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CHILDHOOD OVERWEIGHT AND CHILDHOOD OBESITY IN
FIFTH GRADERS AT GRANITE HILL ELEMENTARY SCHOOL

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
in
Nursing

by
Deborah Ann Toten

June 2003

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FIFTH GRADERS AT GRANITE HILL ELEMENTARY SCHOOL

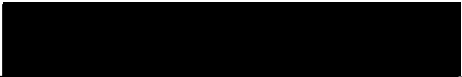
A Thesis
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Deborah Ann Toten

June 2003

Approved by:



Ellen B. Daroszewski, RN, PhD, Chair,
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ABSTRACT

There is a worldwide concern that childhood overweight and childhood obesity are on the increase. Although studies varied in the age of participants, sample size, the methodology used to measure mass and stature, and different standards were used to calculate the results, the final conclusion was the same. Childhood overweight and obesity is increasing around the world. In 2000 the International Obesity Task Force defined the standards for childhood overweight and childhood obesity. Future research on childhood overweight and childhood obesity can be defined by this international standard.

The purpose of this study was to determine if the students in the 5th grade class at Granite Hill Elementary were overweight or obese. The research questions included: (a) Does the Granite Hill Elementary School population mirror the worldwide trend of increasing childhood overweight and childhood obesity, and (b) how does the Granite Hill Elementary School population compare to the International Obesity Task Force standards? Data from the Presidential Physical Fitness Test was extracted from 50 Student Data Collection forms. The sample was 48% male and 52% female. Demographic data demonstrated that 52% of the students were ten years old, 38% of the students were ten

and a half years old, and 10% of the students were eleven years old. Forty eight percent of the students were Hispanic and 44% were White. Data reflected that 37.5% of males were overweight or obese while 53.8% of the females were overweight or obese. Tendencies were not noted for Hispanics to be heavier than their White counterparts. This study did provide evidence that childhood overweight and childhood obesity are a concern in 5th grade students at Granite Hill Elementary School.

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I would like to thank Ed Tierney who always said he was my number one supporter and was my number one supporter. He always knew I would complete this project. My parents, who started encouraging me to complete my masters 20 years ago, and I finally fulfill their expectations. Lastly, my thesis buddy, Barbara Shuman who made sure I succeeded in my endeavors.

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CHAPTER ONE

INTRODUCTION

Background

The rapid global increase in childhood overweight and obesity is a significant health concern. This trend is not only found in the western world, but in other developing countries as well (Barba et al. 2001). The increase in the prevalence of overweight and obesity is found at all economic levels (Stettler et al., 2002). Researchers throughout the world are collecting data to determine if the prevalence of childhood overweight and obesity is occurring within their countries to describe what extent of children are overweight and obese in their populations.

Nationwide there is a concern due to the effects of childhood overweight and childhood obesity on health consequences in childhood and beyond. The escalating medical problems due to overweight in adults may have begun as problems with overweight in childhood and represent the need to develop and evaluate appropriate health policies (Magarey, Daniels, & Boulton, 2001). The risk of adult overweight and obesity is twice as great if the adult was overweight or obese as a child (Zimmermann, Hess, & Harrell, 2000).

The overweight or obese adult has a greater incidence of physical problems, such as diabetes mellitus, coronary heart disease, and respiratory problems than his nonoverweight counterpart (Barba et al., 2001; Zimmermann et al., 2000). The concern over the relationship of adult overweight and obesity to serious medical conditions has spurred global concern related to both quality of life and economic issues resulting from overweight and obesity (Shirai et al., 1990).

Over the last several decades childhood overweight and obesity has risen dramatically. Approximately one quarter of the children in the United States are affected by this problem, yet frequently childhood overweight and obesity are undiagnosed and under treated (Moran, 1999). Obese children frequently suffer physical and psychological problems making it imperative to discuss preventive strategies for the maintenance of normal weight during interactions with all health care professionals and especially during formal medical care such as the well child examination.

The leading health indicators identified in Healthy People 2010 reflect the major public health concerns in the United States. The enormity of the problem of overweight and obesity is evident as Healthy People 2010

objective 19-3 establishes the need to reduce the proportion of children and adolescents who are overweight or obese from 11 percent to five percent in children six to 19 years of age (Healthy People 2010, n.d.).

Evaluation of childhood obesity is an important first step in the effort to prevent the disease progression and morbidity from childhood into adulthood. Research by Moran (1999) found that if a child is under three and overweight with one obese parent this child is at higher risk for obesity in adulthood. After age three, an overweight child has a higher incidence of obesity in adulthood. A child who is six and overweight has a 50 percent chance of obesity in adulthood. Obese adolescents have a 70 to 80 percent chance of obesity in adulthood. Regardless of age, a child with one obese parent has an increased risk of obesity in later life. Any contact with a health care professional, especially a well child exam could raise suspicion of a possible medical reason, such as hormonal or genetic cause for the overweight. Early identification and management of the childhood overweight and obesity issue can increase personal happiness and success in later life by decreasing the negative effects that overweight and obesity have on self-esteem. Lastly, to begin healthy habits of exercise and eating a well balanced diet should

be the cornerstone of the preventive efforts to decrease the incidence overweight and obesity in childhood Moran, 1999).

In my daily profession as an advanced practice nurse I can see up to 3500 students in the kindergarten to sixth grade setting. As a school nurse at four campuses I have noticed that children are getting heavier. As childhood overweight and obesity are increasing globally, is the same trend occurring locally? How do students at Granite Hill Elementary School compare to the established standards for overweight and obesity in children set by the International Obesity Task Force of 2000?

Statement of the Problem

A school nurse has many health related responsibilities to the children enrolled in the school district served. The focus of school nurse practice includes both health problems and prevention efforts. In the school district to which Granite Hill Elementary School belongs, the school nurse has responsibility for up to 3500 students from kindergarten to sixth grade. Problems with overweight and obesity at Granite Hill Elementary School have been noted during well child exams and also as observations of the general school population.

Aim of the Study

The aim of this study was to describe the incidence of childhood overweight and childhood obesity in fifth graders at Granite Hill Elementary School in Riverside, California based on height and weight measurements. According to Federal Education Code section 60800 the California Department of Education is required to administer a state-designated physical fitness test to all fifth grade students each year. This physical fitness test includes the collection of student demographic characteristics, aerobic capacity, body composition, abdominal/trunk strength, upper body strength, and flexibility. The data extracted from the physical fitness test to be used in this study included the student's birth date, gender, ethnicity, height and weight. The height and weight measurements were used to calculate the Body Mass Index (BMI). The BMI for the sample was compared to the overweight and obesity standards set by the International Obesity Task Force (IOTF).

