Prevalence of Overweight
in
American Samoan Schoolchildren

Report to the Directors

Department of Health
Department of Education

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Territory of American Samoa
Togiola T. A. Tulafono, Governor

This report is dedicated to former ASDOE Director Malaetele Dr. Lui Tuitele for his commitment to this research project. Malaetele understood the growing health issues of our Samoan people and believed that it was the Department of Education's responsibility to work with the school-community in order to promote healthy lifestyles. He realized the importance of using data to make informed decisions in education and planned to use the results of this study to implement changes to the physical education and health programs in American Samoa's public schools. Like Malaetele, it is our hope that the data presented in this report will be used to promote healthy living for all the people in American Samoa.

ABSTRACT

Although childhood obesity is recognized as a global epidemic, Samoan children may be especially vulnerable owing to the high prevalence of obesity in Samoan and other Polynesian adults. This large-sample survey was conducted to verify the high prevalence of overweight and obesity found in several small-sample surveys of American Samoan children and adolescents. We determined the body mass index and waist circumference of 2,795 boys and 2,621 girls attending grades kindergarten, 3, 6, 9, and 12 in American Samoa during the 2006/2007 school year. Using Centers for Disease Control standards, about 20% of the students were at risk of overweight and 34% were overweight. Preliminary age– and sex-specific waist circumference cutoffs categorized about 40% of students as having high trunk fat. The prevalence of both body mass index and high trunk fat increased with age. The results validate the high prevalence of overweight and obesity found in the earlier studies and may presage a looming healthcare crisis as today's children become tomorrow's adults.

During the twentieth century, great progress had been made toward improving human health and well being, especially in the fight against infectious diseases. Paradoxically, the close of the past century also witnessed a startling setback: Despite learning that excess weight has profound health consequences, people began gaining weight at an alarming rate and to a dangerous degree.

The US Surgeon General warned that America's obesity epidemic will dwarf the threat of terrorism if the nation does not reduce the number of people who are severely overweight (Jackson 2006). Childhood obesity, in particular, ranks as a critical public health threat. Overweight adolescents have a 70% chance of becoming overweight or obese adults (Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity, SGCAPDOO). In American Samoa, as elsewhere, childhood obesity threatens to further tax an already overburdened healthcare system as children enter adulthood and begin exhibiting the debilitating symptoms of cardiovascular disease, diabetes, several types of cancer, and other non-communicable diseases that are strongly linked to obesity.

Beginning in 1975, anthropologists, geneticists, epidemiologists, demographers, and other scientists undertook studies of the biology and behavior of Samoans in coping with health changes as they transition from a traditional to what is often termed a modern lifestyle (Baker 1986). Today in American Samoa, that transition is nearly complete.

Prior to World War II, for instance, the population was approximately 13,000 (Harbison 1986). People lived in isolated and socially stable traditional villages and engaged in subsistence farming and fishing. Life expectancy was about 50 years with flu/pneumonia/

bronchitis, infectious parasitic diseases, diarrhea, and tuberculosis as the main causes of mortality (Baker and Crews 1986). During and following the war a wage economy, expanded educational opportunities, and the availability of non-agricultural jobs for both men and women began impacting American Samoan society (Harbison 1986).

In 2007, the population is estimated at 57,663 (CIA World Factbook 2007). Several sprawling villages are linked by paved roads that experience gridlocked traffic as single-occupant cars and crowded buses convey people to service-related jobs. Salaries and wages fuel a consumer-oriented society that enjoys increased leisure time. Life expectancy has risen to 76.25 years (CIA World Factbook 2007), and the leading causes of death have shifted to heart disease, malignant neoplasm, diabetes mellitus, and cerebrovascular disease (American Samoa Statistical Yearbook 2005).

In September 2000, the first fast-food franchise opened in American Samoa with enthusiastic fanfare. Before the end of 2007 six nationally incorporated fast-food restaurants will be catering to an obliging population of mostly young people. With more meals eaten outside the home, with fewer families tending multicrop plantations for their main source of food and regular exercise, and with a greater reliance on video games and television to occupy children because of both parents earning a wage, the obesity epidemic affecting American Samoa's children must be recognized and aggressively addressed by policy makers, community leaders, and parents.

Toward this end, we have attempted to survey all of the territory's schoolchildren attending grades K-5 (i.e., kindergarten for five-year-olds), 3, 6, 9, and 12 during the 2006/2007 school year. Our goal was to definitively document the prevalence of overweight in children and

adolescents across a wide range of ages and to compare our results with those of earlier studies in order to gauge the degree and extent of this insidious epidemic.

Human Subjects

Following the example of a growing number of States that mandate yearly BMI surveys of school-children (Raffaele 2006), we conducted our survey under the authority of the American Samoa Department of Health with approval of its Institutional Review Board. Together with the American Samoa Department of Education and the unanimous voluntary participation of private schools, we measured heights ($\pm$ 1 mm), weights ($\pm$ 0.1 kg), and waist circumferences ($\pm$ 1 mm) of 2,795 boys and 2,621 girls attending grades K-5, 3, 6, 9, and 12 between 18 September 2006 and 8 March 2007. The children's ages ranged from 4 to 20 years. They received an age-appropriate gratuity promoting 5-A-Day consumption of fruits and vegetables for participating.

