 hours per week of physical activity including organized sport, swimming, jogging, and cycling. The participants engaged in Cognitive Behavioral Therapy (CBT) for the first 12 weeks of the programs to address the behaviors behind unhealthy eating habits. With these interventions in place, children lost an average of 45 pounds and their BMI dropped by 8.6. These results indicate that weight loss in children is directly influenced by access to healthy food choices and physical activity.

Age is an important factor when looking at weight management and intervention. It is hypothesized that interventions would be even more effective and less intense with children ages 3-5 years. Young children have less experience with unhealthy eating habits and would be more open to acquiring new habits. Young children are also growing at a more rapid pace than school aged children; this requires

energy. They do not require as much physical activity to maintain an effective energy balance (Braet, et. al. 2004).

Consequences of Childhood Obesity

Psychosocial. Current research focusing on the preschool population indicates that social/emotional factors are just as important as cognition and attention when examining school success (Fantuzzo, Bulotsky-Shearer, McDermott, McWayne, & Frye, et. al, 2007). Definition for school success would include academic achievement as well as positive social relationships. It is widely accepted that children from low-income families are often at risk for school failure due to lack of instruction or exposure to school readiness skills, indicating that early intervention is a valuable resource. By acknowledging the importance of positive social/emotional growth in preschool children, early intervention regarding healthy diet and physical activity should be a focus; this should be done in addition to academics because overweight children are at greater risk for social/emotional issues (Fantuzzo, Perry, & McDermott, 2004).

Strauss and Pollack (2003) examined social isolation in overweight adolescents. Overweight adolescents were found to be more socially isolated than their normal-weight peers. Although they listed a similar number of friends as the normal-weight group, the overweight adolescents did not receive as many friend nominations. Normal weight adolescents received more friendship nominations and they were more likely to receive at least one best-friend nomination. In contrast, overweight adolescents were less likely to receive a best-friend nomination. This study summarizes the social isolation that overweight and obese children can experience.

Few peer relationships or poor peer relationships and peer rejection can affect self-esteem and depression. Friedlander, Larkin, Rosen, Palermo, and Redline (2003) examined the association between health-related quality of life and BMI. The population consisted of 371 children ages 8 to 11 years; 17.5% of the children were considered overweight and 12.4% were considered at-risk for being overweight. Sixty-two percent of the population was considered of normal weight and 8.1% was considered underweight. Results indicated that overweight children, when compared to normal weight children, scored lower on the Psychosocial Health Summary and on subscales measuring self-esteem, physical functioning, and parental emotional well-being. This study indicates that even at age 8 years, children have increased odds of low scores for several health-related quality of life domains.

Obese children have been found to have higher rates of depression when compared with their normal weight peers. In a sample of 108 girls ages 12 to 17 years, obese girls scored significantly higher on indicators of depression and low self-esteem when compared with their normal weight peers (Tomlinson, 2005).

Disordered eating also impacts weight. Children who are obese are more likely than their average weight peers to develop bulimia nervosa or binge eating disorder as adults (Epstein, Paluch, Saelens, Ernst, & Wilfley, 2001). Many children turn to diets to address their weight gain. However, excessive dieting in children may also be related to eating disorders as adults (Epstein, et. al., 2001).

Medical. Pediatric healthcare in the United States has historically been low in cost for consumers and for insurance companies. Because of the health factors associated with childhood obesity, the cost of pediatric healthcare is predicted to rise

dramatically during the next decade (Ludwig, 2007). In the United Kingdom, it is the Treasury Department, rather than the Department of Health, that is asking the government to address obesity on a national level. The Treasury Department seeks to use National Health Service budgets towards aiding the elderly or funding cancer treatment rather maintaining those suffering from avoidable obesity. The cost of obesity related healthcare will experience a rise at the pediatric level and continue to grow as children who are overweight are 5-20 times more likely to remain overweight into adulthood (Watkins, et al., 2007).

Between the years 2001-2006, the number of female children ages 10-16 years who were prescribed medication for type 2 diabetes rose 59% in the United States (Devi, 2008). It is predicted that by 2030, 37% of men and 44% of women will be obese, resulting in increased chances of heart attack, chronic chest pain, and death before age 50 (Devi). Because of the increased number of obese children who remain obese into adulthood, it is predicted that by the year 2035, 16% of Americans will experience coronary heart disease. Currently 5% of Americans have coronary heart disease (Ludwig, 2007).

Ludwig (2007) also notes that obesity rates are predicted to accelerate through transgenerational mechanisms if an effective intervention is not developed and implemented. Having excessive weight when young may elicit irreversible biological changes in hormonal pathways, in fat cells, and in the brain; these will increase hunger and adversely affect metabolism. Children who are overweight are more likely to have disordered eating and develop anxiety and depression. They are less likely than their thinner counterparts to achieve in college and more likely they will live in poverty.

Watkins et al. (2007) found that elevated BMI in childhood is a predictor of hypertension or high-blood pressure in early adulthood. Hypertension increases the risk of heart disease and stroke. Those who remain overweight for a long period of time are more likely to develop type 2 diabetes which can lead to liver failure, amputation of limbs, and early death (Ludwig). Other medical concerns include fatty liver, high blood pressure, gastroesophageal reflux, orthopedic problems, insular resistance, dyslipidemia, emotional problems, and sleep apnea. Ludwig also predicts that by mid-century, the effects of pediatric obesity could be seen through a shortened life span of 2-5 years. This is an effect equal to all cancers combined. The risk of dying by middle age is 2-3 times as high among obese adolescent girls as it is in their non-obese peers. Devi (2008) concludes that today's children are the first generation in United States history to have a life span that is predicted to be shorter than their parents' life span.

Obesity during pregnancy has been linked to severe medical consequences. As reported by Caughey (2006), researchers Villamor and Cnattingius examined a cohort of 150,000 Swedish women with two births and found that BMI was a predictor of perinatal morbidity. Women who were three or more units above average BMI (an approximately 5'4" woman weighing 157 lbs) showed an increased risk in stillbirths, caesarean delivery, pre-eclampsia, gestational diabetes, and large- for- gestational-age infants, as compared with women of average BMI.

Medical research has identified a link between oral health care and obesity. Grossi, Collier, and Perkin (2008) have studied this link and found that poor oral health is a common side effect of obesity, specifically in the areas of tooth decay and periodontal disease. Many behaviors that obese children engage in such as consuming

sweetened beverages and food, taking bottles to bed and general over-eating put them at high risk for oral health disease. Children who are being treated by a dentist for poor oral health should be considered at-risk for overweight. Children who are receiving treatment for being overweight should have an oral health care component to prevent the irreversible damage of periodontal disease (Grossi et al., 2008).

Parent Perceptions

A major concern when intervening with overweight children is the unrecognized need for parents to seek assistance. In one study, only 20% of mothers who identified themselves as overweight correctly identified their children as being overweight (Watkins, et al., 2007). Parents tend to overlook the severity of having a child who is overweight, especially at early onset (i.e., when being overweight is apparent by age 3 years). Parents tend to believe genetics are the critical contributors to obesity rather than environmental factors, which would lead to feelings of helplessness in controlling their children's weight. Further research from Watkins et al. found that many parents do not view terms such as big-boned, chubby, strong, or plump as synonyms of overweight.

Parents may believe that their children will outgrow their excess weight or believe their children are of normal weight for their ages. Parents often do not become concerned about weight issues until their child experiences teasing, bullying, or peer rejection (Jackson, Strauss, Lee, & Hunter, 1990). Because parents have a difficult time recognizing their children as being overweight, they do not seek help until their children have already reached the overweight or obese category (Edmunds, 2005). In addition, when a parent does seek treatment, it often does not occur until the child

reaches school age, leaving a population of 2-5 year olds without intervention or prevention care. Parents tend to try their own methods of controlling weight before they seek outside assistance (Edmunds). Parents may believe that their pediatricians do not have the resources or knowledge to assist with weight problems; this prevent them from seeking assistance in the early stages of weight gain. If parents have a difficult time identifying their child as overweight, a teacher in their child's life could be another adult to identify a possible weight issue.