Theoretical Framework

The theory of Population Health Promotion provided the framework for this study (Huff & Kline, 1999; Population Health Approach Online, n.d.). The aim of

Population Health Promotion theory is to improve the health of the whole population while reducing the health inequities among population groups. The concept of the Population Health Promotion is the support to pursue one's goals, while acquiring skills and education to grow. Health includes a range of social, economic, physical, and environmental factors that affect health. The focus of this theory is to improve the health of a population by taking action that includes multiple factors. The Population Health Promotion focuses on the ability of all parts of the population to have health care. This health care includes a well child examination where height and weight measurements are done to assess and evaluate the concern of childhood overweight and obesity. Evidence of a weight concern is shown by the child's height and weight measurement, which is used to calculate the child's BMI. The BMI is compared to the International Obesity Task Force standards to determine childhood overweight and obesity. Efforts are made to prevent the problem by increasing physical activity. Prevention equates to a healthier population with less medical problems related to overweight. Improvements are made to the health status of the entire society while considering the needs of a vulnerable sub-population, in this case the Hispanic

population. Vulnerable sub populations are specific at risk groups such as children, seniors, woman, or minority populations who may not receive health care equally due to social, economical, physical, and environmental inequities. The way to achieve this is to focus on partnerships and cooperation of the Hispanic community while finding flexible and multidimensional solutions for the problem. To achieve this goal public involvement and community participation are essential. The Population Health Promotion theory suggests identifying one of these health determinants, childhood overweight and obesity, the action strategy used, the well child examination, and the level of action to be taken, increasing physical activity to create a healthier society.

This study on the prevalence of childhood overweight and obesity of fifth graders at the Granite Hill Elementary School examines the height and weight of fifth grade children. The BMI calculated from the height and weight data gave the percentages of overweight and obese children. These percentages coupled with lack of affordable health care results in a vulnerable population. There is a lack of affordable health care; therefore many members of this Hispanic population may not be seen for routine physical exams where the physician or health care

professionals address childhood overweight and childhood obesity. Physical activity is identified as the preventive action to decrease the overweight and obesity concern. The action strategy is to increase the ability of all Hispanic children to have health care. This level of action can be completed by society working together as a team to assure that all children have health care.

Theory Application

The theory of Population Health Promotion can be applied to a linear process that describes childhood overweight or obesity. Childhood overweight or obesity compounded by lack of medical care, presents a lack of awareness of the problem which represents a significant problem with the lack of medical acknowledgement resulting in no intervention. The interventions of physical activity, which could and should be initiated with overweight and obese children, are not initiated. An assessment of height and weight used to calculate the BMI is the first step to identify and access overweight and obesity.

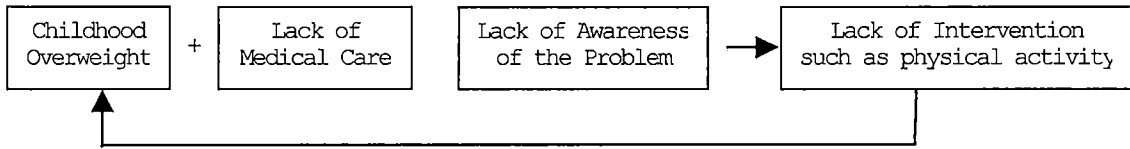


Figure 1. Cycle of Childhood Overweight and Obesity

Limitations of the Study

This study has three major limitations. The first limitation of this study was it included a sample of students from only Granite Hill Elementary School. This is a convenience sample from only one school, which limits the external validity. The results cannot be applied to other elementary school populations.

The second limiting factor was students must have the ability to stand and support their weight without any assistance. Overweight and obesity was not evaluated in children who had any type of devices to aid in support of their bodies.

The third limitation was parents had to consent to the inclusion of their child's data extraction for the study. Sampling may have missed some overweight and obese children because their parents may not have wanted them included in the study resulting in an under-representation of the incidence of overweight and obesity in this population.

Definition of Terms

Fifth Grader - This study considered a fifth grader to be nine, ten, or eleven years of age and enrolled in the fifth grade at Granite Hill Elementary School.

Body Mass Index - Body Mass Index is defined as an assessment of height and weight. Body mass index is calculated by measuring the body weight in kilograms and the height in meters and performing the calculation of weight divided by height squared.

Childhood Overweight - Childhood Overweight is defined by the International Obesity Task Force as 25kg/m of body weight ranging from a BMI of 19.1 to 20.6 in males and 19.1 to 20.7 in females.

Childhood Obesity - Childhood Obesity is defined by the International Obesity Task Force as 30kg/m of body weight ranging from a BMI of 22.8 to 25.1 in males and 22.8 to 25.4 in females (Cole, Bellizzi, Flegal, & Dietz, 2000).

CHAPTER TWO

REVIEW OF THE LITERATURE

Childhood overweight and obesity are a worldwide concern. Worldwide studies demonstrate an increase in childhood overweight and obesity. Research in the United States on Hispanic children demonstrates the tendency of Hispanic children to be more overweight than children of other ethnic groups. Current research provides evidence that the Hispanic population is expected to continue to increase in number. Many Hispanic children receive mediocre health care. As the Hispanic population increases more Hispanic children will be overweight or obese. Childhood overweight and obesity, along with lack of access to adequate medical care, especially well child examinations, will contribute to a lack of awareness of the weight problem. The result will be inadequate interventions to address childhood overweight or obesity and their subsequent health issues.

Researchers Barba et al., (2001), Magarey et al., (2001), Stettler et al., (2002), and Zimmermann et al. (2000) acknowledge that the lack of an international standard to gauge childhood overweight and obesity has made it difficult to evaluate the problem. All research,

regardless of the year the research was done or the method employed to calculate overweight or obesity, consistently demonstrates that the incidence of childhood overweight and childhood obesity is increasing throughout the western world. Recent research by Cole, Bellizzi, Flegal, and Dietz (2000) has established a standard definition for child overweight and obesity worldwide to unify future research.

The worldwide literature on childhood overweight obesity reviewed includes the following countries Australia, Britain, Italy, Japan, Seychelles, Sweden, Switzerland, United Arab Emirates, and the United States. All ten countries share the main purpose and have found an increasing incidence of childhood overweight and childhood obesity in their populations. Some studies included an assessment of the effects of childhood overweight and obesity on the body's physiology, possible etiology, and prevention.

Australian Research

Two studies by Magarey, Daniels, and Boulton (2001) examined the prevalence of overweight and obesity in 8492 seven to 15 year old school children in 1985, and in a second study, 2962 two to 18 year old children in private

dwellings in 1995. Data previously obtained was recalculated and analyzed using the new standards of the International Obesity Task Force (2000). The results obtained by applying the new standards demonstrated in 1985 that 9.3% boys and 10.6% girls were overweight and 1.7% boys and 1.6% girls were obese. In 1995 the percentage of children overweight or obese increased to 15% of boys and 15.8% of girls overweight, while 4.5% boys and 5.3% girls were obese. Reviewing this study shows that the two groups examined were from different segments of the child population. The groups had different average ages (1985 the children were 7 to 15 years and 1995 the children were 2 to 18 years) and sample sizes (1985 sample was 8492, in 1995 sample was 2963). The 1985 study was done in the school system while the later study data was obtained from private homes. A better comparison could have been made if the samples were more homogeneous. How stature and mass measurements were obtained was not discussed making it difficult to compare this data to other studies.

