

Effects of Racial Variation On the Distribution of Demographics, Body Mass, and Medical Co-Morbidities in Morbid Obesity – An Analysis of 83,059 Patients from the BOLD Database

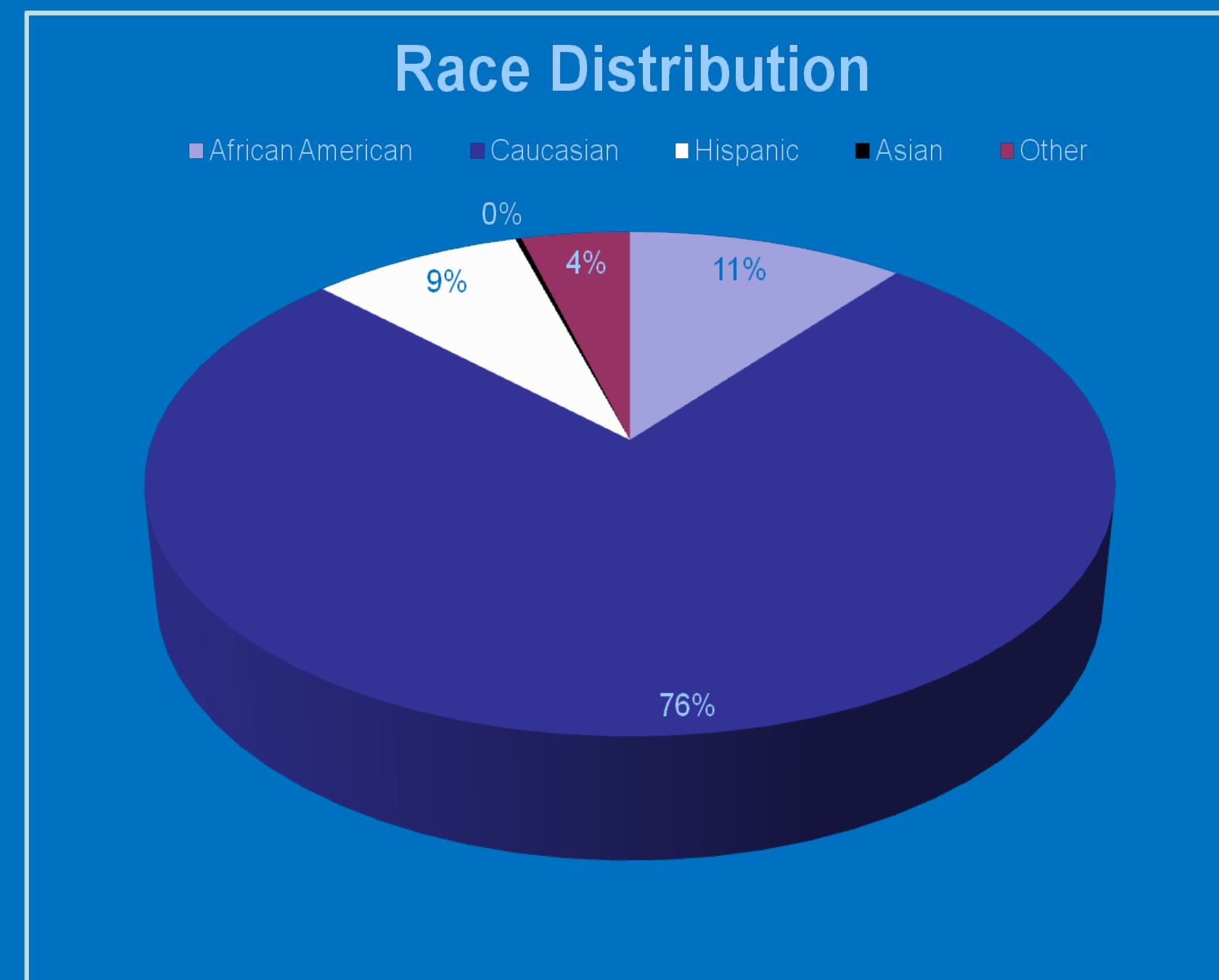
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Introduction

Obesity co-morbidities and their management have been described and are understood. However, clinically significant variations between racial groups in the distribution of weight-related medical problems and demographic data have not been well established.

Objective

To evaluate relationships of race variation with respect co-morbidities and demographic data in obese patients.



	African American	Caucasian	Hispanic	Asian	Other
Age (SD)	43 +/- 10	46 +/- 12	41 +/- 11	41 +/- 11	44 +/- 12
BMI (SD)	50 +/- 9	47 +/- 7	48 +/- 8	46 +/- 8	47 +/- 8
Weight in kg (SD)	139.2 +/- 29.10	132.8 +/- 26.64	129.4 +/- 27.21	123.9 +/- 26.79	130.8 +/- 26.52
Sex F/M (%)	85.5/15.5%	77.6/22.4	78.0/22.0	73.2/26.8	80.8/19.2

*All p-values were <0.0001

	Laparoscopic RYGB
Population	
N	83059
Epidemiology	
Age (SD)	45 +/- 11
Weight in Kg (SD)	133 +/- 27
BMI (SD)	48 +/- 8
Sex F/M (%)	78.6/21.4

Gastrointestinal & Hepatobiliary	African American	Caucasian	Hispanic	Asian	Other
	Abdominal Hernia	336 (3.71%)	3510 (5.54%)	249 (3.61%)	7 (3.54%)
Abdominal Skin Pannus	417 (4.61%)	5390 (8.51%)	194 (5.45%)	11 (5.56%)	349 (5.06%)
Cholelithiasis	1309 (14.46%)	14675 (23.16%)	1302 (18.89%)	24 (12.12%)	610 (17.13%)
Gastroesophageal Reflux Disease	3933 (43.43%)	33039 (52.15%)	2742 (39.78%)	70 (35.35%)	1529 (42.94%)
Liver Disease	359 (3.96%)	4933 (7.79%)	461 (6.69%)	13 (6.57%)	198 (5.56%)