Teacher Training

The New Jersey Department of Education (NJDOE) adopted standards of quality for preschool teachers in July 2004. The standards of quality known as Preschool Teaching and Learning Expectations, determine the areas in which preschool teachers are trained in the state of New Jersey. The categories of competence are Home, School and Community Partnership; Learning Environment; The Documentation/Assessment Process; Social/Emotional Development; Creative Arts; Health, Safety and Physical Education; Language Arts Literacy; Mathematics; Science; Social Studies, Family Life Skills, and World Language. Under the category of "Health, Safety and Physical Education", there are five expectations. Of those five, one focuses on an obesity risk factor. "Expectation 1: Children develop the knowledge and skills necessary to make nutritious food choices" (NJDOE, 2004, p. 32). The guidelines to satisfy this expectation include experiencing a variety of foods in the classroom, such as foods from different cultures. Learning materials such as play food and books about food should be available in the classrooms. The guidelines also encourage teachers to inform parents about nutritious food choices through newsletters or parent conferences. The physical

education components of this expectation focus on the development of fine and gross motor skills rather than on the health benefits. The New Jersey Education Department Standards drives the educational training of preschool teachers. With only one curriculum expectation focusing on an obesity risk factor, the assumption can be made that preschool teachers are not exposed to current information on obesity.

A second resource for preschool teacher training is the National Association for the Education of Young Children (NAEYC). NAEYC promotes 10 program standards for early childhood education. Health and Safety is one of the 10 categories and is defined as “Promoting the nutrition and health of children and protecting children and staff from illness and injury” (NAEYC, 2009). NAEYC holds a national convention each fall, as well as a professional development conference each spring. According to the NAEYC published itineraries, the topic of obesity has not been presented during recent NAEYC conventions. Workshops and presentations that fall under the health and safety standard will usually focus on illness, safe and healthy classroom environments, and on protecting teachers and students from infection. There seems to be a lack of education on the general topic of obesity and the risk factors that could be apparent in preschool age children.

Teachers receive training through their college programs and supplemental professional development. Currently, both the New Jersey state requirements and the leading association for preschool teachers lack sufficient focus on obesity education. Nutrition and play are addressed, but from the social standpoint of promoting peer interaction and positive behavior. It appears that with a lack of education during the

teacher training process, the risk factors of obesity will continue to go unnoticed by the educational professionals working with this population.

The literature supports a need for intervention and prevention programs to target the issue of overweight and obesity in America's young children. This research study aims to discover the current knowledge base on obesity of the professionals that work closely with young children. Preschool teachers are a critical component of educating and shaping the behaviors of children. They have the potential to influence greatly, the eating behaviors that can be carried throughout life. This study provides information on areas in which preschool teachers require more training in order to be able to provide healthy eating and exercise habits to their students.

Analysis

The National Health and Nutrition Examination Survey (NHANES) reported that in 2004, 13.9 % of 2-5 year olds were overweight. The literature supports an increase in obesity among preschool age children; however, prevention and intervention programs have not targeted this age group. Therefore, the first research question was: Do preschool teachers indicate that a percentage of 3-5 year old children are obese as defined by medical standards? To address this research question, the mean and standard deviation of responses for each question was computed. Frequencies of responses were also compared. This research question focused specifically on survey questions 1-8 on which participants were asked to rate their responses on a 5- point Likert scale (1-Strongly disagree, 2-Disagree, 3- Neutral, 4- Agree, 5- Strongly agree).

Question 18 asked the rater to rank contributing factors to obesity as they apply to 5 year old children. The results demonstrated the current knowledge base of preschool teachers on the causality of obesity.

The literature supports the idea that there are long-term medical and social-emotional consequences to being obese as a child. Devi (2008) concludes that today's children are the first generation in United States history to have a predicted life span shorter than their parents because of medical and social-emotional issues related to obesity. Therefore, the second research question was: Do preschool teachers believe that being overweight or obese at ages 3-5 years can adversely impact future physical and emotional growth? To address this research question, the mean and standard deviation of each question was calculated and frequency of item responses was examined. This research question focused specifically on survey items 9-16. These questions were answered on a 5-point Likert scale. The results of this analysis provided an understanding of how teachers rate the long-term consequences of being obese at ages 3-5 years.

Let's Move was developed in reaction to the research on childhood obesity. An awareness of the issues surrounding childhood obesity resulted in intervention and prevention programs in the United States (www.letsmove.gov/accessing, 2010). Therefore, the third research question was: Do teachers who have received training on the risk factors of obesity view intervention at the preschool level as more important than those teachers who have not received education on the risk factors of obesity. To address this research question, correlation analysis was conducted to compare the results provided by teachers with obesity risk factor training relative to those teachers

without obesity risk factor training, specifically in the final section of the survey, which included 5 questions. This indicated if teachers were incorporating their knowledge into current practice.

The final open-ended question on the survey was qualitatively analyzed for themes and variation. This information was used to determine areas in which future research was needed.

CHAPTER 2

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Participants and Setting

The sample consisted of 103 preschool teachers employed in the state of New Jersey. Preschool teachers are defined as individuals who hold a teaching certificate and who currently educate children between 3 and 5 years of age. A teacher contact list was obtained through school district Web sites, which provide teacher e-mail addresses. This is publicly posted information through district Web sites; therefore, permission to use the email addresses was not required. Obtaining teacher contact information through district Web sites ensured the fact that those surveyed are currently licensed and employed preschool teachers. Approximately 1000 preschool teachers employed by public school systems in New Jersey received the survey. Informed consent was distributed with the survey. Because the survey was distributed via the internet, participants provided informed consent by clicking on the “Next” button and entering the survey. No identifying information was included in the survey responses. Demographic information included gender, age, training in the area of obesity risk factors, and number of years in the profession of the preschool teacher.

Design

The proposed study utilized a survey research design. The survey that was distributed to participants consisted of information regarding contributing factors and long-term consequences of obesity, based on the literature. Participants were asked to rate their knowledge and perceptions on the topic of obesity in children ages 3-5 years. Participants were also asked to add any additional comments or suggestions at the end of the survey. In addition, participants were asked to supply demographic information as well as information

on their training experiences. The data that was collected provided useful information on the current knowledge base of preschool teachers regarding obesity (Appendix A).

Independent Variables

The independent variables in this study consisted of the topics identified in the survey. The topics are broken into introductory information, causality, consequences, and current practice. Additional independent variables included demographic characteristics, specifically gender, age, years of experience teaching preschool, highest degree of education, and training.

Dependent Variables

The dependent variables in this study are the assigned ratings that the participants provided in each topic area. The participants were asked to rate each of the questions according to a 5- point Likert scale: 1 – strongly disagree; 2- disagree; 3- impartial; 4- agree; 5- strongly agree. In addition, the participants were asked to supply any information or suggestions regarding the topic that they believed were not addressed in the survey. The ratings were analyzed to determine how preschool teachers rated the importance of each of the survey questions. Open- ended questions were also collected and analyzed. The survey was developed to better understand the knowledge and perceptions that preschool teachers possessed regarding obesity in children, ages 3-5 years.

Setting

Participants employed by public school districts in the state of New Jersey participated in the survey. Identifying information was not included with the surveys. At no time did the researcher have access to e-mail addresses paired with responses of the survey. The survey consisted of questions regarding the contributing factors and risks of obesity. The

questionnaire included the definition of obesity as “the imbalance of calorie intake and calories a child uses for normal growth, development, metabolism, and physical activity” (CDC, 2008c). The term overweight was also used throughout the survey. The definition for overweight for the purpose of this study was “weighing more than a standard level for weight and height” (Fields, 2006 p. 2).

The researcher developed the survey items by identifying issues in the research literature on obese preschool age children and the knowledge of preschool teachers about the topic. This included preschool teacher perceptions of obesity in 3 to 5 year olds as well as the possible impact on their future academic, medical, and social-emotional health. The survey included 16 items, using a 5-point Likert scale. Survey questions 1- 8 addressed the current information that preschool teachers have on the topic of obesity. Questions 9-16 gained a sense of perceptions regarding the causality of obesity. Survey questions 17-18 gained an estimate of teacher perceptions regarding general knowledge on obesity. A final section of 5 questions surveyed the current practices that teachers incorporate into their classrooms regarding physical activity and eating habits. One open-ended question concluded the survey to allow teachers to provide input that was not specifically addressed through the survey questions (Appendix A).

Three independent preschool teachers, three independent school psychologists, and a market research planner edited the items on grammar, clarity, and the extent to which the items display important factors in the area of knowledge. They provided feedback that included the way in which items were worded and the structure of the question. Items 17 and 18 were created, based on the feedback. There was agreement by the six raters that the survey

contained items that were clear and that they contained key information on knowledge of children ages 3-5 years categorized as obese.