British Research

A study by Chinn and Rona (2001) reported on the prevalence and trends of overweight and obesity in poorer

children age four to 11 in the primary schools in England and Scotland between 1974 and 1994 using the International Obesity Task Force standards. The prevalence of overweight changed little from 1974 to 1984. From 1984 to 1994 there was an increase in overweight from 5.4% to 9% in English boys, 6.4% to 10% in Scottish boys, 9.3% to 13.5% in English girls, and 10.4% to 15.8% in Scottish girls. Scottish children appeared to be more overweight than the British children that were compared at the same time.

Measurements for stature differ between the two time periods of the study. The 1974 study measured to the nearest .5 centimeter while the later studies measured to the nearest centimeter. This is a small matter, but it may have an affect on the results. The study took place in poorer areas, which may have affected the data because dietary habits and physical activity may differ from other economic areas or physical activity may vary due to dietary habits and income levels. The researchers studied only Caucasians. Adipose tissue development children may vary between racial or ethnic groups.

Italian Research

Barba et al. (2001) studied dietary and anthropometrics factors in a sample of 363, six to 12 year

old school children living in Southern Italy to assess childhood obesity. Data collection for the study took place from April 2000 to May 2001 during an on going educational program on nutrition at the school site where the research was conducted. According to the definition of childhood obesity by the International Obesity Task Force almost 50% of all age classes reviewed had a BMI above the norm for age specific percentile. The norm for the age specific percentile is used to predict overweight in adult life. The group studied was participating in an on going research project including nutritional education for teachers, children, and family. This group may have been heavier than the normal population and that was why the nutrition education was done at this site. The researchers never stated why they chose this group. The results from this study may not represent other Italian children. The participants also answered a questionnaire on dietary habits. The questionnaire showed that the children consumed foods high in calories. The education provided may have affected responses on the dietary questionnaire. The participants may have answered the dietary questionnaire with what they thought to be socially acceptable answers. Observations of actual dietary intake may have provided more accurate data.

Japanese Research

From 1979 to 1989 Shirai et al. (1990) studied approximately 8000, six to 14 year old children to examining the incidence of childhood obesity and its effects on medical problems in Tateyama City, Japan. Childhood obesity has found to be increasing in the last ten years in Tateyama City in both male and female children. Those children with "light" obesity had an 85% chance of becoming obese adults. Obesity in males eleven to 13 years was most predominate. Childhood obesity was found to have a higher incidence in areas with a high incidence of adult obesity. Hypertension, fatty liver, and serum lipids were found to increase as obesity increased. This study used a method to calculate obesity that isn't frequently used, the Hibi method. Stature and BMI calculations were not given. The only reference given was Hibi and Hibi was not defined in the study.

Seychelles Research

Stettler et al. (2002) studied the prevalence of overweight, obesity, socioeconomic, and related risk factors in 5514 children ages four and a half to 17.4 years of age in 1999. Using the standard of the International Obesity Task Force Stettler discovered that

12.6% of the children were overweight and 3.8% of the children were obese in a sample of kindergarten, fourth, seventh, and tenth graders. Stettler concluded that weight gain during the first year of life and maternal weight gain might have an association with future weight gain in life. Children from a family of unskilled laborers have a lower risk of overweight or obesity. Measurements for stature and BMI were not defined. The Seychelles population is 65% Black, the results of the study are on a greater percentage of Blacks than other racial or ethnic groups.

Swedish Research

In December 1997, Berg, Simonsson, Brantefor, and Ringqvist (2001) evaluated the percentage of overweight and obesity of nine, 12, 15, and 18 year olds based on a self-report of height and weight. The sample size was 7011. The standard they used to evaluate overweight was a BMI of $> 90\%$ or obese at a BMI of $> 98\%$. Approximately 12% of the 12, 15, or 18-year-old boys were overweight, and 6% of the girls. Obesity in boys was 7% for the same age levels while girls were 4.5%. More boys in this study than girls were overweight. Zimmermann et al. (2000) found girls are more apt to report an inaccurate weight. A

validation study confirmed that Berg et al. (1997) data was accurate in an additional sample of approximately 150 from each age group. This validation study included only a small percentage of the total sample. This study used a BMI of > 90% for overweight, and a BMI > 98% for obese while the International Obesity Task Force standard is 25kg/m for overweight and 30kg/m for obese. It will be difficult to correlate this study to other studies.

Switzerland Research

From April to October, 1999, Zimmermann et al. (2000) examined the prevalence of overweight and obesity in 596 six to 12 year old children obtaining information on weight perceptions and weight control practices. The highest prevalence of overweight and obesity was found in six to eight year old boys. The prevalence of overweight was 27.4% and 16.3% obese. Eleven to 12 year old girls were more overweight and obese than the boys, 7.5% to 10.3% respectively. More girls considered themselves to not be at optimal weight than the boys. The population sample only represents 1% of children in this age group. Height was measured to 1 centimeter instead of .5 centimeter. The interview process was semiprivate and may have inhibited some answers due to peer pressure.

Semiprivate interview process wasn't defined in the study. The BMI used was at or above the sex and age specific 90th or 97th BMI percentiles.

United Arab Emirates Research

Al-Haddad, AlNuaimi, Little, and Thabit (2000) investigated the prevalence of obesity in six to 16 year old schoolchildren from the Ras Al-Khaimah Emirate. The sample consisted of 1787 boys and 2288 girls. Overweight was defined as a BMI of > 85 to 98 percentile, and obesity as >95 percentile for sex and age specific cutoffs. BMI criteria for overweight and obesity is variable, but it frequently defines obesity as a BMI of the 95th percentile for age and gender, or > 30 kg/m², whichever is smaller. Overweight is a BMI between the 85th and 95th percentile. The study showed that 16.5% of the boys and 16.9% of the girls were overweight, and 8% of the total sample was obese. The older youths were at the greatest risk of overweight and obesity. The study never stated when the research was done. It was published in 2000. The height and weight descriptions were the most detailed of all the studies. The study included native United Arab Emirate children, making the sample not generalizable to other groups of children.

United States Research

The first of four United States studies on the prevalence of overweight and obesity was done in the Navajo population in Northeastern Arizona. Eisenmann et al. (2000) collected data from a sample of 526 Navajo children from six to 12 years. The study examined weight from 1955 to 1997 based on BMI of > 85 percentile as overweight and > 95 percentile as obese. Criteria for overweight and obesity is variable, but it frequently defines obesity as a BMI of the 95th percentile for age and gender, or > 30 kg/m², whichever is smaller. The data demonstrates that Navajo children were heavier than a decade ago. Since 1955 weight has increased in six to 9 year olds by 1.5 kilograms per decade, and has increased 3 kilograms per decade in ten to 12 year olds. Obesity has increased by .5 kilograms per decade in six to 9 year olds and 1.0 kilogram per decade in ten to 12 year olds. This study assessed only three percent of the Navajo children in the age range studied. Due to a lapse in time periods between studies it is difficult to compare the studies due to differences in sampling and methodology of each study.

