High BMI in Pacific Island and Filipino Children

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Background

- Native Hawaiians and other PI have high prevalence of obesity and related illnesses including diabetes, cancer and cardiovascular disease
- Filipino Americans have much poorer health status when compared with other Asian Americans such as Japanese Americans
  - High risk for chronic conditions associated with OW and central obesity
- There is little data on the prevalence of obesity in Native Hawaiian, other PI and Filipino children

Study Objective

- To determine the prevalence of overweight and obesity in a population of Native Hawaiian, Samoan and Filipino children attending a rural health center in Hawaii

Methods
Study Population

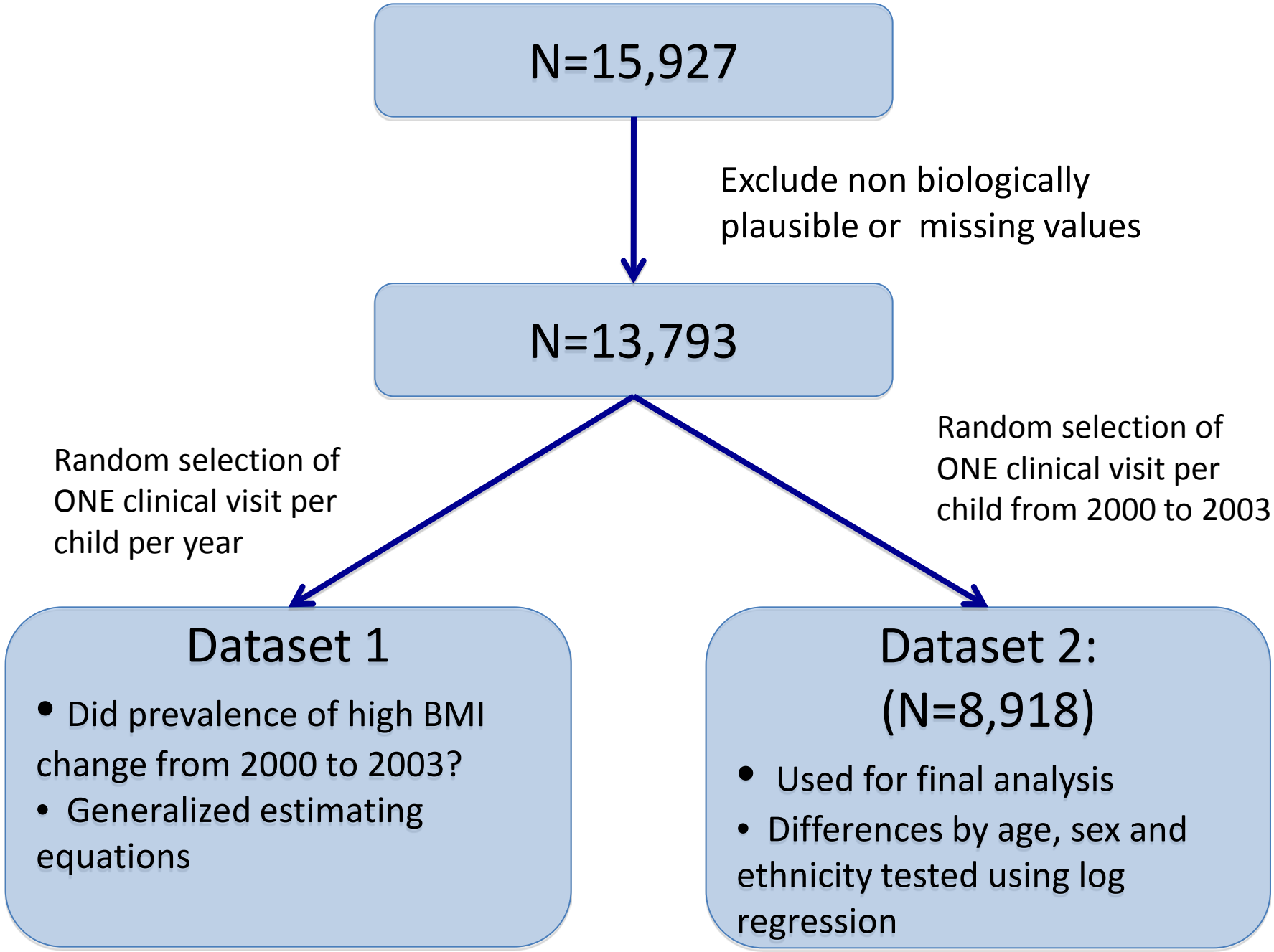
- Children who utilized Hawaii's largest federally qualified community health center from 2000 to 2003
- Community:
  - One of the highest concentrations of full and part-Native Hawaiian residents
  - 40% of the population of 33,400 residents is < 20 years
- In 2005 the CHC provided health services to 26,936 patients
  - 51% NH
  - 43% < 20 years of age
  - 76% income at or below 200% of the US federal poverty level