Procedure

The survey questions were designed based on the literature and research questions of this specific study. A contact list was gathered using the NJDOE Web site. This Web site provides links to each school district by county. Each school district Web site lists employed teachers and their individual e-mail addresses. This is public information and can be accessed without seeking permission from the school district.

A pilot study was conducted by sending the survey to a random selection of 100 teachers from the list of collected e-mail addresses through the private online company, “Survey Monkey”. This company assists with survey design studies and data collection, for a fee. Survey Monkey provides a privacy policy, which is described in the introduction of the survey (Appendix B). Participants were asked to access the survey via e-mail (Appendix C). When participants clicked the “next” button to proceed to the study, it was understood that they were providing informed consent.

Those who agreed to participate in the study were asked to click on a link to access the Web site. The instructions stated that the purpose of the study was to gain information concerning obesity/overweight in preschool children. Participants were also informed that the study would fulfill the requirements for the doctoral degree of the student investigator. Reminder e-mails were sent 1 week after the original survey was sent and again 1 week later (Appendix D). The survey responses were collected via surveymonkey.com and the researcher was blind to the responses. The responses were kept confidential and no identifying information was included in the survey.

The pilot was used to predict rate of return and demographic group size. Clarity and content of the survey were also reviewed, using rater feedback.

The survey was then distributed to the remaining list of preschool teachers, using “Survey Monkey”. The same procedure that was utilized for the pilot survey was repeated for the larger pool of participants. The survey was sent to approximately 800 teachers employed by public school districts in the state of New Jersey. The data collected were organized by surveymonkey.com and the principal researcher in the study analyzed the data.

CHAPTER 3

RESULTS

Of the approximately 800 teachers to whom the surveys were sent, 103 preschool teachers completed the survey. Of the 103, 8 participants were excluded from the analysis, because they did not answer the majority of the survey questions.

The frequency of items responses, means and standard deviations were examined to determine if the presented research questions were supported. A Pearson correlation was used to compare demographics to survey item responses.

Demographics

Table 3.1. *Demographic characteristics of preschool teachers who responded to the obesity survey*

Characteristic	N (%)
Sample Size analyzed	95
Gender	
Male	3 (3.3)
Female	89 (96.7)
Missing	3
Age range:	
20-30	19 (20.7)
31-40	17 (18.5)
41-50	23 (25.0)
51-60	29 (31.5)
61+	4 (4.3)
Missing	3
Years teaching:	
1 year	3 (3.2)
2-5 years	12 (12.9)
6-10 years	22 (23.7)
11+ years	56 (60.2)
Missing	2

Table 3.1. *Continued*

Characteristic	N (%)
Years teaching preschool:	
1 year	7 (7.6)
2-5 years	21 (22.8)
6-10 years	27 (29.3)
11+ years	37 (30.2)
Missing	3
Highest degree of education:	
Bachelor's	53 (57.6)
Master's	38 (41.3)
Doctorate	1 (1.1)
Missing	3
Degree of training on the topic of obesity:	
None	67 (72.0)
1-2 classes/workshops	21 (22.6)
2-4 classes/workshops	1 (1)
Component of teacher course work	4 (4.3)
Missing	2
Socioeconomic status of the population I teach:	
Lower-class	24 (25.5)
Lower-middle class	29 (30.9)
Middle class	19 (20.2)
Middle-upper class	22 (23.4)
Upper -class	0 (0)
Missing	1
Preschool population I teach are of the following ethnic background:	
Caucasian/white	62 (66.0)
Asian	0 (0)
African American	10 (10.6)
Hispanic/non-white	19 (20.2)
Other	2 (3.9)
Missing	1
The majority of students I teach are:	
Typically developing 3-5 year olds (general education)	56 (59.6)
3-5 year olds receiving special education	38 (40.4)
Missing	1

Of the 95 responders, the majority were female (96.7%), which was expected because the profession of preschool teachers is predominately female. Only four participants were older than 61 years of age. Most participants had been teaching for 11 or more years (60.2%), with 40.2% having taught preschool, specifically, for 11 or more years. Approximately half the responders hold a bachelor's degree (57.6%), with the other half holding a master's degree (41.3%) and 1 participant holding a doctorate. As expected, the majority of participants indicated that they had never received training on the topic of obesity (72%).

Responders provided demographic information regarding the preschool students they teach. None of the teachers surveyed believed she/he taught students who were considered upper class and students were equally distributed among the 4 other options of SES status. Of the teachers surveyed, 23.4% indicated they taught students who were considered middle-upper class; 20.2% considered their students middle class; 30.9% considered their students lower-middle class and 25.5% considered their students to fall in the SES category of lower class. Most preschool teachers indicated that the majority of the students they taught were Caucasian/white (66%). The participants responded that about half of them taught typically developing 3-5 year old children (59.6%) and the other half taught children receiving special education (40.4%).

Research Question 1

The first research question asked if preschool teachers are unaware that children age 3- 5 years of age can be medically categorized as overweight or obese,

evidenced by ratings of Strongly Disagree or Disagree on questions 1,2, 4, and 7 and Strongly Agree or Agree on questions 3, 5, 6, and 8. A rating scale of 1-5 was used, with 1 being Strongly Disagree and 5 being Strongly Agree. Question 18 asked the rater to rank contributing factors to obesity as they apply to 3-5 year old children. The results (Table 3.2) demonstrate the current knowledge base of preschool teachers concerning the causes of obesity. A higher rating indicates that respondents agreed with the statement and a lower rating indicates they disagreed with the statement.

Table 3.2. *Descriptive statistics for items 1-8*

Survey Item	Mean	SD
2. Being obese at age 3-5 years will affect future growth and development.	4.45	.73
7. Having an obese mother greatly increases the chances of a 3-5 year old being obese.	3.95	.75
1. I believe obesity is a significant problem facing children age 3-5 years old.	3.65	.97
6. 3-5 year olds are naturally active enough to burn off the calories they consume each day.	3.37	1.08
8. Restricting food has a positive effect on managing weight in 3-5 year olds.	2.92	.99
4. 3-5 years old should NOT have diet restrictions.	2.49	.85
5. Obesity occurs after several years of eating a high fat diet and lack of exercise.	2.24	.79
3. Obese 3-5 year olds often outgrow their weight problems.	2.13	.78

Table 3.3 Frequency of responses for items 1-8

Survey Items	Frequency of Responses (%)				
	1	2	3	4	5
1. I believe obesity is a significant problem facing children age 3-5 years old.	2(2.2)	11(11.8)	21(22.6)	43(46.2)	16(17.2)
2. Being obese at age 3-5 years will affect future growth and development.	2(2.1)	0(0.0)	1(1.1)	41(43.6)	50(53.2)
3. Obese 3-5 year olds often outgrown their weight problems.	16(17.0)	58(61.7)	13(13.8)	7(7.4)	0(0.0)
4. 3-5 years old should NOT have diet restrictions.	6(6.5)	52(55.9)	20(21.5)	15(16.1)	0(0.0)
5. Obesity occurs after several years of eating high fat diet and lack of exercise.	9(9.7)	63(67.7)	10(10.8)	11(11.8)	0(0.0)
6. 3-5 year olds are naturally active enough to burn off the calories they consume each day.	2(2.2)	24(26.4)	16(17.6)	38(41.8)	11(12.1)
7. Having an obese mother greatly increases the chances of a 3-5 year old being obese.	0(0.0)	6(6.4)	11(11.7)	59(62.8)	18(19.1)
8. Restricting food has a positive effect on managing weight in 3-5 year olds.	3(3.3)	35(38.5)	24(26.4)	25(27.5)	4(4.4)

Note. 1=Strongly Disagree 2= Disagree 3= Impartial 4= Agree 5= Strongly Agree.

To address this research question the mean response and frequencies (Table 3.3) were examined to determine if teachers answered survey questions 1-8 and 18 as hypothesized. Survey item 2 had the highest mean ($m=4.45$) because 91 preschool teachers agreed or strongly agreed that being obese at age 3-5 years affects future growth and development. The majority of preschool teachers (59) agreed with survey item 7, which stated that having an obese mother did increase the chances of being obese at age 3-5 years old ($m=3.95$). On item 1, forty-three preschool teachers agreed that obesity is an issue at age 3-5 years olds ($m=3.65$) With a mean closer to 3, fewer teachers agreed (38) or strongly agreed (11) with item 6, that preschool children naturally burn off their caloric intake ($m=3.37$). Preschool teachers provided a mixed response on item 8 which stated that restricting food would have a positive effect on

weight in 3-5 years olds ($m=2.92$). Twenty-five teachers agreed with this statement; 35 teachers disagreed with the statement and 24 were impartial. The majority of participants (52) disagreed with item 4, that children age 3-5 years should NOT have diet restrictions ($m=2.49$). Sixty-three preschool teachers disagreed with item 5, that obesity occurred after several years of poor diet and lack of exercise ($m=2.24$). They also disagreed (58) or strongly disagreed (16) with item 3, that 3-5 year old children outgrow their weight problems ($m=2.13$).