Kumanyika et al. (1990) assessed the prevalence of growth problems in 5170 four to five year old children in the District of Columbia during the fall of 1985. Results

show that Whites, boys and girls, and Hispanic girls were average height when compared to the National Center for Health Statistics, while Hispanic males were shorter than average, and Blacks were taller than average. Excess overweight was noted in all minority groups especially Hispanic males. Overweight was defined as > 95th percentile of the BMI. The study found that 34% of White boys were overweight, 31% of Black boys were overweight, and 37.6% Hispanic boys were overweight. White girls were 38.2% overweight, Black girls 26.7% overweight, and 24.8% of Hispanic girls were overweight. The study population was 91.9% Black children, 5.5% White children, and 2.6% Hispanic. The Hispanic data would be more influential if the population sample was higher.

Strauss and Pollack (2001) studied the prevalence of overweight from 1986 to 1998 in 8270 children age four to 12 years using data from the National Longitudinal Survey of Youth. Overweight was defined as BMI > 95th percentile for age and sex specific. In 1998, the prevalence of overweight increased 21.8% in Hispanics, 21.5% in African Americans, and 12.3% in Whites. Overweight increased the largest among minorities and southerners. Sample population in this study was mainly white 48.8%, African American 30.7%, and Hispanic 20.5%.

Another study was by Troiano and Flegal (1998). It examined the prevalence of overweight children ages six to 17 years old. The study took into account sex, age, race, income and educational level. Height and weight data came from national surveys conducted from 1963 to 1994. Overweight was defined by a BMI of age and sex specific 95th percentile, and the 85th to 95th percentile was an "area of concern." This study found that race, income, or education did not have a significant relationship to BMI. The results show that eleven percent of the children were overweight from 1988 to 1994, and 14 percent were in the "area of concern." Overweight prevalence is increasing more rapidly as the decades progress. BMI criteria for overweight and obesity is variable, but it frequently defines obesity as a BMI of the 95th percentile for age and gender, or > 30 kg/m², whichever is smaller. Overweight is a BMI between the 85th and 95th percentile. This study was more liberal in their definitions.

It is difficult to interpret and compare the prevalence of childhood overweight and obesity between studies because different standards are defined. Studies varied in their definition of what scale was overweight, obese, or "area of concern." The Swedish study used a BMI scale of > 90% was overweight, while > 98% was obese. The

Swiss study used the BMI scale > 90% overweight and 97% obese. The Arab study used the BMI scale of > 85 to 90% as overweight and obese at > 97%. The United States study used 85 to 90% as an area of concern and >95% as overweight. Japan used the Hibi scale. The use of a single standard determination of overweight and obesity would allow better comparisons between groups, both within the United States and worldwide. In 2000, the International Obesity Task Force implemented a standard to determine sex and age specific cut off points based on BMI (Cole et al., 2000). This new standard was used in the later studies of Australia, Britain, Italy, and Seychelles. Researchers now have a base line to evaluate further studies.

More information is needed to fully address the obesity issue, the prevalence and possible causes for the high rates of overweight and obesity of the children in this community population. Interventions must be realistic to make changes in this population. Variables can only be controlled during the school day. Research has shown that nutrition rather than dieting, and health promotion programs that reduce obesity at an early age can have lifelong benefits for improved health (Covington et al., 2001). Behaviors can be altered by education of the importance of physical activity, and an awareness of how

many calories are burned by each activity. Increases in physical activity can be implemented by changes made in the physical education class.

Obesity in Hispanics

Research on Hispanics and obesity is slowly being compiled. Until the early 1990's Hispanics were classified as Whites in most studies (Powers, 1992). Current research is now providing more specifics on childhood overweight and obesity in the Hispanic population. Dwyer et al. (2000) measured the prevalence of obesity among Hispanic children in 96 elementary schools in California, Louisiana, Minnesota, and Texas to identify populations at risk for childhood overweight and obesity from the Fall of 1991 to Spring 1994. The study included 5106 participants from the third grade, who were followed up again in fifth grade with 4019 participants. The prevalence of obesity, based on greater than the 95th percentile of basal metabolic index and triceps measurement was higher in boys (9.1%) versus girls (8.6%) on the initial study. When comparing data from the initial research to the later research obesity in boys increased to 11.7% while obesity in girls decreased to 7.2%. Hispanics of both sexes were heavier than whites. This study had five times more whites

in their study population than Hispanics, possibly skewing the minority numbers.

Kumanyika et al. (1990) assessed the prevalence of growth problems in 5170 four to five year old children in the District of Columbia during the fall of 1985. Results show that Hispanic girls were average height when compared to the National Center for Health Statistics, while Hispanic males were shorter than average. Excess overweight was noted in Hispanic males. Overweight was defined as > 95th percentile of the BMI. The study found that 37.6% of Hispanic boys were overweight, and 24.8% of Hispanic girls were overweight.

Strauss and Pollack (2001) studied the prevalence of overweight from 1986 to 1998 in 8270 children age four to 12 years using data from the National Longitudinal Survey of Youth. Overweight was defined as BMI > 95th percentile for age and sex specific. In 1998, the prevalence of overweight increased 21.8% in Hispanics. Sample population in this study was 20.5% Hispanic.

More research on Hispanic childhood overweight and obesity is needed to fully address the prevalence and possible causes for the high rates of overweight and obesity of the children in this community population.

Health Care

There were 12.5 million United States Hispanics under the age of 18 in 2000 according to the Census Bureau (United States Census Bureau, 2000). According to Flores (2000) Hispanics are the largest minority group in the country. The Hispanic population is expected to continue to grow and many Hispanic children currently receive mediocre health care. When comparing the Hispanic children to African American and White children, it was discovered that Hispanic children are more likely to have no health insurance, drop out of school, have no regular doctor, attempt to suicide if they are girls, or be obese if they are boys (Flores et al., 2000).

There are 11.74 million uninsured children in California (Baezconde-Garbanti, Lourdes, Portillo, & Carmen, 1999). Of the uninsured children 400,000 are eligible for Healthy Families and 668,000 are eligible for "MediCal." Many that qualify for insurance do not apply for the insurance due to fear of interfering with the processing of citizenship and immigration documentation. Only one out of three Hispanic youths under the age of 17 are insured (Baezconde-Garbanti et al., 1999). In Orange County, California 49% of all children without health

coverage are Hispanic according to Orange County Health Needs Assessment (2002).