Measurements

We used a Road Rod™ stadiometer for measuring heights, a Tanita BWB-800 Electronic Medical Scale for measuring weights, and a fiberglass seamstress tape for measuring waist circumferences.

For height, the child was positioned erect with shoulders level, hands at the sides, knees together and weight evenly distributed on both feet. Heels

B. Road Rod™
Durable space age plastic components make a sturdy height rod, accurate to 6 ft, 6 in. All the pieces fit neatly into the lightweight footplate. Pieces are coded, so assembly is easy. A perfect travel companion!
Features:
• Completely portable stadiometer
• Disassembles in 4 sections, stores in foot plate, along with headpiece
• Measurement range-10"-78" (200 cm)
  • Graduations -⅛" / (1 mm)
  • 90-day warranty.
#680214 $132.95
Built-in carry handle

Protective Carry Case
#685585 $69.95
See Page 33-G.

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were comfortably together and touching the base of the stadiometer. The head, back, and buttocks were in contact with the vertical pole while the child maintained a natural stance. The head was aligned in the Frankfort Plane before taking a reading to the nearest millimeter.

The electronic balance automatically froze the readout display once all movement stopped. Weight was then recorded to the nearest 0.1 kilogram.

The seamstress tape was positioned midway between the top of the hip bone and the bottom of the rib cage. The waist circumference was then recorded to the nearest millimeter at the point when the child exhaled during normal breathing.

Students were barefooted and wearing lightweight school uniforms.

Data Analysis

BMI percentiles were determined using Microsoft Visual Basic 6 and the NutriSts subroutine from the Centers for Disease Control software program, EpiInfo. We used SigmaStat 3.10 from Systat Software, Inc., for linear regression, analysis of variance with the Holm-Sidak method for pairwise multiple comparisons, and the two-class chi-square test for homogeneity with the Yates correction for continuity. If, by subdividing the contingency table, two or more samples within a class were found to be homogeneous (defined as having a level of significance, α, greater than 0.05), they were

combined. If three samples could be combined into either of two two-sample combinations, the sample pair with the higher probability, P, for homogeneity was combined. We then used the Bonferroni inequality to adjust the P values to account for performing multiple tests.

Body Mass Index

The Body Mass Index, or BMI, is defined as weight, in kilograms, divided by the square of the height, in meters. It is a reliable indicator of body fatness for most children and teens, making it an easy and inexpensive method of screening for weight categories that may lead to health problems (About BMI for Children and Teens).

While BMI alone is sufficient for categorizing adults, it fails to account for body fat differences between boys and girls and for body fat changes that occur from infancy, through puberty, and towards adulthood. For this reason, the Centers for Disease Control (CDC) produced BMI-for-age growth charts for both sexes (About BMI for Children and Teens).

Plotting a child's BMI on the appropriate growth chart yields a percentile ranking. The percentile indicates the relative position of the child's BMI number among a large reference sample of children of the same sex and age. It is used to assign the child to one of four weight status categories: underweight, healthy weight, at risk of overweight, and overweight.

The chart for girls is on the following page. The bottom axis is the age, in years, from 2 to 20. The side axis is BMI, as kg per square meter. It ranges from 10 to 37.

The curves are percentiles, with colors indicating the weight status categories. Boundaries between

categories occur at the 5th, 85th, and 95th percentiles. If the child's BMI plots below the 5th percentile, that is, in the orange area of the chart, her weight status category is "underweight." Between the 5th and 85th percentile lies the "healthy weight" area (green). A percentile between the 85th to less than the 95th percentile places the girl in the "at risk of overweight" category (yellow). And if her percentile is equal to or greater than the 95th percentile, she is categorized as "overweight" (red).
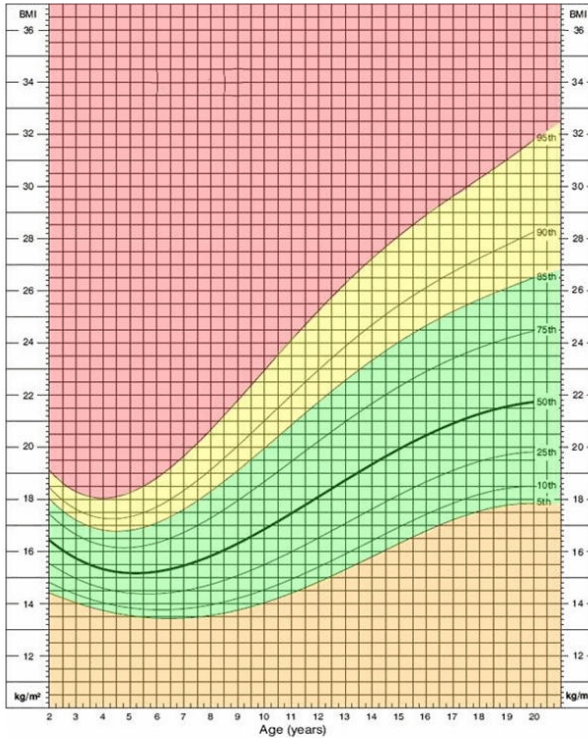
An alternative standard for categorizing children and adolescents by their BMI was developed by Cole et al. (2000) for the International Obesity Task Force (IOTF). Although these age– and sex-specific growth charts closely parallel those of the CDC, they were linked to the adult cutoffs of 25 and 30 kg per square meters and use the same terms. For example, children whose BMI plot between the 25 and 30 IOTF cutoffs would most likely plot between the 85th and 95th CDC percentile. However, rather than categorize them as "at risk of overweight," the IOTF term is "overweight."