Table 3.4 *Descriptive statistics for item 18*

Item	Mean	SD
18. Please rank the following in order of importance, where 1 is least associated with obesity and 5 is most associated.		
High sugar content foods and beverages	3.78	1.40
Food practices (planned meal times, eating norms)	2.45	1.21
Inactive behavior	3.73	1.19
Genetics	3.00	1.25
Diet (balanced nutrition)	3.04	1.59

Table 3.5 *Frequency of responses for item 18*

Variable	Frequency of Response (%)				
	1	2	3	4	5
High sugar content foods and drinks	8(13.3)	4(6.7)	7 (26.7)	16(26.7)	25(41.7)
Food practices	19(27.9)	16(23.5)	21(30.9)	7(10.3)	5(7.4)
Inactive behavior	3(4.2)	10(13.9)	15(20.8)	19(26.4)	25(34.7)
Genetics	14(17.1)	13(15.9)	23(28.0)	23(28.0)	9(11.0)
Diet	21(24.4)	18.6(16)	11(12.8)	12(14.0)	26(30.2)

Note – 1= least associated with obesity – 5= most associated with obesity

When preschool teachers were asked to rank causes of obesity, the mean response rate was approximately 3 for all items, indicating that preschool teachers are unsure of the factors that contribute to obesity at ages 3-5 years. Twenty-six teachers ranked diet as the variable most closely associated with obesity in 3-5 year old children. However, 21 teachers believed diet was the least closely associated variable with obesity. Twenty-five preschool teachers indicated high sugar content foods and drinks were most closely associated with obesity. Twenty-five teachers believed inactive behavior was the most closely associated variable with obesity. Therefore, teachers indicated several contributing variables, but did not agree that any one variable was most closely associated with obesity in children 3-5 years.

In sum, preschool teachers agreed that 3-5 year olds are capable of being obese, which did not support the present research question. However, Table 3.5 indicates that preschool teachers are not aware of the highest contributors of obesity in 3-5 year olds.

Research Question 2

The second research question was that preschool teachers do not believe that being overweight or obese at ages 3-5 years can negatively impact future physical and emotional development, evidenced by responses of Strongly Disagree or Disagree on questions 9, 10, 12, and 15 and responses of Strongly Agree or Agree on questions 11, 13, 14, and 16. A high rating indicates that preschool teachers agree with the statement and a low rating indicates that they disagree with the statement.

Descriptive statistics (Table 3.6) and frequency of item responses were examined for survey items 9-16.

Table 3.6 *Descriptive statistics of items 9-16*

Item	Mean	SD
9. I am concerned for the future social/emotional development obese 3-5 year olds.	4.36	.55
10. I am concerned that obese 3-5 year olds could develop diabetes, cardiovascular disease and orthopedic problems in the future.	4.36	.54
15. Unhealthy eating habits at age 3 years can impact eating habits throughout one's lifespan.	4.35	.78
12. Obese 3-5 year olds are MORE likely to be obese as adults than their peers of average weight.	4.12	.73
11. Obese 3-5 year olds are LESS likely to experience academic failure than 3-5 year olds that are average weight.	2.29	.80
13. Medical issues associated with obesity are NOT apparent until adolescence.	2.06	.75
14. Being obese at age 3-5 years does NOT affect future growth.	1.92	.70
16. Obese 3-5 year olds experience NO difference in future social/emotional development than their peers of average weight.	1.86	.68

Table 3.7 Frequency of responses for items 9-16

Survey Items	Frequency of Responses (%)				
	1	2	3	4	5
9. I am concerned for the future social/emotional development of obese 3-5 year olds.	0(0.0)	0(0.0)	3(3.3)	52(57.8)	35(38.9)
10. I am concerned that obese 3-5 year olds could develop diabetes, cardiovascular disease and orthopedic problems in the future.	0(0.0)	0(0.0)	3(3.2)	43(45.7)	48(51.1)
11. Obese 3-5 year olds are LESS likely to experience academic failure than 3-5 year olds that are average weight.	14(15.6)	41(45.6)	31(34.4)	3(3.3)	1(1.1)
12. Obese 3-5 year olds are MORE likely to be obese as adults than their peers of average weight	0(0.0)	2(2.2)	13(14.0)	48(51.6)	30(32.3)
13. Medical issues associated with obesity are NOT apparent until adolescence.	16(17.0)	63(67.0)	9(9.6)	5(5.3)	1(1.1)
14. Being obese at age 3-5 years does NOT affect future growth.	22(23.7)	61(65.6)	7(7.5)	2(2.2)	1(1.1)
15. Unhealthy eating habits at age 3 years can impact eating habits throughout one's lifespan.	2(2.2)	0(0.0)	6(6.5)	41(44.1)	44(47.3)
16. Obese 3-5 year olds experience NO difference future social/emotional development than their peers of average weight.	27(29.0)	54(58.1)	10(10.8)	2(2.2)	0(0.0)

Note. 1=Strongly Disagree 2= Disagree 3= Impartial 4= Agree 5= Strongly Agree.

Fifty-two preschool teachers agreed with item 9, indicating that they are concerned about the long-term social/emotional development of obese 3-5 year olds ($m=4.36$). Preschool teachers strongly agreed (48) or agreed (43) that obese 3-5 year olds are at risk for developing medical consequences such as diabetes ($m=4.36$). Eighty-five preschool teachers strongly agreed or agreed with item 15 that unhealthy eating habits at age 3 could impact eating habits throughout one's lifespan ($m=4.35$). Forty-eight preschool teachers agreed with item 12 that obese 3-5 year olds are more likely to remain overweight into adulthood than their peers of average weight ($m=4.12$). Preschool teachers disagreed (41) with item 11 that obese 3-5 year old children were less likely to experience academic failure than their average weight peers ($m=2.29$)

Sixty-three preschool teachers disagreed with item 13, that medical issues related to obesity are not apparent until adolescence ($m=2.06$). Sixty-one teachers also disagreed with item 14, that being obese at age 3-5 years does not affect future growth and development ($m=1.92$). Preschool teachers disagree (54) with item 16, that obese 3-5 year olds experience no difference in future social/emotional growth than their peers of average weight ($m=1.86$).

Research Question 3

The third research question was that teachers who have received training on risk factors of obesity will rate early intervention as more important than their peers who have not had training on obesity risk factors.

Table 3.8 Training of preschool teachers who responded to the obesity survey

Variable	N (%)
To what degree of training have you received on the topic of obesity?	
None	76 (74.5)
1-2 classes/workshops	21 (20.6)
2-4 classes/workshops	1 (1)
Component of teacher course work	4 (3.9)
Missing	1

To address this research question, correlation analysis was conducted to compare the results provided by teachers with obesity risk factor training in relation to those without obesity risk factor training, specifically in the final section of the survey, which includes 5 questions. Teachers with training were expected to respond with “Most of the time” to questions 19 and 21. Question 22 has a response choice of “most of the time”, “some of the time” or “never”. “Most of the time” is defined as each day a

teacher delivers instruction; “some of the time” is defined as 2-3 times per week; “never” indicates that the item is not part of the preschool program. Teachers with training would be expected to respond “Never” to question 22. Teacher with training would check all options for question 20 and chose the response “preschool” for questions 23 and 24. A low response mean would indicate that teachers responded as hypothesized with the “preschool” response choice. Preschool teachers with training would also be able to identify the accurate percentage of preschool age children that are considered obese in the United States. The correlation analysis was conducted by coding the responses into two groups, those who had any kind training and those who did not have any training.

The only item that showed a significant correlation between training and response was item 1 (Table 3.9). Teacher’s who had training on the topic of obesity were more likely to respond that obesity is a significant problem facing children age 3-5 years ($p=.247, 0.05$). There were no other significant correlations between training and survey items.

A Pearson correlation was also conducted between survey items and each demographic question.