Data From CHC Electronic Clinic Database

- Entry criteria
  - Patients 2-19 years
  - At least ONE visit to the CHC between 1/1/2000 and 12/31/2003 in which weight, height and demographic information was recorded in the database
- BMI converted to percentiles for age and sex based on CDC 2000 growth charts

High Body Mass Index (BMI) Terms

- Overweight
  - BMI% for age/sex 85-94.9%
- Obese
  - BMI% for age/sex ≥ 95%
- Very obese
  - BMI% for age/sex ≥ 97%


N=15,927
Exclude non biologically plausible or missing values
N=13,793
Random selection of ONE clinical visit per child per year
Random selection of ONE clinical visit per child from 2000 to 2003
Dataset 1
• Did prevalence of high BMI change from 2000 to 2003?
• Generalized estimating equations
Dataset 2: (N=8,918)
• Used for final analysis
• Differences by age, sex and ethnicity tested using log regression

Results

High BMI by Calendar Year

- High BMI by calendar year
  - Adjusted for age, sex and ethnicity
  - OR 1.03 (95% CI; 1-1.06)
- Trends for single ethnicities were statistically significant (p value 0.13-0.82)
- Therefore, dataset 2 was used for remainder of analysis

Table 1: Demographics

	No.	% Medicaid	% Uninsured	% Boys	% Girls
All ethnic groups	8918	60.7	19.7	44.2	55.8
Hawaiian	5670	67.9	12.4	47.3	52.7
Samoan	776	68.9	15.5	50.9	49.1
Filipino	1320	24.7	58.0	24.6	75.4
White	1152	60.7	14.7	46.4	53.6
Age 2-5 years	2100	79.3	4.8	51.7	48.3
Age 6-11 years	2065	73.3	5.8	53.6	46.4
Age 12-19 years	4793	46.0	32.3	36.8	63.2