Riverside County currently ranks sixth in population in California with a total population of 250,000 plus (Department of Public Health [DPH], 2001). The county is projected to nearly triple between 2000 and 2040 to approximately 4.5 million people. The Hispanic population is projected to grow from one third, approximately 36 % to one half, approximately 52%. In October 2000, 194,885 or 12% of the residents of Riverside County were enrolled in "MediCal" (Department of Public Health [DPH], 2001). Seventeen percent of the "MediCal" population was Hispanic (Department of Public Health [DPH], 2001). Healthy Families is an insurance plan for families whose yearly income is greater than the allowance for "MediCal", but within poverty level. Total enrollment in Healthy Families was 22,793 or four percent of the population of Riverside County. Seven percent of the Hispanic population is enrolled in Health Families (Department of Public Health [DPH], 2001). As of August 2000, 22% of the Riverside County population did not have any insurance. This equates to one in five persons in Riverside County are without insurance (Department of Public Health [DPH], 2001).

Gary M. Feldman, MD, Director of Public Health in Riverside County has stated the efforts to improve health status will necessitate culturally appropriate promotion of healthy behaviors while addressing poverty; promoting economic development, improving living conditions, access to health care, and opportunities for learning (Department of Public Health [DPH], 2001). All this can occur by ongoing community efforts (DPH, 2001).

Hispanics participate in the labor force in large numbers and enter at an early age, but the nature of the job prevents them from having access to health insurance (Baezconde-Garbanti et al., 1999).

The primary goals of Healthy People 2010 are for disease prevention and health promotion (Healthy People 2010, n.d.). Zamrana and Logie (2000) recommend four evidence based themes of reducing poverty and increasing access to health care coverage, increasing funding in targeted primary and preventive care services, provide funds needed to implement health legislation, and improve measurement and quality of data collection. Healthy People 2010 objective 19-3c is to reduce the proportion of children and adolescents who are overweight or obese (Healthy People 2010, n.d.). Reducing poverty will allow monies to pay for health care where childhood overweight

or obesity is diagnosed. Primary and preventive services are initiated once diagnosis is made. Funds to implement health legislation are needed to increase physical education programs in the schools. Improvement in measurement and data collection will allow research to be focused on the Hispanic population where causes and possible prevention can be defined to aid in the treatment of childhood overweight and obesity in the Hispanic community. Zamrana and Logie believe that Healthy People 2010 goals can be achieved if these four evidence-based themes are implemented by society.

The Hispanic population is young. The median age is 25 years old. In California, 82% of the Hispanic population is younger than 44 years of age. Forty two percent of the Hispanic population is between birth and 19 years old (Baezconde-Garbanti et al., 1999). The Hispanic population in the United States is more overweight and obese than other populations. Overweight and obesity increase the risk of cardiac, diabetic, orthopedic, and skin diseases (Moran, 1999). The increase in childhood overweight and obesity places Hispanic children at a risk for health problems that were once found mostly among adults. The annual cost to treat this overweight and

obesity related illnesses top 117 billion dollars (Cottle, 2002).

Summary of Literature Review

In 1988 to 1994 the literature found 14% of the children and adolescents age six to 11 years old and 12% of adolescents aged 12 to 17 years were overweight or obese in the United States (Covington et al., 2001). In summary, worldwide studies demonstrate an increase in childhood overweight and obesity regardless of the year the research was done or the method to calculate childhood overweight or obesity.

Hypothesis

This study examined BMI data from fifth grade students in an effort to evaluate the incidence of overweight and obesity in an elementary school with primarily Hispanic students in Riverside, California. The hypothesis for this study predicted that the incidence of overweight and obesity found in the study sample would be consistent with the incidence of overweight and obesity found in the general United States population.

CHAPTER THREE

METHODOLOGY

Introduction

This study is a descriptive secondary analysis of data from the Presidential Physical Fitness Test. According to Federal Education Code section 60800 the California Department of Education is required to administer a state-designated physical fitness test to all 5th grade students each year. Data from the Presidential Physical Fitness Test is reported to the state and used to evaluate how physically fit the 5th grade students are. This physical fitness test includes the collection of student demographic characteristics, aerobic capacity, body composition, abdominal/trunk strength, upper body strength, and flexibility. The data extracted from the physical fitness test used in this study included the student's birth date, gender, ethnicity, height and weight. The height and weight measurements from the test were used to calculate the Basal Metabolic Index (BMI).

Participants

The target population for this study was 5th grade boys and girls from Granite Hill Elementary School in Riverside, California.

Students were not recruited to participate directly. The students were given a letter explaining the study participation and informed consent to be taken home, read, and signed by their parent or guardian allowing data from their physical fitness test to be used for the study. All data used in the secondary analysis was from students who were healthy 5th graders with the ability to stand and support their weight without any assistance. Students who needed orthopedic equipment such as braces, halos or other hardware that would add additional weight were not included. Students with medical conditions that would have contributed to abnormal weight gain or loss were excluded from the study.

Setting

This study was conducted at Granite Hill Elementary School located in the Jurupa Unified School District in a suburban area of western Riverside, California. The community is comprised of 37% Hispanic, 52% Anglo, 6% African American, and 5% reporting their ethnicity as other (Department of Public Health [DPH], 2001). The school district consists of 69% Hispanic, 23% Anglo, 6% African American, and 2% reporting their ethnicity as other.

Study Variables

Socio-demographic data collected included birth date, gender, ethnicity designated as African, American Indian, Asian, Filipino, Hispanic, Pacific Islander, White, or other, height in inches, and weight in pounds.

Data Collection Procedure

After obtaining written approval from the Jurupa Unified School District (see Appendix A), and approval from the California State University, San Bernardino Institutional Review Board (see Appendix B), informed consent letters explaining the study were sent to all parents or guardians of 5th graders (see Appendix C & D). Signed informed consent permission forms were returned to the teachers. Only the Physical Fitness Tests from students whose parents gave consent for the data to be extracted were used.

Physical Fitness Test 2002 data was collected on the standard Student Data Collection Form (see Appendix E), by the student's teacher in March 2003. Students verbally completed the sociodemographic section on the Presidential Physical Fitness Test. Height was measured with the children barefoot, standing with heels touching separated by 45 degrees. The heels, buttock, back, and head touched

the vertical height scale with the head in the Frankfort plane during the measurement of height. Weights were measured on a balanced beam scale, which is standardized to zero. Children were weighted barefoot, and wearing light clothing. Data for this study was extracted from the Student Data Collection Form and recorded in a database. The height and weight measurement were extracted from the database and the body mass index was calculated (BMI). Body Mass Index is defined as an assessment of height and weight. Body mass index is calculated by measuring the body weight in kilograms and the height in meters and performing the calculation of weight divided by height squared.