Likewise, those who plot at or above the 30 IOTF cutoff, which is roughly equivalent to the CDC's 95th percentile, are categorized as "obese" rather than as "overweight."

Waist Circumference

While BMI is a reliable indicator of body fatness, it does not distinguish between subcutaneous fat and fat that accumulates around organs. Perhaps of greater importance for predicting health risks is a measure of this trunk, or abdominal fat. Waist circumference is used with adults for this purpose, but no standard of optimal waist circumference exists for children.

We determined whether a child potentially had high trunk fat mass by comparing his waist circumference against an age- and sex-specific table of suggested cutoffs proposed by Taylor et al. (2000).

An alternative to the cutoffs proposed by Taylor et al. (2000) is that of Fernández et al. (2004) in which cutoffs were proposed for the 10th, 25th, 50th, 75th, and 90th percentiles for boys and girls from 2 to 18 years of age. We compared the percentages of students in each grade level that fell within the boundaries of these percentiles, using the chi-square test to determine whether the proportions were homogenous.

| Sex	School Status	BMI Category	Grade					Totals
			K-5	3rd	6th	9th	12th	
Boy	Public	UW	5	2	2	2	0	11
		HW	227	296	228	184	148	1083
		AR	83	89	100	109	95	476
		OW	96	135	201	185	187	804
		All	411 (76)	522 (87)	531 (88)	480 (74)	430 (79)	2374
	Private	UW	1	1	1	0	0	3
		HW	46	28	31	37	17	159
		AR	29	18	19	6	5	77
		OW	37	46	35	31	16	165
		All	113 (89)	93 (89)	86 (90)	74 (86)	38 (73)	404
Girl	Public	UW	1	3	1	1	0	6
		HW	225	254	216	146	105	946
		AR	90	85	94	130	122	521
		OW	66	123	165	205	162	721
		All	382 (82)	465 (91)	476 (88)	482 (80)	389 (83)	2194
	Private	UW	1	1	0	1	0	3
		HW	57	57	31	27	12	184
		AR	15	17	12	20	9	73
		OW	36	34	39	29	20	158
		All	109 (100)	109 (98)	82 (89)	77 (100)	41 (95)	418

Results and Discussion

Body Mass Index

Less than 0.5% of the 5,416 students were underweight. The underweight category was omitted in subsequent analyses owing to the relatively low counts.

Most students (44.7% of boys, 43.2% of girls) had a healthy weight. The remainder were either at risk of overweight (19.9% of boys, 22.8% of girls) or overweight (34.9% of boys, 33.6% of girls). These latter percentages are far greater than the estimated 16% of children and adolescents aged 6-19 years that were overweight in the United States (Hedley et al. 2004).

The numbers of students who were underweight (UW), at a healthy weight (HW), at risk of overweight (AR), or overweight (OW) attending grades K-5, 3, 6, 9, or 12 at either a private or a public school are given at left. Numbers in parentheses next to totals are percentages of enrolled students who were actually surveyed.

The percentage of students in the healthy weight category declined as grade level increased. The rate of
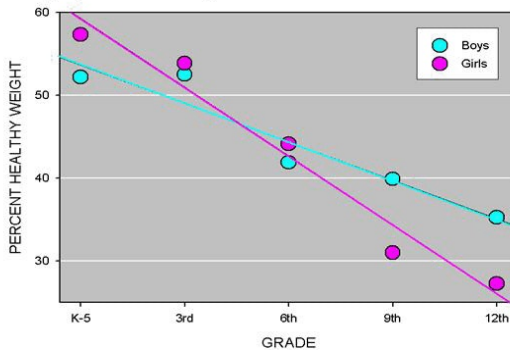
decrease for girls, 2.7% per year, was nearly twice that for boys, 1.4% per year.