*All p-values <0.0001

Musculoskeletal	African	Caucasian	Hispanic	Asian	Other
	Back Pain	3985 (44.01%)	33000 (52.09%)	2896 (42.01%)	85 (42.93%)
Fibromyalgia	141 (1.56%)	2635 (4.16%)	112 (1.62%)	2 (1.01%)	101 (2.84%)
Lower Extremity Edema	2370 (26.17%)	20426 (32.24%)	1415 (20.53%)	49 (24.75%)	818 (22.97%)
Musculoskeletal Pain	3718 (41.06%)	31028 (48.98%)	2338 (33.92%)	71 (35.86%)	1401 (39.34%)

*All p-values <0.0001

Methods

Pre-operative data from 83,059 patients in the Surgical Review Corporation's BOLD database who were about to undergo laparoscopic Roux-en-Y gastric bypass was analyzed retrospectively in five groups: African-American (n=9,055), Caucasian (n=63,352), Hispanic (n=6,893), Asian (n=198), and Other (Pacific Islander, Native American, or >1 race listed in BOLD; n=3,561). Age, weight and Body Mass Index (BMI) were compared by analysis of variance. Dichotomous variable distribution was assessed by the Chi-squared equation. An array of medical diseases and demographic data were evaluated to find areas of statistical significance.

Cardiopulmonary	African American	Caucasian	Hispanic	Asian	Other
Hypertension	5927 (65.46%)	38758 (61.18%)	3459 (50.18%)	130 (65.66%)	1897 (53.27%)
Angina	286 (3.16%)	1910 (2.30%)	128 (1.86%)	3 (1.52%)	68 (1.91%)
CHF	244 (2.69%)	1523 (2.40%)	70 (1.02%)	3 (1.52%)	55 (1.54%)
DVT/PE	230 (2.54%)	1975 (3.12%)	113 (1.64%)	1 (0.51%)	73 (2.05%)
Ischemic Heart Disease	274 (3.03%)	3084 (4.87%)	189 (2.74%)	3 (1.52%)	94 (2.64%)
Peripheral Vascular Disease	86 (0.95%)	815 (1.29%)	54 (0.78%)	1 (0.51%)	35 (0.98%)
Pulmonary Hypertension	458 (5.06%)	3255 (5.14%)	229 (3.32%)	8 (4.04%)	147 (4.13%)
Hyperlipidemia	2794 (30.86%)	29696 (46.87%)	2162 (31.37%)	103 (52.02%)	1284 (36.06%)
Obstructive Sleep Apnea	4148 (45.81%)	31468 (49.67%)	2792 (40.50%)	90 (45.45%)	1393 (39.12%)
Obesity Hypoventilation	139 (1.54%)	1267 (2.00%)	87 (1.26%)	3 (1.52%)	66 (1.85%)
Asthma	1761 (19.45%)	11953 (18.87%)	1139 (16.52%)	27 (13.64%)	669 (18.79%)

*All p-values were <0.0001 except for peripheral vascular disease with a p-value of 0.0003

Results

Psychological & Social	African American	Caucasian	Hispanic	Asian	Other
Mental Health Disease	596 (6.58%)	8025 (12.67%)	523 (7.59%)	28 (14.14%)	259 (7.27%)
Disabled Functional Status	299 (3.30%)	2267 (3.58%)	138 (2.00%)	7 (3.54%)	73 (2.05%)
Depression	2079 (22.96%)	25738 (40.63%)	1640 (23.79%)	48 (24.24%)	937 (26.31%)
Psychological Impairment	998 (11.02%)	12514 (19.75%)	783 (11.36%)	37 (18.69%)	424 (11.91%)
Alcohol Use	2454 (27.10%)	20583 (32.49%)	1737 (25.20%)	70 (35.35%)	872 (24.49%)
Substance Abuse	47 (0.52%)	259 (0.41%)	46 (0.67%)	1 (0.51%)	23 (0.65%)
Tobacco Use	480 (5.30%)	4305 (6.80%)	473 (6.86%)	13 (6.57%)	228 (6.40%)

*All p-values were <0.0001 except for substance abuse with a p-value of 0.0087

Endocrine	African American	Caucasian	Hispanic	Asian	Other
Glucose Metabolism	3254 (35.94%)	25036 (39.52%)	2626 (38.10%)	103 (52.02%)	1318 (37.01%)
Gout	434 (4.79%)	2439 (3.85%)	117 (1.70%)	9 (4.55%)	104 (2.92%)
Irregular Menses	2132 (23.55%)	15813 (24.96%)	1367 (19.83%)	47 (23.74%)	656 (18.42%)
Polycystic Ovarian Disease	338 (3.73%)	3752 (5.92%)	299 (4.34%)	10 (5.05%)	154 (4.32%)

*All p-values were <0.0001

Conclusions

Serious weight-related medical problems were frequent in all morbidly obese patients, regardless of race. However, distribution of obesity co-morbidities varied significantly, both statistically and clinically, between African-American, Caucasian, Hispanic, Asian, and Other race patients.

- African Americans: highest BMI, rates of asthma and sleep apnea
- Higher female/male % among African Americans – mechanism unknown
- Hypertension most frequent among Asians and African Americans
- Diabetes highest among Asians
- Most prevalent among Caucasians: ischemic heart disease, cholelithiasis, GERD, liver disease, somatic complaints and depression
- Hispanics had the highest mean age but lower rates of hypertension, sleep apnea and other co-morbidities