Table 3.9 *Demographics correlated with items 1-8*

Demographic Variable	1	2	3	4	5	6	7	8
Gender	-.066	-.138	.191	.108	.210*	.004	.068	-.011
Age	-.043	-.009	-.138	-.026	.035	.296**	.175	.208*
Years teaching	.051	.075	-.153	-.157	-.065	.150	.202	.121
Years preschool	.166	.045	-.097	-.041	-.049	.088	.075	.009
Degree	-.264*	.028	-.116	.140	.012	.054	.017	-.205
Training	.247*	.069	-.102	-.081	-.035	.058	-.051	-.163
SES	-.161	-.147	-.091	.112	.164	.033	.006	-.044
Ethnicity	.041	.056	-.068	.013	.000	.036	.006	.156
Reg Ed/Special Ed	-.158	.113	-.134	-.143	-.001	-.027	.087	.065

Note- * = 0.05 significance level, ** = 0.01 significance level

It was found that at the 0.05 significance, female teachers were likely to agree with item 5, that obesity occurs after several years of a high fat diet and lack of exercise ($p=.210, 0.05$). There were no other significant correlations between gender and survey items. The majority of participants were female; therefore, this correlation does not appear meaningful after taking the data into consideration.

Table 3.10 *Demographics correlated with items 9-16*

Demographic Variable	9	10	11	12	13	14	15	16
Gender	-.105	-.168	.067	-.053	.016	.157	-.074	.055
Age	-.044	.153	.015	.103	-.162	.113	-.004	-.023
Years teaching	.055	.321**	-.062	.117	-.232*	-.129	.087	-.219*
Years preschool	.047	.208*	-.003	-.007	-.157	-.007	.022	-.135
Degree	-.066	.119	.034	.006	-.131	.063	-.109	-.058
Training	.005	.151	.024	.086	.042	.030	.097	-.125
SES	-.024	-.148	-.079	-.065	-.047	-.027	-.157	-.069
Ethnicity	.087	-.087	.290**	.019	.152	.165	.022	.087
Reg Ed/Special Ed	-.061	.038	.140	.064	.103	-.005	-.065	-.120

Note- * = 0.05 significance level, ** = 0.01 significance level

A Pearson correlation indicated that older teachers were more likely to agree with item 6, that 3-5 year olds are naturally active enough to burn off their daily calorie intake ($p=.296, 0.01$). Older teachers were also more likely to agree with item 8, that restricting food has a positive effect on managing weight ($p=.208, 0.05$). Older teachers were also most likely to incorporate healthy eating habits into their preschool curriculum ($p=-.215, 0.05$). The correlation analysis was conducted by coding the responses into two groups, those between the ages of 20-40 years and those over age 40 years.

Table 3.11 *Demographics correlated with items 19, 24-27*

Demographic Variable	19	24	25	26	27
Gender	.057	.127	-.033	-.045	-.175
Age	-.148	-.215*	-.031	.037	-.094
Years teaching	-.153	-.284**	-.075	.155	-.067
Years preschool	-.131	-.265*	-.052	-.007	-.064
Degree	-.060	-.146	.005	.044	-.075
Training	-.123	-.039	.093	.083	.150
SES	.151	-.042	.039	-.271**	-.238*
Ethnicity	-.085	-.012	-.069	.154	.199
Reg Ed/Special Ed	.174	-.117	-.377**	-.054	.092

Note- * = 0.05 significance level, ** = 0.01 significance level

The correlation analysis was conducted by coding the responses into two groups, those who had taught for 1- 5 years and those who had taught for over 6 years. The same groups were used for experience in teaching preschool specifically. Teachers who had been in the profession longer were more likely to agree that obese 3-5 year old children face the risk of diabetes and other medical consequences ($p = .321, 0.01$). Teachers, who had been teaching preschool specifically, were also more likely to agree with this statement ($p = .208, 0.05$). This group of teachers was more likely to disagree that medical issues associated with obesity are not apparent until adolescence ($p = -.232, 0.05$). Teachers with more than 6 years experience were more likely to disagree with item 16, that obese 3-5 year olds experience no difference in future social/emotional development than their average weight peers ($p = -.219, 0.05$). This group of teachers was also much more likely to incorporate healthy eating habits most of the time in their classrooms ($p = -.284, 0.01$). Teachers with more preschool teaching experience were more likely to incorporate healthy eating habits into their curriculum most of the time ($p = -.265, 0.01$).

Teachers with a bachelor's degree are more likely to agree that obesity is a significant problem facing children age 3-5 years old ($p = -.264, 0.05$). The groups used for correlation analysis were those with a bachelor's degree and those with a graduate degree.

A Pearson correlation revealed that teachers with a population of students that fall into the lower end of SES status were more likely to respond that school programs targeting healthy eating would have the greatest impact at the high school level ($p = -.271, 0.01$). Teacher with students that fell predominantly on the lower end of SES status were more likely to respond that school programs targeting physical activity would be most effective at the high school level ($p = -.238, 0.05$). The groups used for correlation analysis were those that fell into a lower class category and those who fell into a middle class category.

A Pearson correlation revealed that participants who taught predominantly Caucasian students were more likely to disagree that obese 3-5 year olds would experience less academic failure than their peers of average weight ($p = .290, 0.01$). The groups for correlation analysis were Caucasian/white and non-white.

A Pearson correlation revealed that teachers who had more special education students are much more likely to use food as a positive reinforcement for their students ($p = -.377, 0.01$). Preschool teachers were asked to indicate the types of physical activity that are incorporated into their classrooms. Only 37% of teachers responded that structured physical education was a component of their preschool curriculum.

It should be noted that survey items 5, 6, 8, and 11 had the widest range of responses. Because of the variation of responses, the correlations pertaining to these items may not be as strong as the analysis indicated.

CHAPTER 4

DISCUSSION

The present study sought to gain an understanding of preschool teachers' perceptions on the topic of obesity. Teacher perceptions were determined by their responses to survey questions. A literature review revealed a significant increase in children identified as obese or overweight over the past decade. JAMA estimates that 32% of school-aged children in the United States are overweight, with 8% of that number falling into the obese range (Ogden, et al., 2010). Long-term medical consequences of being obese at a young age include hypertension in early adulthood, which increases the risk of heart disease and stroke (Watkins, et al, 2007). Those with long-term overweight problems are more likely to develop type 2 diabetes; this can lead to liver failure, amputation of limbs, and early death (Ludwig, 2007). Other medical concerns include fatty liver, high blood pressure, gastroesophageal reflux, orthopedic problems, insular resistance, dyslipidemia, emotional problems, and sleep apnea. Devi (2008) concludes that today's children are the first generation in United States history to have a predicted life span shorter than their parents.

The social-emotional impact of being overweight during adolescence includes social isolation. Few peer relationships or poor peer relationships and peer rejection can affect self-esteem and depression. Because of a lack of self-esteem and issues of depression, academic success can suffer as well (Strauss & Pollack, 2003). Although the consequences of obesity at a young age are well documented, there is little being done in schools to intervene at a young age. The purpose of this study was to collect

information on the current perceptions that preschool teachers hold regarding this topic.

Summary of findings

Preschool teachers agreed that 3-5 year-old children could be considered obese and could be at risk for remaining obese into adolescence and adulthood. Training, years in the profession, and degree of education did not appear to influence the degree of concern for these children. It is positive that preschool teachers are aware that overweight problems and obesity are affecting the population they teach. Their awareness on the issue could make intervention and prevention programs appear valuable and relevant to their profession.

Preschool teachers agreed that being overweight at age 3-5 years could lead to long-term medical, educational, and social-emotional difficulties. This was a consensus among all teachers, regardless of training or years in the profession. Preschool teachers appear to have the knowledge that being overweight or obese at age 3-5 years is not a temporary issue that will resolve itself over time.

Preschool teachers who responded that they had received training on the topic of obesity were not found to answer the survey questions any differently from their peers who had not received training. The only correlation between training and survey items was that teachers who had received training were more likely to agree with item 1 that states specifically, obesity is an existing and significant issue for 3-5 year olds. The training that is provided does not seem to be impacting preschool teachers who receive the training to a greater degree than those teachers who do not receive training. They do not have increased knowledge on causality or intervention. It seems the basic

knowledge of the long-term consequences of obesity is being obtained through popular media. Training in the areas of causality and treatment are the missing components. Preschool teachers agreed that children who were obese at age 3-5 years were more likely to remain obese into adulthood and were more likely to experience medical, social-emotional and academic consequences, yet they did not believe intervention or prevention programs would be beneficial at the preschool level. The majority of teachers (66%) responded that programs addressing healthy eating and exercise would be best implemented at the elementary level, after children have already begun to experience the consequences of obesity.