Keighley et al. (2007) reported BMI studies conducted in American Samoa from 1976 to 1978 on 162 boys and 130 girls, and again in 2002 on 283 boys and 262 girls. They examined children 6 to 17 years of age and clustered them into eight groups by sex and age. They categorized the children as normal, overweight, or obese using standards developed for the International Obesity Task Force (IOTF) by Cole et al. (2000). The three IOTF categories closely parallel the healthy
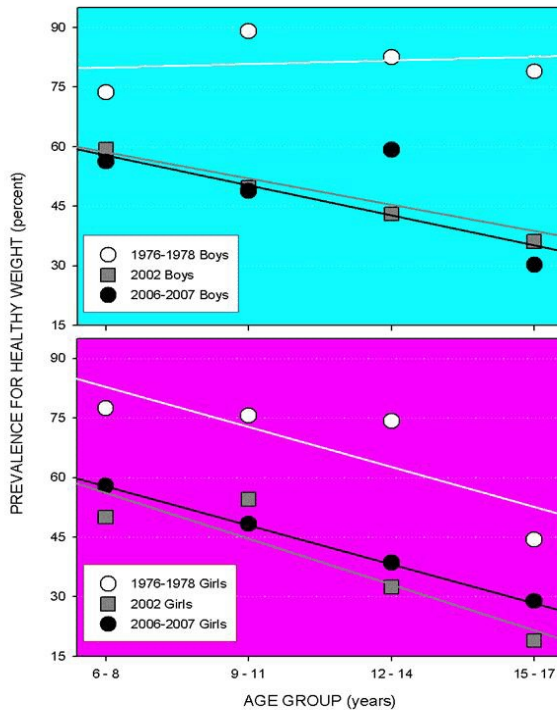
weight, at risk of overweight, and overweight categories of the Centers for Disease Control.

In order to compare our 2006/2007survey results with these two earlier studies, we also categorized 6 to 17 year-old students in our study using the IOTF cut-offs, assigning 2,236 boys and 2,114 girls among the same age groups as did Keighley et al. (2007).

The prevalence of normal, or healthy weight, was highest for both sexes during 1976-1978 (see charts at left). Moreover, the data for boys at that time showed that a decline in prevalence with age was not necessarily inevitable. Even girls in the 1976-1978 study maintained a high, steady 75% healthy weight prevalence up until their late teens, when it dropped abruptly to 45%.

But by 2002 the prevalence of healthy weight children of either sex declined more or less steadily with age. Again, the decline was greater for girls (about 3.5% per year) than for boys (about 2.4% per year).

Another earlier study of American Samoan children was carried out in 1978 and 1982 (Bindon and Zansky 1986), collecting BMI data on 130 boys and 138 girls between the ages of 11 and 18. Retroactively applying CDC BMI cutoffs to this data indicated that 77.0% of the boys and 56.5% of the girls had a healthy weight and only 3.8% of the boys and 8.0% of the girls were overweight. The highest BMI among the boys was 45.3 and among the girls 37.2. These were also the only BMI values that exceeded the CDC growth charts' upper limit of 37.

During 2005 we repeated this earlier survey on 197 boys and 183 girls (Davison et al. 2007). Only 37.6% of the boys and 30.0% of the girls had a healthy weight, while about 40% of both sexes were overweight. Sixteen girls had BMI values ranging from 37.3 to 54.8 kg per square meter. Sixteen boys had BMI values ranging from 37.5 to 67.9 kg per square meter.

Compared with children measured about 25 years earlier, those surveyed in 2005…

1. had average BMI values 4.9 kg per square meter higher for boys and 3.8 kg per square meter higher for girls,
2. entered the overweight weight status category at an earlier age, and
3. had much higher BMI values that fell above the 99th percentile range.

All of these studies point to a dramatic increase in overweight, or obesity, in American Samoan children during the past quarter century. While this trend is shared by the rest of the world, the magnitude of the increase is particularly striking in American Samoans.

In order to confirm our 2005 results and to establish a definitive benchmark that may serve to measure any further changes in BMI in American Samoan children and adolescents, we conducted our much larger survey during the 2006-2007 school year. The plots appearing on the following pages reaffirm the results of both Keighley et al. (2007) and Davison et al. (2007).

The CDC growth charts, which range from a BMI of 10 to 37, were distorted to accommodate the excessively high BMI values that reached 65 kg per square meter for both boys and girls. For adults, a BMI at or above 50 is considered "morbidly obese."

The bottom portions of both graphs, from BMI 10 to 37, are the CDC growth charts. The upper portions were included to display BMI values above 37 kg per square meter.

The axis at the bottom of both graphs denotes age, ranging from 2 to 20 years. The five clusters denote ages of children in grades K-5, 3, 6, 9 and 12.

Expanded CDC growth chart for boys, 2006/2007.