CHAPTER FOUR

RESULTS

Data Analysis

This study was a quantitative descriptive study that used data extraction from the Presidential Physical Fitness Test including the student's birth date, gender, ethnicity, height and weight. The height and weight measurements were used to calculate the Basal Metabolic Index (BMI). The BMI for the sample was compared to the overweight and obesity standards set by the International Obesity Task Force. The convenience sample for this study was composed of boys (n = 24) and girls (n = 26) from the fifth grade class at Granite Hill Elementary School. Data was entered and analyzed using computer software SPSS 7.5 for Windows SPSS Inc, Chicago, IL.

Presentation Findings

Participants included 50 5th grade students of a total 5th grade population of 90. Forty eight percent of the samples were boys (n = 24) and 52% were girls (n = 26). Of this group 52% of the students were ten years old (n = 26), 38% of the student population was ten and a half years old (n = 19), and ten percent of the students were eleven years old (n = 5). Ethnicity of the

participants included two percent African American (n = 1), 48% Hispanic (n = 24), 44% White (n = 22) and six percent other (n = 3).

Height for the study subjects ranged from 48.75 to 65.50 inches with a mean of 56.11 (SD = 3.04). Weight showed a range of 49.50 to 173 pounds, with a mean of 94.00 pounds (SD = 26.862). Five subjects ranged in weight between 133.50 and 173.00. BMI ranged from 12.3 to 33.80kg/m, with a mean of 20.86 (SD = 4.74).

Childhood overweight and childhood obesity was identified as an area of concern for the study participants when compared to the International Obesity Task Force standards Cole et al. (2000). The data demonstrate 54% of the sample was not overweight or obese. Twenty-two percent of the sample had a BMI greater than 25kg/m, which is defined by the International Obesity Task Force as overweight, and 24% had a BMI greater than 30kg/m, which is defined by IOTF as obese. In total 46% of the sample was either overweight or obese as defined by IOTF (see Appendix F).

When comparing boys to girls for overweight or obesity, 25% percent of boys had a BMI of greater than 25kg/m (n = 6) and 12.5% percent of boys had a BMI greater than 30kg/m (n = 3). The percentage of overweight and

obese boys was 37.5%. The data demonstrated that 19.2% of girls had a BMI greater than 25kg/m (n = 5) and 34.6% of girls had a BMI greater than 30kg/m (n = 9). In total 53.8% of the girls were overweight and obese. The boys had a greater percentage of overweight at 25% as compared to 19.2%, while the girls had a greater percentage of obesity, 34.6% compared to 12.5%. Overall, the girls were more overweight and obese; 53.8% versus boys at 37.5%. A t-test performed for independent samples did provide statistical support that there was a significant difference between boys and girls BMI (t = 2.162, p = .036).

Girls had the greatest incidence of overweight at age 10.5 years of age and were most obese at 10 years. Boys had the greatest incidence of overweight at 10.5 years of age and equally were obese at 10, 10.5 and 11 years of age.

Table 1. Overweight/Obese by Age and Gender

Overweight/Obese	10 years	10.5 years	11 years
Males > 25	2	3	1
Females > 25	1	3	1
Males > 30	1	1	1
Females > 30	4	3	2

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The rapid global increase of childhood overweight and obesity is an increasing health concern. Nationwide there is concern because childhood obesity may have public health consequences. Over the last several decades childhood overweight and obesity has risen dramatically. Approximately one quarter of the children in the United States are affected by this problem. Evaluation of childhood obesity is important to identify children with overweight and obesity in order to intervene to decrease weight and prevent progression and potential deleterious health outcomes in childhood and adulthood.

This research study provided evidence that childhood overweight and childhood obesity is a concern in a fifth grade population. Forty six percent of the sample was overweight or obese. Although both boys and girls were affected, 5th grade girls demonstrated a greater incidence of being overweight or obese than boys. There was not a significant difference in overweight or obesity between the ethnic groups in the sample. Ethnicity was not a factor in this study's sample population. This study

demonstrates an alarming incidence of overweight and obesity in a fifth grade sample especially with respect to the girls who were included.

This research study reflects the trend seen in the literature on childhood overweight and obesity. Worldwide studies demonstrate an increase in childhood overweight and obesity. In 1988 to 1994 the literature found 14% of the children and adolescents age six to 11 years old in the United States were overweight and obese (Covington et al., 2001). This research study reflected 46% of the students at Granite Hill Elementary were overweight and obese. Twenty-two percent of the sample had a BMI greater than 25kg/m, which is defined by the International Obesity Task Force as overweight, and 24% had a BMI greater than 30kg/m, which is defined by IOTF as obese. Childhood overweight and childhood obesity was identified as an area of concern for the study participants when compared to the International Obesity Task Force standards (Cole et al., 2000).

The Population Health Promotion theory focuses on the ability of all parts of the population to have health care. There are 11.74 million uninsured children in California (Baezconde-Garbanti, Lourdes, Portillo, & Carmen, 1999). This health care includes a well child

examination to assess and evaluate the concern of childhood overweight and obesity. An awareness of the weight issue, assessed in the well child examination, is the first step in preventive care.

Limitations

Limitations of this study that affected the findings are a small sample size with all participants' recruited from the same setting. All students who participated in the study were between the ages of ten to eleven years old. The two major ethnicities included in the sample were White and Hispanic. This limits the external validity of the results making it difficult to generalize the findings and conclusions outside the sample studied.

Data was not extracted from the entire 5th grade population. Both child and parental consents were needed to participate in the study. The parents of heavier children may have chosen not to allow data from their child to be included due embarrassment or self esteem issues related to weight.

To increase the validity of the study it is recommended that a larger sample be used including children from a variety of settings to examine the incidence of childhood overweight and childhood obesity

with similar children of ethnicity, age, socio-demographic status and educational background. By expanding the sample and collecting more data, the results could be transferable to other populations where recommendations could be used to decrease the incidence of childhood overweight.

Further research is needed to evaluate which age group has the largest percentage of childhood overweight and obesity, and to target that age group for the most extensive preventive actions for weight gain. All future research should use the same standards when comparing BMI. The International Obesity Task Force standard of 2000 should be used consistently when examining childhood overweight and obesity regardless of country or setting.

Recommendations

In an effort to advance nursing and decrease the incidence of childhood overweight and childhood obesity, the National Association of School Nurses recommends that school nurses who have knowledge and expertise in areas of exercise, weight control measures, and nutrition implement preventive measures (NASN Position Statement: Overweight Children & Adolescents, n.d.). Prevention programs can be, and must be initiated to prevent the increase in

overweight and obesity. The school nurse can screen for height and weight, and measure BMI to identify students who are at risk for overweight or obesity. The school nurse can refer students who are not seen by a health care provider to a physician for follow up. The school nurse can be involved with support programs, counseling services, referrals, follow up, and support in their school settings.