As stated in the literature, intervening at a young age (3-5 years) can be more effective than intervening when children are school aged (Braet, et al., 2004). Intervening during the preschool years involves teaching healthy eating habits and encouraging physical activity. Elementary school-aged children require all of these interventions plus increased physical activity and behavioral interventions. Elementary school-age children also may need to lose a significant amount of weight, but preschool-aged children who are categorized as obese have less weight to lose relative to their size. Preschool-aged children are easier to intervene with because of their limited amount of time engaged in unhealthy eating and their natural energy consumption due to growth. Developmentally, they are also in the stage of “wanting to please” adults so they are more likely to engage in new behaviors (Satter, 2005). Elementary age children are more likely to exhibit their independence and be resistant to changes in diet and exercise. Preschool age children are less likely than elementary age children to have experienced the social-emotional, academic, and medical consequences of obesity.

Intervening before these long-term consequences become apparent is beneficial to the health and development of the child. It appears that preschool teachers need more training in this area to understand the reasons why intervention at the preschool level would be more beneficial than waiting until elementary school.

Preschool teachers responded that they incorporated healthy eating habits and physical activity into their curriculum. However, only 37% of teachers indicated that structured physical activity education class is available to their students. Teachers who have been in the profession and who have been teaching preschool for a longer period of time are much more likely to incorporate healthy eating habits into their curriculum. Teachers of an older age were also more likely to include healthy eating into their classrooms. Teacher responses suggest that younger, less experienced teachers are not as likely to stress the importance of healthy eating and physical activity with their students.

Veteran teachers may be more likely to incorporate healthy eating habits into their classrooms because they have witnessed the increase in childhood obesity first hand. As the literature indicates, the number of obese children in American has increased 100% since 1971 (Kimbro, et al, 2007). In 1980, 5% of preschool age children were considered obese versus 13.9% in 2004 (NHANES, 2004). Teachers who have been in the classroom to witness these dramatic changes may be more inclined to take action as opposed to new teachers who may feel this is merely the composition of their student population. New teachers may also be overwhelmed as they adapt to the curriculum and teaching practices, but more highly experienced teachers can add new dynamics because they feel comfortable with their teaching methods.

Younger teachers may have been impacted by the dramatic increase in obesity personally. The obesity increase in children has occurred over the past 20 years; therefore, younger teachers (20-30 years) may have experienced overweight or obesity themselves. If they have not found a successful method to address their own weight issues, they may feel helpless in intervening with their students. An overall lack of nutrition and physical activity has impacted weight and health in American society over the past 20 years. Young teachers were raised in this generation of thinking; therefore, their perceptions of weight and health may be very different from teachers of a previous generation.

The contributing factors of obesity do vary by individuals, and they differ for children age 3-5 years, compared with adolescents and adults. Preschool teachers could not define the most important contributors for this particular age group. Although genetics provide a predisposition, balanced nutrition and low sugar diet are most influential at age 3-5 years. Restricting food is not recommended at this age because it can lead to a distorted feeling towards food (Satter, 2005). Physical activity is important for the development of motor skills, socialization, growth and brain development; however, it is not the most influential contributor to obesity at age 3-5 years (Sun, 2006). If teachers were aware of this information, they could be more inclined to practice healthy eating in their classrooms. Simply reducing the sugar content in a 3-5 year olds' diet could dramatically decrease their risks of becoming obese. Teaching these healthy eating habits at preschool can also lead to lifelong healthy behaviors.

Preschool teachers, including those with training on the topic of obesity, underestimated the number of children identified in the United States as being obese at

age 3-5 years. The research suggests 13.9% of children at this age are identified as being overweight or obese (NHANES, 2004); however, most preschool teachers (30) indicated only 6-10% of preschool children fell into this category. Twenty-five teachers believed that only 1-5% of preschool children in the United States are considered obese.

A free response section of the survey revealed specific concerns. Teachers who provided a free response commented that they believe a lack of healthy food in the home and in school is a factor contributing to obesity in children age 3-5 years. Teachers also believed a lack of physical exercise and an increase in television and video games were matters of concern. The general consensus was that obesity was a family issue, not a school issue, which could have influenced the responses concerning prevention. Teachers find the family eating habits and genetics to be the most crucial contributors to obesity. Teachers may think that they do not have enough influence on this topic to intervene.

According to the literature, diet is a key factor in weight management for children ages 3-5 years old. Consuming an extra 150 calories per day at age 3-5 years can lead to a 15-pound weight gain in the following year (Hassink, 2007, p. 72). Although this is a family issue that can be influenced by the food choices offered in the home, schools can intervene and make a difference. Children who live in low-income neighborhoods are at risk for obesity because of a lack of healthy food options and limited safe areas for physical activity. However, these children are also more likely to qualify for school meal programs (www.letsmove.gov/accessing, 2010). These children could receive two of the three meals of the day at school, along with at least one snack. More than half of their calorie intake could be monitored by school personnel; this

could also allow for ample opportunity for education and practice on making healthy food choices.

It appears that preschool teachers need more training on the causality of obesity in young children. If they knew that changing diet alone could significantly impact a child's weight, they could be more seriously inclined to intervene. Having support from government agencies such as *Let's Move* would assist in providing the resources for balanced nutrition and the added bonus of physical activity.

Programs for educating preschool teachers could be incorporated into new teacher orientations. Providing information on the causes of obesity and effective intervention techniques could assist in the implementation of healthy eating and physical activity within preschool classrooms. Helping teachers realize how critical their involvement is, and how they could make a difference in the overall well being of their students could aid in gaining teacher participation. If teachers have the resources, information, and beliefs that they can make a difference in obesity prevention, they may be more likely to support programs in their classrooms.

Limitations of the study

A limitation of this study may be external validity. With 95 participants it is possible that the information gathered is not representative of most preschool teachers. This study focused on public school preschool teachers in New Jersey because this state provides public access to teacher contact information. The study was limited to this one state and did not gain information from other regions throughout the United States. Although New Jersey is a diverse state, the majority of the population is Caucasian. Most residents fall into the SES category of middle-class and have some college education.

Most towns within the state of New Jersey are considered suburban and lie within a 45-mile radius of a major city.

The survey was sent via e-mail without other forms of solicitation. If a teacher did not have a publicly posted e-mail address, or if the school district in which they were employed by did not publicly post teacher e-mail addresses, they were not provided the opportunity to participate. This study did not utilize a paper survey sent via postal mail; therefore, those without e-mail addresses were not contacted. In addition, preschool teachers who responded to the survey were predominantly female, eliminating information from a male perspective.

Another limitation is construct validity. This was the first time this survey was used on a population of preschool teachers. The survey was created through careful examination of the literature. Questions were based on general knowledge of the topic, causality, and long-term consequences. Each section of the survey focused on one of these specific areas. Although the survey was evaluated for clarity and content prior to its use, the validity of the survey will gain strength only if it is more widely used. A factor analysis could provide input to the strength of the survey questions and their relationship to each other. Further analysis of the questions, along with standardization among preschool teachers through the country, would improve the construct validity of the survey. The survey items were based on the literature and divided into three sections: basic knowledge, long-term consequences, and current practice. It would be expected that the survey had 3 factors; however, if more resulted from a factor analysis, the survey questions may need to be reexamined and edited.

Implications for practice

Research supports the fact that there has been a significant increase in obesity among children over the past 20 years (Kimbrow, et al., 2007). Although intervention programs are being introduced into elementary, middle, and high schools, very little is being done to address the 3-5 year old population in New Jersey (NJDOE, 2004, p. 32).

Preschool teachers have concerns for the future of obese 3-5 year old children. They have the knowledge that if a child is obese during the preschool years, he or she is at a greater risk than peers of average weight to have long term medical, social-emotional, and academic issues. Preschool teachers do not know the causality of obesity for 3-5 year olds. They are not aware of the extent of the number of children who are categorized as obese in this age group. Preschool teachers responded that intervention and prevention programs would be most effective at the elementary school level or above.