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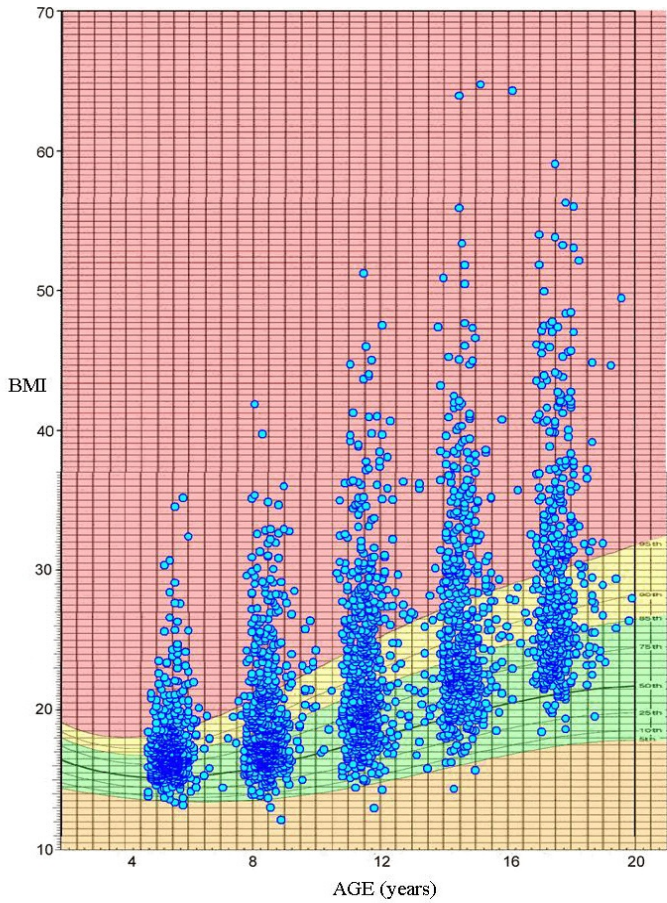
Expanded CDC growth chart for girls, 2006/2007.
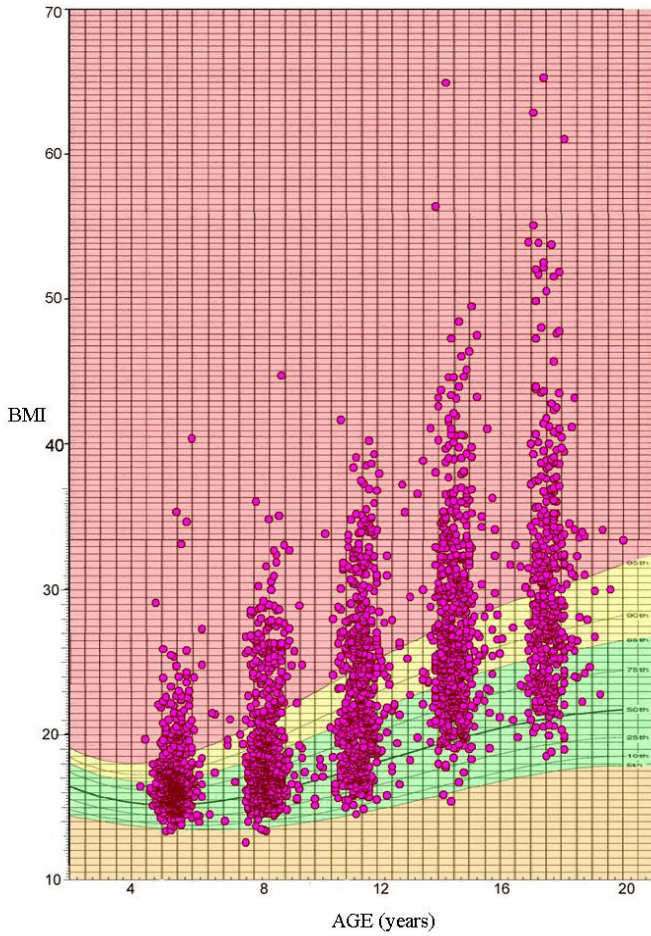
The table below gives the percentages of boys and girls in each grade who attended a private school during 2006/2007.

	Boys	Girls
Kindergarten	21.4	22.1
Grade 3	15.0	18.8
Grade 6	13.8	14.6
Grade 9	13.4	13.8
Grade 12	8.1	8.9

Inasmuch as socioeconomic status is linked to the prevalence of overweight and obesity (SGCAPDOO), we addressed the possibility of detecting differences in the prevalence of overweight between students attending private schools and public schools. We based this on the assumption that families who could afford private school tuition were at a relatively higher socioeconomic level and would prefer private school education for their children.

We found proportionally higher numbers of overweight private school students in kindergarten and in grade 3 ($P < 0.001$). This was true for both sexes, but the proportion was especially high for girls in kindergarten, at 35.3%, and somewhat lower, at 21.5%, for third graders. For boys the proportions were 27.4% and 25.1% for grades K-5 and 3, respectively.

Private schools also had a proportionally higher number of kindergarten boys at risk of becoming overweight (25.9%, $P < 0.001$).

These results were the opposite of what we expected; lower income families in modern societies usually show a higher prevalence for overweight and obesity (SGCAPDOO).