APPENDIX A
APPROVAL LETTER, JURUPA
UNIFIED SCHOOL DISTRICT

JURUPA UNIFIED SCHOOL DISTRICT

EDUCATION CENTER 4850 Pedley Road Riverside, CA 92509 (909) 360-4100

BOARD OF EDUCATION *Mary Burns, President Carolyn A. Adams, Clerk John J. Chavez Sam D. Knight Sr. Ray E. Teagarden*
SUPERINTENDENT *Rollin Edmunds*

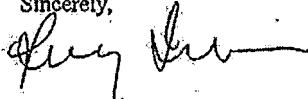
November 5, 2002

Committee on the Protection of Human Subjects
California State University San Bernardino

Dear Committee:

Please be advised that Deborah Toten has been granted permission to extract data from the state mandated Physical Fitness Testing from 5th graders at Granite Hill Elementary School for her Master's thesis research study on Childhood Overweight and Obesity during the 2002-2003 school year. We understand that parental permission for use of their child's information will be obtained prior to any data being extracted.

Sincerely,



Dr. Terry Tibbetts
Administrator, Education Support Services

TT:gm

APPENDIX B
INSTITUTIONAL REVIEW BOARD
APPROVAL LETTER



**CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO**

5500 University Parkway, San Bernardino, CA 92407-2397

November 26, 2002

Ms. Deborah A. Toten
c/o Professor Ellen Daroszewski
Department of Nursing
California State University
5500 University Parkway
San Bernardino, California 92407

**CSUSB
INSTITUTIONAL
REVIEW BOARD**
Full Board Review
IRB# 02032
Status
APPROVED

Dear Ms. Toten:

Your application to use human subjects, titled, "Childhood Overweight and Childhood Obesity in Fifth Grades at Granite Hill Elementary" has been reviewed and approved by the Institutional Review Board (IRB). Your informed consent statement should contain a statement that reads, "This research has been reviewed and approved by the Institutional Review Board of California State University, San Bernardino."

- Minor change – Put date on Informed Consent

Please notify the IRB if any substantive changes are made in your research prospectus and/or any unanticipated risks to subjects arise. If your project lasts longer than one year, you must reapply of approval at the end of each year. You are required to keep copies of the informed consent forms and data for at least three years.

If you have any questions regarding the IRB decision, please contact Michael Gillespie, IRB Secretary. Mr. Gillespie can be reached by phone at (909) 880-5027, by fax at (909) 880-7028, or by email at mgillesp@csusb.edu. Please include your application identification number (above) in all correspondence.

Best of luck with your research.

Sincerely, *Joseph Lovett*

Joseph Lovett, Chair
Institutional Review Board

JL/mg

cc: Professor Ellen Daroszewski, Dept. of Nursing

APPENDIX C
INFORMED CONSENT LETTER
(ENGLISH VERSION)

Dear Parent/Guardian,

I am Deborah Toten, RN the school nurse at Granite Hill Elementary School. I am completing my Master's degree in Nursing at California State University, San Bernardino. The focus of my Master's thesis research is childhood overweight and obesity.

As required by the State of California your child will complete a physical fitness test as part of their school activities. I would like to use some of your child's information from this test for my Master's thesis research. The information I would like to use is your child's date of birth, gender (sex), ethnicity, height, and weight. The California Educational code EC51513 requires parental notification and consent whenever information about their children will be used in any research study. I will take this information from your child's physical fitness test after they have completed the test.

Your child's name will not be used and all of the information that I gather will be kept strictly confidential. Students who appear to be upset by their weight or height measurements will be referred to talk to the Youth Service Counselor who is available daily on campus. Any reporting of this information will be only as a group. There are no risks to using your child's information and being able to use your child's information may help me better understand the health issues of children at Granite Hill Elementary School. You do not have to allow me to use your child's information and there are no penalties to your child if you do not wish to allow me to use this information.

The Jurupa Unified School District and the Institutional Review Board of California State University San Bernardino have approved this study. Dr Ellen Daroszewski, Assistant Professor at California State University San Bernardino is my thesis director and can be contacted at 909-880-7238 if you have any questions. I can be contacted at 909-360-4144. I appreciate your time in reading this letter, and your help. If I do have your permission to use your child's information please complete the attached informed consent form and have your child return it to his/her teacher. You may contact me after May 2003 if you would like to know the results of my research study.

Sincerely,

Debbie Toten, RN

APPENDIX D
INFORMED CONSENT
(ENGLISH VERSION)

December 10, 2002

Child's name: _____

I consent to allow Deborah Toten to use my child's information from the State of California's required physical fitness test for her Master's thesis research. I understand the identity of my child will be kept confidential.

I understand there are no foreseeable risks to participation, and there may be some benefits to the school having this knowledge. This research has been reviewed and approved by the Institutional Review Board of California State University, San Bernardino and the Jurupa Unified School District.

I understand that participating in this study is voluntary and not required by the school or the teacher. There are no penalties for not participating. All information that is collected will remain confidential and used only for the study.

Signing below will allow your child's information to be used in this study. I appreciate your time reading this consent, and your help.

Sincerely,

Deborah Toten, RN

Parent/Guardian Signature: _____

APPENDIX E
INFORMED CONSENT LETTER
(SPANISH VERSION)

Decembre 10, 2002

Estimado Padre/Guardian,

Soy Deborah Toten, Enfermera Registrada, Enfermera de la Escuela Elemental Granite Hill. Estoy por terminar mi maestria en Enfermeria en la Universidad del Estado de California, en San Bernardino. El enfoque de mi tesis para mi maestria es la investigacion es el exceso de peso y la obesidad en la minez.

Como es requerido por el Estado de California que su hijo/a se le hara un examen fisico de salud como parte de sus actividades escolares. Me gustaria usar alguna de la informacion de su hijo/a de este examen para su investigacion para me tesis de maestria. La information que me gustaria usar de su hijo/a es la fecha de nacimiento, genero (sexo), etnicidad, estatura, y peso. El Codigo Educacional de California EC51513 requere que se le notifique a los padres y que ellos den el consentimiento para usar informacion acerca de su hijo/a para cualquier investigacion. Obtendre esta informacion de la prueba de salud fisica una vez que hayan tomado el examen.

No se usara el nombre de su hijo/a y toda la informacion tomada sera mantenida en estricta confidencialidad. Los estudiantes que parezcan que tienen problemas con su peso o altura seran recomendados/as para que hablen con el/la consejera/o de servicios de la juventud el/la cual esta disponible todos los dias. Cualquier reporte de esta informacion sera en grupo solamente. No hay riesgos al usar la informacion de su hijo/a y el poder usar esta information me ayduara a poder entender mayor los problemas de salud de los ninos/as de la Escuela Elemental Granite Hill. Si usted no quiere no tiene que dejarme usar esta informacion y no lay ninguna represalia en contra de su hijo/a si usted no quiere dejarme usar esta informacion.

