

B. TRENDS OF BODY MASS INDEX (BMI) BY AGE AND SEX PERCENTILE AMONG ARAB-AMERICAN FIFTH GRADERS IN SOUTHEASTERN MICHIGAN SCHOOLS

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INTRODUCTION

Childhood obesity is a growing problem in developed and developing countries and a pressing public health concern. In the United States, obesity has gained prominence on the public health agenda because it is now one of the most common health problems facing children. It is a problem because it is a known risk factor for many diseases, including diabetes, heart disease, stroke, hypertension, hypercholesterolemia, gallbladder disease, osteoarthritis, sleep apnea and breathing problems, and some types of cancers.¹

BACKGROUND

Nearly two thirds (64.5%) of US adults are overweight, and one third (30.5%) of US adults are obese, according to data from the 1999–2000 National Health and Nutrition examination Survey (NHANES).² The prevalence of overweight and obese adults and children has steadily increased over the years among all ages, racial/ethnic groups, educational levels, smoking levels, and both genders. Being overweight refers to an excess of body weight compared to normative standards. Obesity is defined as having an abnormally high proportion of body fat. A person can be overweight without being obese, such as a bodybuilder or other athlete who has a large muscle mass. Unfortunately, most people who are overweight are also obese.

The most common method for determining whether someone is overweight or obese is by measuring body mass index. Body mass index (BMI) is the measurement of choice for obesity researchers and health professionals, as

well as the parameter used in most published information on body size. It is calculated as weight in kilograms (kg) divided by the square of height in meters (m²) (BMI = weight [kg]/height[m²]). To estimate BMI using pounds (lbs) and inches (in), divide weight in pounds by the square of height in inches. Then multiply the resulting number by 704.5 (BMI = weight [lbs]/height[in²] × 704.5). An overweight person has a BMI between 25 and 29.9; an obese person has a BMI of 30 or greater.³

As the prevalence of overweight and obese adults and children has increased in the United States, so has related healthcare costs, both direct and indirect. The economic costs of obesity are approximately the same as for diabetes, 1.25 times greater than coronary heart disease, and 2.7 times more expensive than hypertension.⁴ According to a study of national costs attributed to both overweight and obese adults, medical expenses accounted for 9.1% of total US medical expenditures in 1998 and may have reached as high as \$78.5 billion (\$92.6 billion in 2002 dollars).⁵ Being obese or overweight tends to begin in childhood. According to the Centers for Disease Control and Prevention, about 15.6% of American children between 12 and 19 years old were obese in 2002, up from 6.1% in 1974.⁶

Rates of being overweight and/or obese appear to differ among distinct ethnic groups in America. Obesity is higher in women who are members of racial and ethnic minority populations than in non-Hispanic White women. Among men, Mexican Americans have a higher prevalence of obesity than non-Hispanic Whites or Blacks. For non-Hispanic men, the prevalence of overweight and obesity among Whites is slightly greater than among Blacks.⁶

From the Arab Community Center for Economic and Social Services, Dearborn, Michigan.

Table 1. Age and sex distribution of Arab-American children in study

Sex	Age			Total
	10–11 Years	11–12 Years	>12 Years	
Male	15 (9.5%)	47 (29.7%)	6 (3.8%)	68 (42%)
Female	25 (15.8%)	63 (39.9%)	2 (1.3%)	90 (57%)
Total	40 (25.3%)	110 (69.6%)	8 (5.1%)	158 (100%)

Data for youth from NHANES III showed a similar pattern to that seen among adults. Mexican-American boys tended to have a higher rate of being overweight than non-Hispanic Black and non-Hispanic White boys. African-American girls tended to have a higher prevalence of being overweight compared to non-Hispanic White and Mexican-American girls.⁷ The National Heart, Lung, and Blood Institute Growth and Health Study on overweight children found a higher mean BMI for Black girls aged 9 and 10 years compared to White girls of the same ages.⁸ This racial difference in BMI widened and was even greater at age 19.⁹

An ethnic group for which no overweight/obesity data have been collected is Arab-American youths. To determine the obesity of Arab-American children in an area of southeastern Michigan, a screening survey was conducted in two elementary schools during the Spring of 2003. The screening effort consisted of measuring fifth-grade students' height and weight then calculating their BMI. The criteria are based on year 2000 CDC BMI guidelines for age growth charts in the United States.³

METHODS

Sample

A convenience sample of 158 students, 90 girls and 68 boys, in two elementary schools were screened. Ages ranged between 10 and 13 years, with 110 (69.6%) of the students between 11 and 12 years of age (see Table 1).

Measurement

Weight was measured in kilograms by having students stand on a pre-tested scale. Height was measured in meters using a height measurement scale. Those considered overweight were defined as having a BMI greater than the 95th percentile for age and sex, while those at risk were defined as having a BMI between the 85th and 95th percentiles. The BMI of each student was compared to the CDC growth chart of BMI for each gender.

RESULTS

To compare students based on their BMI, they were subdivided into three categories for each gender. The first category was children with a BMI less than the 85th percentile. They were considered to be of normal weight; 51.4% of the boys and 60% of the girls fell into this category as shown in Table 2.

The second group included children with a BMI between the 85th and 95th percentiles; they were considered overweight. Table 2 shows that 21 (31%) of boys and 22 (24.5%) of girls fell into this category. The third group had chil-

dren with a BMI greater than the 95th percentile; they were considered obese; 12 (17.6%) of boys and 14 (15.5%) of the girls were in this category. About half (50%) of the boys were found to be overweight or at risk for becoming overweight, and 40% of the girls were found to be overweight or at risk for becoming overweight.

DISCUSSION

Data for Arab-American children included in this study follow the same trends of being overweight/obese as seen in other ethnic groups in America. The National Longitudinal Survey of Youth, a prospective cohort study conducted from 1986–1998 among children aged 4–12 years, found that the proportion of overweight children was 21.5% among African Americans, 21.8% among Hispanics, and 12.3% among non-Hispanic Whites.⁹ Troiano et al¹⁰ reported a 10.9% prevalence of those overweight in the United States (based on BMI) above the 95th percentile and 22% in the 85th percentile. When we compared our results with the results of these two studies, the rates of those who were overweight were similar.

CONCLUSION

The increasing overweight trends among youth are affecting Arab-American children as well as other ethnic minorities. These trends indicate an urgent need to focus on primary prevention for excess body weight. Implementing cul-

Table 2. Body mass index percentile according to gender of Arab-American children

Sex	BMI Percentile			Total
	<85th Percentile	>85th Percentile	>95th Percentile	
Male	35 (51.4%)	21 (31%)	12 (17.6%)	68 (42%)
Female	54 (60%)	22 (24.5%)	14 (15.5%)	90 (57%)
Total	89 (56%)	43 (27.5%)	26 (16.5%)	158 (100%)

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turally competent treatment and prevention strategies as well as other policy interventions are needed to lower the growing obesity trend by increasing physical activity and encouraging a healthy diet among the young. The preliminary findings in this study have encouraged the ACCESS Research Health Team to conduct a more thorough study of body weight in growing Arab-American children.

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