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Waist Circumference

Waist circumference alone may be a more useful and more easily obtainable index in children for predicting the development of hyperlipidemia, insulin resistance, hypertension, and diabetes mellitus (Fernández et al. 2004). Although no standard cutoffs yet exist for children and adolescents, we used tentative cutoffs developed by Taylor et al. (2000) to compare with the BMI weight status categories. We found that the tentative age- and sex-specific waist circumference cutoffs of Taylor et al. (2000) would have categorized 38.9% of the boys and 41.4% of the girls as having high trunk fat.
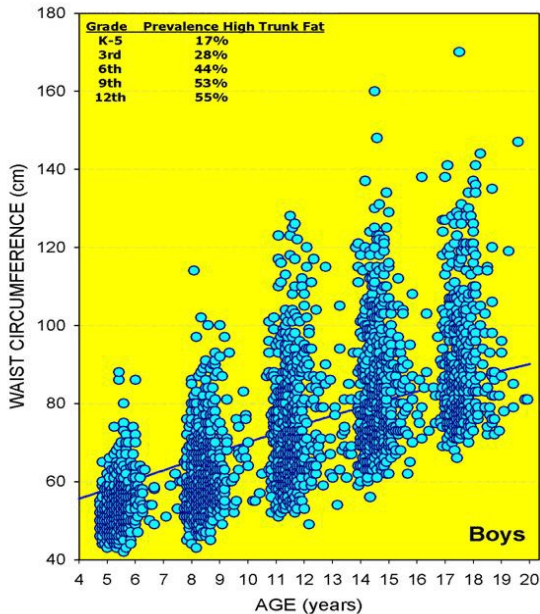
As with BMI, percentages were not uniform across grade levels. The prevalence of high trunk fat increased with grade level, as indicated on the charts at left and below, which show the distributions of waist circumferences for the 2,795 boys and 2,621 girls in the 2006-2007 survey. The   lines behind the points are second-order polynomial curves fitted to the cutoffs proposed by Taylor et al. (2000).
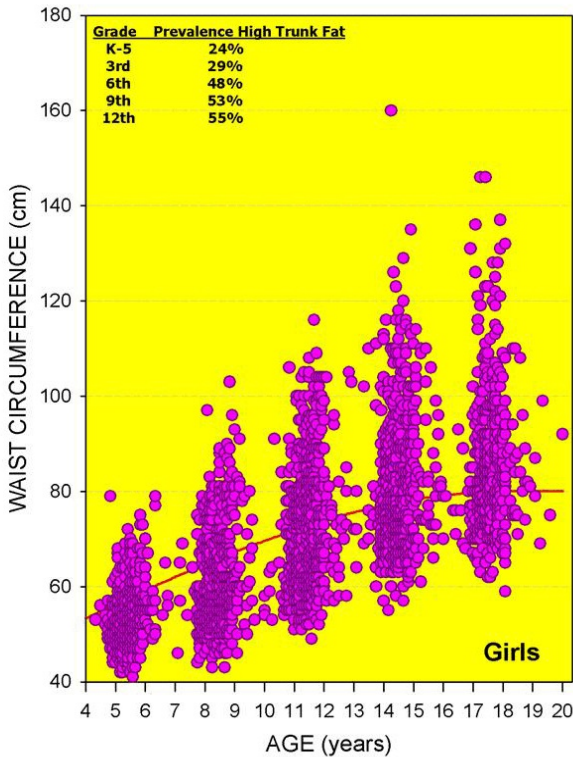
Fernández et al. (2004) published suggested age–and sex-specific cutoffs for the 10th, 25th, 50th, 75th, and 90th percentiles for waist circumferences in children and adolescents 2 to 18 years old.

We found a proportionally greater number of students above the 90th percentile in the upper grades levels, while both boys and girls in K-5 and grade 3 did not differ significantly from the proportions in the reference population used by Fernández et al. (2004).

By definition, only 10% of the sample should be at or above the 90th percentile cutoff. In our study, 27.8% of sixth-grade boys ($P = 0.024$) and 29.8% of sixth-grade girls ($P = 0.006$) had a waist circumference at or above the 90th percentile. For ninth-graders, 27.8% of the boys ($P < 0.001$) and 25.0% of the girls ($P < 0.001$) fell in this range.

But for seniors, only boys had a significantly higher proportion, 31.2% ($P < 0.001$), that equaled or exceeded the 90th percentile. Girls, at 17.0%, did not differ significantly from the expected value of 10%.

Other

Because the objectives of our survey received unanimous cooperation from all schools in the territory, private as well as public, this presented a unique opportunity to make comparisons between the two types of school.

From the table on page 15, private schools have a steadily increasing percentage of students as grade level decreases. Whether this represents a gradually increasing preference or ability of parents to enroll their young children into private schools during the past twelve years or a steady exodus of students from private schools towards public education as they advance from one grade level to the next might be decided by a review of recent enrollment records.

Based on the public school enrollment record for December 2006 and enrollments provided by each private school, our survey comprised 81.6% of all boys and 86.5% of all girls in the territory enrolled in grades K-5, 3, 6, 9, and 12. Assuming that our survey rates represented attendance rates as well, since without exception all students in a classroom came forward for measurement, a three-way analysis of variance of rates by school type, grade level, and sex found significant differences between private and public schools ($P = 0.008$) and between boys and girls ($P = 0.010$), but not among grade levels ($P = 0.136$). Average survey rates, as percents, are given in the table below.

	Boys	Girls
Private Schools	85.4	96.5
Public Schools	80.8	84.8

Boys had lower rates than girls, whether they attended a private school or a public school. Likewise, both boys and girls in public schools had lower rates than those attending private schools.

Average ages and standard deviations of all students are given in the table below.