A need for intervention is supported by the literature. However, the survey results indicate that preschool teachers do not feel prevention programs should be implemented in their classrooms. Further training on the importance of prevention and intervention with obese preschool children should be considered before a program is put into place. This could include in-service workshops on the topics of obesity and skill building to provide realistic ways in which teachers can implement healthy eating and physical exercise in their classrooms.

Preschool teachers who indicated that the majority of their students are eligible for special education were much more likely to use food as a positive reinforcement in their classrooms. Finding motivators when working with this population can be challenging. Children that qualify for special education services often have speech

deficits, are on the autistic spectrum, or have other significant developmental delays, which make communication difficult. Food often becomes the motivator of choice because it is familiar to children and easily accessible. Special education teachers could benefit from training on other options for reinforcement such as toys and games or using healthier options when food appears to be the best motivator.

The results of this survey provided information on the knowledge that preschool teachers already have on the topic of obesity. It also indicated the areas in which further training and support is needed before programs targeting obesity could be successfully implemented in preschool classrooms. An intervention program for preschool age children should include a balanced option of fruits, vegetables, dairy and whole grains as recommended by MyPyramid (United States Department of Agriculture, 2005). As long as 3-5 year olds consume the average number of servings recommended over the course of a week, they will be eating a balanced diet. Schools can provide the model for healthy eating and educate parents and families through teacher conferences, parent workshops and school newsletters. Teaching young children the types of food they need to be healthy at a young age can lead to a lifetime of balanced nutrition.

In addition, physical activity can be implemented into the preschool day. At this age, the positive effects are seen more frequently in socialization, brain activity, and motor coordination; however, physical activity each day can also lead to positive changes in behavior. Promoting physical activity at a young age can lead to the behavioral norm of exercising each day. With these two additions to the preschool curriculum, impacts could be made on the rate of obesity in America's children.

REFERENCES

- Braet, C., Tanghe, A., Decaluwe, V., Moens, E., Rosseel, Y. (2004). Impatient treatment for children with obesity: Weight loss, psychological well-being and eating behavior. *Journal of Pediatric Psychology*, 29(7), 519-529.
- Caughey, A. B. (2006). Obesity, weight loss, and pregnancy outcomes. *The Lancet*, 368, 1164-1165.
- Center for Disease Control. (2008a). *Defining childhood overweight*. Retrieved May 5, 2008, from <http://www.cdc.gov/obesity/childhood/defining>.
- Center for Disease Control. (2008b). *Overweight prevalence*. Retrieved May 5, 2008, from <http://www.cdc.gov/obesity/childhood/prevalence>.
- Center for Disease Control. (2008c). *Childhood overweight: Contributing factors*. Retrieved May 5, 2008, from <http://www.cdc.gov/obesity/childhood>.
- Devi, S. (2008). Progress on childhood obesity patchy in the USA. *The Lancet*, 371, 105-106. Retrieved May 7, 2008 from ProQuest Psychology Journals database. (Document ID: 1417861591).
- Edmunds, L. D. (2005). Parents' perceptions of health professionals' responses when seeking help for their overweight children. *Family Practice*, 22 (3), 287-292. Retrieved May 7, 2008, from ProQuest Psychological database. (Document ID: 857800461).
- Epstein, L.H., Paluch, R. A., Saelens, B.E., Ernst, M.M., Wilfley, D.E. (2001). Changes in eating disorder symptoms with pediatric obesity treatment. *The Journal of Pediatrics*, 129, 58-65.
- Fantuzzo, J. W., Bulotsky- Shearer, R., McDermott, P. A., McWayne, C., Frye, D., Pearlman, S. (2007). Investigation of dimensions of social-emotional classroom behavior and school readiness for low-income urban preschool children. *School Psychology Review*, 36, 44-62.
- Fantuzzo, J. W., Perry, M. A., & McDermott, P. (2004). *School Psychology Quarterly*, 19(3), 212-230.
- Fantuzzo, J. W., Rouse, H. L., McDermott, P. A., Sekino, Y., Childs, S., & Weiss, A. (2005). Early childhood experiences and kindergarten success: A population-based study of a large urban setting. *School Psychology Review*, 34(4), 571-588.

- Field, A. (2006). Epidemiology of the health and economic consequences of pediatric obesity. In M. I. Goran & M. S. Sothorn (Eds.). *Handbook of pediatric obesity* (p 2). Boca Raton, Fl: Taylor & Francis.
- Fischer, K. W., Hand, H. H., Watson, M. W., Van Parys, M. M., & Tucker, J. L. (1983). *Putting the child into socialization: The development of social categories in preschool children* (Report No. PS 019967). Urbana, Il: U. S. Department of Education. (ERIC Document Reproduction Service No. ED226813).
- Friedlander, S. L., Larkin, E. K., Rosen, C. L., Palermo, T. M., & Redline, S. (2003). Decreased quality of life associated with obesity in school-aged children. *Archives of Pediatrics and Adolescent Medicine*, 157, 1206-1211.
- Grossi, S. G., Collier, D. N., & Perkin, R. M. (2008). Integrating oral health to the care of overweight children: A model of care whose time has come. *The Journal of Pediatrics*, 154(4), 451-452.
- Gustafson, J. K., Keil, M. F., Fleisch, A. F., Roberts, M. D., Ning, C., & Yanovski, J. A. (2008). Insulin resistance, hyperinsulinemia, and energy intake in overweight children. *The Journal of Pediatrics*, 152(5), 612-617.
- Hassink, S.G. (2006). A parent's guide to childhood obesity: A road map to health (pp 27-28). Washington, DC: American Academy of Pediatrics.
- Hassink, S. G. (2007). Pediatric obesity: Prevention, intervention, and treatment strategies for primary care (pp 71-72). Washington, DC: American Academy of Pediatrics.
- Jackson, J., Strauss, C. C., Lee, A. A., & Hunter, K. (1990). Parents' accuracy in estimating child weight status. *Addiction Behavior*, 15, 65-68.
- Jago, R., Baranowski, T., Baranowski, J. C., Thompson, D., & Greaves, K. A. (2005). BMI from 3-6 y of age is predicted by TV viewing and physical activity, not diet. *International Journal of Obesity*, 29, 557-564.
- Keenan, J. C. (2004). Childhood obesity. *Communiqué*, 33(3), 320-328.
- Keller, K. L., Pietrobelli, A., Johnson, S. L., & Faith, M. S. (2006). Maternal restrictions of children's eating and encouragements to eat as the 'non-shared' environment: A pilot study using the child feeding questionnaire. *International Journal of Obesity*, 30 (11), 1670-1675. Retrieved May 7, 2008, from ProQuest Psychology Journals database. (Document ID: 1153166811).
- Kimbro, R. T., Brooks-Gunn, J., & McLanahan, S. (2007). Racial and ethnic differentials in overweight and obesity among 3-year-old children. *American Journal of Public Health*, 97(2), 298-305.

- Kondro, W. (2008). Glutton programs and children's guts. *Canadian Medical Association Journal*, 178(6), 665-667.
- Let's Move (2010). Retrieved February 26, 2010 from <http://www.letsmove.gov>.
- Ludwig, D. S. (2007). Childhood obesity – The shape of things to come. *The New England Journal of Medicine*, 357(23), 2325. Retrieved May 7, 2008, from ProQuest Psychology Journals database. (Document ID: 1394032181).
- Lustig, R. H. (2008). Which comes first? The obesity or the insulin? The behavior or the biochemistry? *The Journal of Pediatrics*, 152(5), 601-602.
- Mayes, L.C., & Cohen, D.J. (2002). The Yale child study center guide to understanding your child (pp343-345). Boston, MA: Little Brown and Company.
- Mello, M. M., Pomeranz, J., Moran, P. (2008). The interplay of public health law and industry self-regulation: The case of sugar-sweetened beverage sales in schools. *American Journal of Public Health*, 94(4), 595-604. Retrieved May 7, 2008, from ProQuest Psychology database. (Document ID: 1453292711).
- National Association for the Education of Young Children (2009). *Early childhood education issues*. Retrieved March 20, 2009, from: <http://www.naeyc.org/ece>.
- National Sleep Foundation (2009). *Hot topics- Children and sleep*. Retrieved March 20, 2009, from: <http://www.sleepfoundation.org/site/apps/lnet>.
- New Jersey Department of Education (2004). *Division of early childhood education: Expectations/standards*. Retrieved March 20, 2009, from: <http://www.state.nj.us/education/ece/code/expectations>.
- Niclasen, B. V., Petzold, M. G., & Schnohr, C. (2006). Overweight and obesity at school entry as a predictor of overweight in adolescence in an Arctic child population. *European Journal of Public Health*, 17, 17-20.
- Phelps, L. & Landau, S. (1995). Health-related issues in early childhood. *School Psychology Review*, 24(2), 129-130.
- O'Dea, J. (2006). Editorial: Childhood obesity prevention- Issues and controversies. *Health Education Research*, 21(6), 129-130.
- O'Dea, J. & Wilson, R. (2006). Socio-cognitive and nutritional factors associated with body mass index in children and adolescents: Possibilities for childhood obesity prevention. *Health Education Research*, 21(6), 796-805.