El comite examinador de la Universidad de San Bernardino del Estado de California y el Distrito Escolar Unificado de Jurupa aprobaron este estudio. El Doctor Ellen Daroszewski, Asistenete de Profesor de la Universidad de California en San Bernardino es mi director de tesis y puede ser localizado en el telefono 909-880-7238 si usted tiene cualquier pregunta. A mi me puede localizar en el telefono 909-360-4144. Aprecio en verdad su tiempo al leer esta carta, y su ayuda. Si usted me da permiso para usar la informacion de su hijo/a por favor llene la forma adjunta y desela a su hijo/a para que se la de a su maestro/a. Usted puede llamarme despues de Mayo 2003 se usted quiere saber los resultados de la investigacion.

Atentamente,

Deborah Toten, Enfermera Registrada

APPENDIX F
INFORMED CONSENT
(SPANISH VERSION)

Decembre 10, 2002

Nombre del nino/a: _____

Doy mi consentimiento para que Deborah Toten use informacion de mi hijo/a para su investigacion es su maestria acerca del examen de educacion fisica que el Estado de California requiere. Entiendo que la identidad de mi hijo'a se mantendra en total confidencialidad.

Entiendo que no corre ningun riesgo al participar en esta investigacion, y que las escuela se puede beneficiar al tener este conocimiento El comite examinador de la Universidad de San Bernardino del Estado de California y el Distrito Escolar Unificado de Jurupa aprobaron este estudio.

Entiendo que la participacion en este estudio es voluntaria y no es requerida por la escuela o el maestro. No hay ninguna represalia si no participa. Toda la informacion que sea reunida se mantendra en confidencialidad y sera usada solamente para el estudio.

El firmar abajo usted nos da permiso para usar la informacion de su hijo/a en este estudio. Les doy las gracias por el tiempo que dedicaron para leer esta forma y su ayuda.

Atentamente,

Deborah Toten, Enfermera Registrada

Firma del Padre/Guardian: _____

APPENDIX G
STUDENT DATA COLLECTION FORM

SAMPLE - Physical Fitness Test 2002 - Student Data Collection Form

Student Name: _____ Test Date: _____ Internet Confirmation #: _____
 or Student ID #: _____

I. STUDENT DEMOGRAPHICS -- Fill in all information whether student has tested or not.

A. County-District-School Code - -

B. District Name (Enter district name)

C. School Name (Enter student's school name)

D. Grade 5 7 9 (Enter student's grade at the time of testing)

E. Date of Birth / / (Enter student's date of birth - MM/DD/YYYY) (Data will be invalid without date of birth)

F. Gender Male Female

G. Ethnicity (Choose one of the following)

H. Reason for Incomplete Data (Choose one of the following)

- African/African American
- American Indian or Alaskan Native
- Asian/Asian American
- Filipino/Fillipino American
- Hispanic/Latino
- Pacific Islander
- White - Not of Hispanic Origin
- Other

Student not tested

- Absent on Test Date and All Make-up sessions for all tasks
- Parent's Written Request
- Waiver Granted by State Board of Education
- IEP (Individual Education Plan)/Special Needs
- Extraordinary Circumstances
- Medical Excuse

Students with partial data

- Absent on Test Date and All Make-up sessions for one or more sessions
- Parent's Written Request
- Waiver Granted by State Board of Education
- IEP (Individual Education Plan)/Special Needs
- Extraordinary Circumstances
- Medical Excuse

>>>> Continue to Section II if student has tested or partially tested.

II. INDIVIDUAL STUDENT SCORES - Fill in all applicable data for each item below.

I. Aerobic Capacity (Enter data for one of the following tasks.)

Heart Rate(15 Sec.)

1) The Pacer	2) Mile Walk/Run (# of min)	3) Walk Test (# of min)	(# of beats)
(# of laps)	(# of sec)	(# of sec)	Weight (pounds)

J. Body Composition (Enter data for one of the following tasks.)

1) Percent Body Fat	2) Body Mass Index	3) Bioelectric Impedence/
Triceps (millimeters)	Height (feet, inches)	Automated
Calf (millimeters)	Weight (pounds)	skinfold callipers % body fat

K. Abdominal/Trunk Strength (Enter data for both of the following tasks.)

1) Abdominal Curl-Ups (# of curl-ups)	And	2) Trunk Lift (inches)
---------------------------------------	-----	------------------------

L. Upper Body Strength (Enter data for one of the following tasks.)

1) Push-ups	(# of push-ups)	3) Pull-ups	(# of pull-ups)
2) Modified Pull-ups	(# of pull-ups)	4) Flexed Arm Hang	(seconds)

M. Flexibility (Enter data for one of the following tasks.)

1) Back-saver Sit-and-Reach	Left Side (inches)	Right Side (inches)
2) Shoulder Stretch	Left Side	Right Side
	<input type="checkbox"/> Pass	<input type="checkbox"/> Pass
	<input type="checkbox"/> Fail	<input type="checkbox"/> Fail

APPENDIX H
INTERNATIONAL OBESITY TASK
FORCE STANDARDS

INTERNATIONAL OBESITY TASK FORCE CHILDHOOD OVERWEIGHT AND
OBESITY TASK FORCE STANDARDS, 2000

A	B	C	D	E
2.	18.4	18.0	20.1	20.1
2.5	18.1	17.8	19.8	19.5
3.	17.9	17.6	19.6	19.4
3.5	17.7	17.4	19.4	19.2
4.	17.6	17.3	19.3	19.1
4.5	17.5	17.2	19.3	19.1
5.	17.4	17.1	19.3	19.2
5.5	17.5	17.2	19.5	19.3
6.	17.6	17.3	19.8	19.7
6.5	17.7	17.5	20.2	20.1
7.	17.9	17.8	20.6	20.5
7.5	18.2	18.0	21.1	21.0
8.	18.4	18.1	21.6	21.6
8.5	18.8	18.7	22.2	22.2
9.	19.1	19.1	22.8	22.8
9.5	19.5	19.5	23.4	23.5
10.	19.8	19.9	24.0	24.1
10.5	20.2	20.3	24.6	24.2
11.	20.6	20.7	25.1	25.4
11.5	20.9	21.2	25.6	26.1
12	21.2	21.7	26.0	26.7
12.5	21.6	22.1	26.4	27.2
13.	21.9	22.6	26.8	27.8
13.5	22.3	23.0	27.2	28.2
14.	22.6	23.3	27.6	28.6
14.5	23.0	23.7	28.0	28.9
15	23.3	23.9	28.3	29.1
15.5	23.6	24.2	28.6	29.3
16	23.9	24.4	28.9	29.4
16.5	24.2	24.5	29.1	29.6
17	24.5	24.7	29.4	29.7
17.5	24.7	24.8	29.7	29.8
18	25	25	30	30

LEGEND FOR CHART

A-Age (years)

B-Body Mass Index 25kg/m Males

C-Body Mass Index 25kg/m Females

D-Body Mass Index 30kg/m Males

E-Body Mass Index 30kg/m Females

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