	Boys	Girls
Kindergarten	5.45 ± 0.35	5.46 ± 0.35
Grade 3	8.49 ± 0.46	8.46 ± 0.45
Grade 6	11.57 ± 0.54	11.53 ± 0.52
Grade 9	14.62 ± 0.52	14.55 ± 0.47
Grade 12	17.63 ± 0.50	17.61 ± 0.45

Conclusions

If the current epidemic of child and adolescent obesity continues unabated, life expectancy could be shortened by two to five years in the coming decades (Olshansky et al. 2005). Obesity is known to increase the risk for cardiovascular disease, certain cancers, and type 2 diabetes, all of which require expensive care.

Fast food, junk food, and soft drinks have increasingly become more common in the adolescent diet. At the same time, children have become more sedentary, spending more time watching TV and using computers and video games.

"To tackle obesity we will need unambiguous political leadership at all levels of government to make clear that public health has to come before private profit," says David Ludwig, Director of the Optimal Weight for Life (OWL) program at Children's Hospital Boston (Olshansky et al. 2005).

We urge the Directors to support the Healthy American Samoa initiative recently presented to the Fono (Coverage for all in American Samoa 2007). The Policy Leadership Group, chaired by Utu Abe Malae, states that "the dramatic levels of risky behavior expressed in the rates of smoking, binge drinking, unhealthy diet, and obesity means that the disease burden will continue to increase into the future, leaving those in American Samoa to suffer the consequences of poor health and premature death and government to pay the exorbitant costs." (Coverage for all in American Samoa 2007).

Recommended actions can be found on several Web sites, particularly the US Dept. of Health & Human Services and the Institute of Medicine. Here, we list just a few that may be applicable to and achievable in American Samoa.

Health Care Providers

- Increase knowledge of and access to effective nutrition and physical activity interventions.
- Promote and support breastfeeding.

Schools

- Provide age-appropriate and culturally sensitive instruction in health education that helps students develop the knowledge, attitudes, skills, and behaviors to adopt, maintain, and enjoy healthy eating habits and a physically active lifestyle.
- Ensure that meals offered through the school lunch program meet nutrition standards.
- Adopt policies ensuring that all foods and beverages available on school campuses and at school events contribute toward eating patterns that are consistent with a healthy diet.

Families and Communities

- Support opportunities that promote leisure time physical activity and encourage food outlets to increase availability of low-calorie, nutritious foods.
- Request the availability of nutrition information for foods eaten and prepared away from home.
- Decrease time spent watching television and in similar sedentary behaviors by children.

Media and Communications

- Encourage community-based advertising campaigns to balance messages that encourage consumption of excess calories by fast food industries and by industries that promote sedentary behavior.

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Appendix

The following pages summarize, by grade level and school, the number of boys and girls in each of the four weight status categories defined by the Centers for Disease Control and Prevention. The weight status categories are abbreviated as...

UW—underweight
HW—healthy weight
AR—at risk of overweight
OW—overweight

Private school names are in italics. Abbreviations are…

SBA—Samoa Baptist Academy
SDA—Seventh-Day Adventist
SPA—South Pacific Academy
SPICC—South Pacific International Christian Center

Two private schools, Nazareth House, with 15 boys and 10 girls in K-5, and Peteli Academy, with 3 boys and 4 girls in K-5, 3 boys and 2 girls in grade 3, and 4 boys and 3 girls in grade 6, were not surveyed owing to our oversight.

Kindergarten	Boys				Girls			
School	UW	HW	AR	OW	UW	HW	AR	OW
Afono	0	2	0	1	0	4	2	2
Alataua	0	11	5	2	0	7	2	3
Alofau	0	3	1	3	0	8	2	3
AP Lutali	0	2	0	0	0	2	1	0
Aua	0	4	0	2	0	6	1	1
Faleasao	0	2	0	1	0	4	0	2
Fitiuta	0	0	0	2	0	0	0	4
Kananafou	1	12	4	9	0	11	6	5
Laulii	0	8	2	3	0	6	0	1
Leatele	0	2	0	0	0	5	0	1
Leone Midkiff	0	28	15	11	0	28	10	11
Lupelele	1	31	13	14	1	22	15	5
Manulele	0	39	13	15	0	43	19	7
Manumalo Baptist	0	11	11	14	0	17	6	12
Mary the Mother	0	5	2	3	0	3	0	6
Masefau	0	4	0	0	0	1	3	1
Matafao	1	12	6	7	0	19	7	4
Matatula	0	3	3	3	0	10	1	6
Mauga-O-Alava	0	2	0	1	0	0	2	3
Olomoana	0	6	0	1	0	3	3	0
Olosega	0	3	1	2	0	0	0	0
Pacific Horizons	0	1	1	1	1	3	1	2
Pavaiai	1	36	16	15	0	32	13	3
PT Coleman	2	18	5	13	0	18	8	9
SBA	0	3	5	1	0	4	1	3
SDA	0	2	2	2	0	1	0	2
Siliaga	0	11	3	0	0	7	1	0
SPA	0	3	1	4	0	5	0	1
SPICC	0	9	3	3	0	13	1	5
Taputapu	0	3	0	2	0	1	2	0