- Ogden, C.L., Carroll, M.D., Curtin, L.R., Lamb, M.M., Flegal, K.M.(2010) Prevalence of high body mass index in US children and adolescents, 2007-2008, *JAMA*, 303(3),242-249.
- Rimm-Kaufman, S. E., & Pianta, R. C. (1999). Patterns of family-school contact in preschool and kindergarten. *School Psychology Review*, 28(3), 426-438.
- Satter, E. S. (2005). *Your child's weight: Helping without harming, birth through adolescence*. Madison, WI: Kelcy.
- Strauss, R. S., & Pollack, H. A. (2003). Social marginalization of overweight children. *Archives of Pediatrics and Adolescent Medicine*, 157, 746-752.
- Sun, S. S. (2006). Growth and development. In M. I. Goran & M. S. Sothorn (Eds.). *Handbook of pediatric obesity* (p 2). Boca Raton, Fl: Taylor & Francis.
- Tate, A. R., Dezateux, C., & Cole, T. J. (2006). Is infant growth changing? *International Journal of Obesity*, 30(7), 1094-1096. Retrieved May 7, 2008, from ProQuest Psychology database. (Document ID: 1067182041).
- Tomlinson, H. L. (2005). The psychological sequelae of overweight: Relations among body-mass index, body image, and risk for depression in White and Black adolescent girls. Ph.D. dissertation, Duke University, United States – North Carolina. Retrieved January 5, 2009, from ProQuest Digital Dissertations database. (Publication No. AAT 3183945).
- United States Department of Agriculture. (2008). *Child & adult food care program*. Retrieved May 24, 2008, from www.fns.usda.gov/cnd/care/CACFP.
- Watkins, M. G., Clark, K. M., Foster, C. M., Welch, K. B., & Kasa-Vubu, J. Z. (2007). Relationships among body mass index, parental perceptions, birthweight and parental weight after referral to a weight clinic. *Journal of the National Medical Association*, 99(8), 908-913. Retrieved May 7, 2008, from ProQuest Psychology database. (Document ID: 131935661).
- Willows, N. D., Johnson, M. S., & Ball, G. D. (2007). Prevalence estimates of overweight and obesity in Cree preschool children in northern Quebec according to international and US reference criteria. *American Journal of Medicine*, 97(2), 311-316.

APPENDIX A

E-MAIL COVER LETTER

OBESITY- ARE 3-5 YEAR OLDS AT RISK?

The following survey attempts to gain an understanding of current preschool teacher perceptions on the topic of obesity and how it applies to children ages 3-5 years. The author of this study will use this information to complete her doctoral dissertation, under the direction of Dr. Rosemary Mennuti at Philadelphia College of Osteopathic Medicine. If you take the time to participate in this survey, it is completely voluntary and should not take more than 10-15 minutes to complete. You may decide to discontinue the survey at any time. All responses will be kept confidential and participants will remain anonymous. Philadelphia College of Osteopathic Medicine's Institutional Review Board has approved this study.

Thank you for your time.

If you wish to participate please click the following link:

<https://www.surveymonkey.com/s.aspx>

Please note: If you do not wish to receive further e-mails from us, please click the link below, and you will be automatically removed from our mailing list.

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APPENDIX B

E-MAIL COVER LETTER- REMINDER

OBESITY- ARE 3-5 YEAR OLDS AT RISK?

This e-mail is a reminder that you have been invited to participate in a voluntary survey. The survey attempts to gain an understanding of current preschool teacher perceptions on the topic of obesity and how it applies to children ages 3-5 years.

For those of you who have already participated, your input is greatly appreciated and will help drive future research and programming on this important topic.

Thank you for your time.

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APPENDIX C

Survey

“Obesity- Are 3-5 year olds at risk?”

First, some information about you:

1. Please specify your gender below:

- Male
 Female

2. Please specify your age range:

- 20-30
 31-40
 41-50
 51-60
 61 +

3. How many years have you been teaching?

- 1 year
 2-5 years
 6-10 years
 11 + years

4. Specifically, how many years have you been teaching preschool?

- 1 year
 2-5 years
 6-10 years
 11 + years

5. What is the highest degree of education that you hold?

- Bachelor's
 Master's
 Doctorate

6. To what degree of training have you received on the topic of obesity?

- None
 1-2 classes/ workshops through professional development
 3-4 classes/ workshops through professional development
 It was a component of my teacher course work

Second, some information about your students:

1. The socio-economic status that best describes the population I teach would be:

- Lower-class
 Lower-middle class

- Middle-class
- Middle-upper class
- Upper-class

2. The majority of the preschool population I teach are of the following ethnic background:

- Caucasian/ white
- Asian
- African American
- Hispanic/ non-white
- Other

3. The majority of the students I teach are:

- Typically developing 3-5 year olds (general education)
- 3-5 year olds receiving special education services

Survey Questions:

Please choose one of the following options that best describes the degree to which you agree with the statement:

1. I believe obesity is a significant problem facing children ages 3-5 years old.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

2. Being obese at ages 3-5 years will affect future growth and development.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

3. Obese 3-5 year olds often outgrow their weight problems.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

4. 3-5 year olds are naturally active enough to burn off the calories they consume each day.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

5. 3-5 year olds should NOT have diet restrictions.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

6. Obesity occurs after several years of eating a high fat diet and lack of exercise.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

7. Having an obese mother greatly increases the chances of a 3-5 year old being obese.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

8. Restricting food has a positive effect on managing weight in 3-5 year olds.

- Strongly Disagree Disagree Impartial Agree Strongly Agree

9. I am concerned for the future social/emotional development of obese 3-5 year olds.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

10. I am concerned that obese 3-5 year olds could develop diabetes, cardiovascular, disease, and orthopedic problems in the future.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

11. Obese 3-5 year olds are LESS likely to experience academic failure than 3-5 year olds that are average weight.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

12. Obese 3-5 year olds are MORE likely to be obese as adults than their peers of average weight.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

13. Medical issues associated with obesity are NOT apparent until adolescence.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

14. Being obese at age 3-5 years does NOT affect future physical growth.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

15. Unhealthy eating habits at age 3 years can impact eating habits throughout one's lifespan.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

16. Obese 3-5 year olds experience NO difference in future social/emotional development than their peers of average weight.
 Strongly Disagree Disagree Impartial Agree Strongly Agree

17. In your experience, what percentage of 3-5 year olds are considered obese?
 1-5%
 6-10%
 11-15%
 16-20%
 21-25%

18. Please rank the following items in order of importance, where 1 is least associated with obesity and 5 is most associated with obesity.

- High sugar content foods and drinks (e.g., juice, cookies, candy)
- Food practices (e.g., planned meal times, cultural food norms)
- Inactive behavior (e.g., television, video games)
- Genetics
- Diet (e.g., balanced nutrition)

Final thoughts:

Please indicate one choice for the following items:

“Most of the time” indicates each day you teach

“Some of the time” indicates 2-3 times per week

“Never” indicates this item is not included in the preschool program

1. I currently incorporate physical activity into my preschool curriculum:

Most of the time

Some of the time

Never

2. I currently incorporate the following types of physical activity into my preschool curriculum (check all that apply):

structured physical education class

outdoor free play

dancing

games (e.g., musical chairs, duck-duck-goose)

3. I incorporate healthy eating habits into my preschool curriculum:

Most of the time

Some of the time

Never

4. I use food as a positive reinforcement for my students:

Most of the time

Some of the time

Never

5. School programs targeting healthy eating would have the greatest impact on obesity during:

High School

Middle School

Elementary School

Preschool

6. School programs targeting physical activity would have the greatest impact on obesity during:

High School

Middle School

Elementary School

Preschool

7. Do you feel there are other issues effecting weight in 3-5 year old children?

APPENDIX D

Privacy Policy

TRUSTe Privacy Program:

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