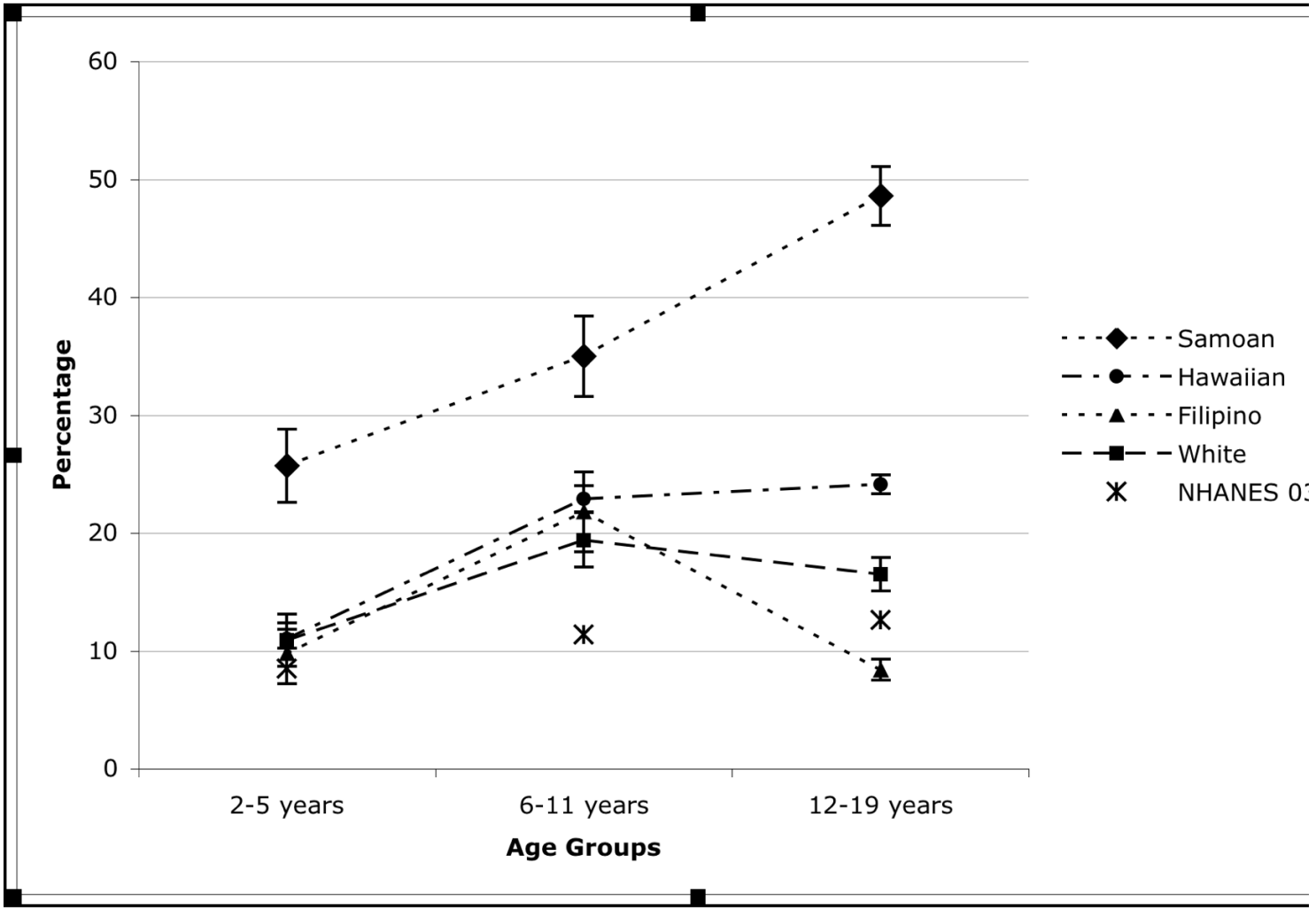
Demographics - Sex

- Overall: All ethnicities
  - 44% male; 63% female
- Age: 12 to 19 years (all ethnicities)
  - 25% male; 63% female
- Age: 12 to 19 years (Filipino)
  - 16% male; 84% female
- Age 2 to 6 years
  - 52% male; 48% female

Prevalence of BMI ≥ 85%

- 42.1% (95% CI, 41.1-43.1)
  - Compared with 31.9% NHANES
- Prevalence of obesity among 6-11 year olds in all major ethnic groups was higher than NHANES 2003-2006
- High obesity prevalence continued through adolescence except for Filipino teen females

Figure 1: Prevalence of BMI ≥ 97%[a] for boys and girls combined, 2000-2003



Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared. NHANES, National Health and Nutrition Examination Survey, 2003-2006. [26]