Grade 3	Boys				Girls			
School	UW	HW	AR	OW	UW	HW	AR	OW
Afono	0	3	2	2	0	2	1	1
Alataua	0	17	1	4	0	9	2	5
Alofau	0	9	3	4	0	2	3	5
AP Lutali	0	4	0	1	0	4	1	2
Aua	0	6	4	1	0	9	3	2
Faleasao	0	5	0	1	0	2	1	1
Fitiuta	0	3	0	1	0	4	0	0
Kananafou	0	6	3	8	0	8	4	13
Laulii	0	8	0	3	0	5	1	5
Leatele	0	4	1	4	0	6	3	2
Leone Midkiff	0	36	9	19	0	28	12	18
Lupelele	0	34	12	26	1	40	10	15
Manulele	0	44	12	18	1	39	13	22
Manumalo Baptist	0	4	5	13	0	15	2	12
Marist St. Francis	0	1	2	3	0	2	0	3
Masefau	0	3	1	2	0	4	3	1
Matafao	0	19	10	11	0	18	7	15
Matatula	0	6	4	7	1	7	2	4
Mauga-O-Alava	0	2	5	1	0	1	0	0
Olomoana	2	3	1	1	0	2	0	3
Olosega	0	3	0	0	0	2	0	0
Pacific Horizons	0	1	0	1	0	3	1	0
Pavaiai	0	55	16	18	0	41	12	11
PT Coleman	0	25	6	9	0	22	9	11
SBA	0	0	1	3	0	3	5	1
SDA	0	2	2	4	0	7	1	2
Siliaga	0	7	2	2	0	7	2	0
SPA	1	3	2	6	1	8	1	1
SPICC	0	7	1	6	0	9	0	1
St. Theresa	0	4	2	2	0	2	3	1
Taputapu	0	2	2	2	0	0	3	1

Grade 6		Boys				Girls		
School	UW	HW	AR	OW	UW	HW	AR	OW
Afono	0	6	0	3	0	4	1	3
Alataua	0	10	3	4	0	9	2	5
Alofau	0	2	4	5	0	6	3	2
AP Lutali	0	2	1	1	0	2	0	1
Aua	0	7	3	7	0	13	4	2
Faleasao	0	5	1	1	0	2	2	0
Fitiuta	0	3	0	3	0	2	1	0
Kananafou	0	5	1	9	0	8	1	5
Laulii	0	8	1	7	0	6	2	3
Leatele	0	3	0	5	1	4	3	2
Leone Midkiff	0	19	16	19	0	19	16	20
Lupelele	0	31	18	30	0	26	12	30
Manulele	0	23	13	33	0	34	17	31
Manumalo Baptist	1	5	5	9	0	1	1	8
Marist St. Francis	0	1	3	1	0	2	0	4
Masefau	0	5	0	1	0	4	2	3
Matafao	0	18	10	12	0	11	8	10
Matatula	1	7	2	8	0	5	2	6
Mauga-O-Alava	0	0	1	2	0	2	0	4
Olomoana	0	4	1	3	0	4	1	4
Olosega	0	2	2	3	0	1	0	2
Pacific Horizons	0	2	2	1	0	1	2	0
Pavaiai	0	42	14	32	0	33	12	22
PT Coleman	1	27	6	16	0	19	5	14
SBA	0	1	2	3	0	5	3	6
SDA	0	3	0	2	0	3	0	3
Siliaga	0	4	4	6	0	10	1	1
SPA	0	5	2	2	0	5	1	3
SPICC	0	5	2	0	0	5	1	4
St. Theresa	0	4	2	8	0	1	3	6
Taputapu	0	2	1	3	0	0	0	2

Grade 9		Boys				Girls		
School	UW	HW	AR	OW	UW	HW	AR	OW
Faasao Marist HS	0	11	1	9	1	9	5	9
Fagaitua HS	2	31	17	32	0	22	24	39
Kananafou	0	17	3	15	0	9	9	15
Leone HS	0	47	30	48	0	34	27	43
Manua HS	0	1	2	4	0	6	1	5
Pacific Horizons	0	1	1	0	0	2	1	0
Samoana HS	0	33	25	38	0	41	33	49
SDA	0	2	0	5	0	4	2	2
SPA	0	6	1	2	0	3	3	3
Tafuna HS	0	72	35	63	1	43	45	69

Grade 12		Boys				Girls		
School	UW	HW	AR	OW	UW	HW	AR	OW
Faasao Marist HS	0	4	2	4	0	5	2	7
Fagaitua HS	0	23	12	38	0	12	22	25
Kananafou	0	2	1	2	0	4	3	6
Leone HS	0	37	23	40	0	34	28	38
Manua HS	0	3	3	5	0	5	4	4
Manumalo Baptist	0	2	1	0	0	1	1	1
Pacific Horizons	0	3	0	0	0	1	0	0
PolyTech	0	15	10	26	0	6	9	13
Samoana HS	0	30	16	35	0	24	23	36
SDA	0	1	0	4	0	1	1	4
SPA	0	5	1	6	0	0	2	2
Tafuna HS	0	40	31	43	0	24	36	46

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