[a] Based on Center for Disease Control 2000 Growth Charts

Table 2: Prevalence of High BMI % for age in Children, 2000-2003

Prevalence of BMI ≥ 95% of the CDC Growth Curve [a]								
	Hawaiian		Samoan		Filipino		White	
Age (years)	No.	%(SE)	No.	%(SE)	No.	%(SE)	No.	%(SE)
Both sexes								
2-5	1584	14.3 (0.9)	191	33.5 (3.4)	132	10.6 (2.7)	193	12.4 (2.4)
6-11	1415	29.5 (1.2)	200	46.5 (3.5)	151	26.5 (3.6)	299	23.4 (2.4)
12-19	2671	31.6 (0.9)	385	59.2 (2.5)	1037	12.3 (1.0)	660	22.2 (1.6)
Girls								
2-5	761	13.0 (1.2)	95	30.5 (4.7)	58	10.3 (4.0)	101	11.9 (3.2)
6-11	654	28.4 (1.8)	90	37.8 (5.1)	70	22.9 (5.0)	145	24.1 (3.6)
12-19	1571	27.8 (1.1)	196	53.5 (3.6)	867	9.3 (1.0)	372	19.6 (2.0)
Boys								
2-5	823	15.4 (1.3)	96	36.5 (4.9)	74	10.9 (3.6)	92	13.0 (3.5)
6-11	761	30.5 (1.7)	110	53.6 (4.8)	81	29.6 (5.0)	154	22.7 (3.4)
12-19	1100	37.0 (1.5)	189	65.0 (3.5)	170	27.6 (3.4)	288	25.7 (2.6)
Prevalence of BMI ≥ 97% of the CDC Growth Curve [a]								
	Hawaiian		Samoan		Filipino		White	
Age (years)	No.	%(SE)	No.	%(SE)	No.	%(SE)	No.	%(SE)
Both sexes								
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6-11	1415	22.9 (1.1)	200	35 (3.4)	151	21.8 (3.4)	299	19.4 (2.3)
12-19	2671	24.1 (0.8)	385	48.6 (2.5)	1037	8.4 (0.9)	660	16.5 (1.4)
Girls								
2-5	761	9.6 (1.0)	95	24.2 (4.4)	58	10.3 (4.0)	101	9.9 (3.0)
6-11	654	21.6 (1.6)	90	31.1 (4.9)	70	17.1 (4.5)	145	20.0 (3.3)
12-19	1571	20.3 (1.0)	196	41.3 (3.5)	867	5.4 (0.8)	372	12.6 (1.7)
Boys								
2-5	823	12.4 (1.1)	96	27.1 (4.5)	74	9.5 (3.4)	92	12.0 (3.4)
6-11	761	24.0 (1.5)	110	38.2 (4.6)	81	26.0 (4.9)	154	18.8 (3.2)
12-19	1100	29.4 (1.4)	189	56.1 (3.6)	170	23.5 (3.2)	288	21.5 (2.4)

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared; CDC, Center for Disease Control and Prevention

[a] Based on Center for Disease Control 2000 Growth Charts

Table 3: Logistic Regression of High BMI for Age [a] for Children, 2000-2003

	Hawaiian	Samoan	Filipino	White
	Odds Ratio (95% Confidence Intervals)			
BMI ≥ 85% of the CDC Growth Curve				
Girls	1.50 (1.23-1.80)	4.37 (3.30-5.76)	0.45 (0.36-0.57)	1 (Reference)
Boys	1.60 (1.31-1.94)	4.58 (3.45-6.08)	1.29 (0.97-1.72)	1 (Reference)
BMI ≥ 95% of the CDC Growth Curve				
Girls	1.42 (1.14-1.77)	3.58 (2.69-4.78)	0.45 (0.34-0.60)	1 (Reference)
Boys	1.57 (1.26-1.97)	4.72 (3.53-6.30)	1.15 (0.83-1.59)	1 (Reference)
BMI ≥ 97% of the CDC Growth Curve				
Girls	1.43 (1.12-1.83)	3.52 (2.57-4.81)	0.42 (0.30-0.59)	1 (Reference)
Boys	1.41 (1.11-1.79)	3.68(2.73-4.96)	1.17 (0.83-1.65)	1 (Reference)

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared; CDC, Center for Disease Control and Prevention

[a] Based on Center for Disease Control 2000 Growth Charts