Clinical Characteristics of Surgical Patients with Obesity Vary by Health Insurance Status: Analysis of 146,159 patients

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BACKGROUND

Today, every surgeon must operate on patients with obesity. Every insight helps. Objective: to identify pre-operative variations by health insurance across the spectrum of demographics, BMI and 33 co-morbidities among surgical patients with obesity.

METHODS

Data from 146,159 pre-operative Surgical Review Corporation BOLD bariatric surgery patients were analyzed in five groups: Medicare (n=16,347), Medicaid (n=5,115), Private (n=117,612), Self Pay (n=7,085). Data included demographics, weight, BMI, and 33 obesity co-morbidities. Statistics: Chi-square and ANOVA.

Table 1: Obesity Co-Morbidities by Health Insurance in Surgical Patients.

		(% incidence, p value)					
COMORBIDITIES		Medicaid vs Medicare	Medicaid vs Private	Medicaid vs Self	Medicare vs Private	Medicare vs Self	Private vs Self
CARDIOPULMONARY	Congestive Heart Failure	3.07/7.22, p<.0001	3.07/1.38, p<.0001	3.07/0.95, p<.0001	7.22/1.38, p<.0001	7.22/0.95, p<.0001	1.38/0.95, p<0.0024
	Hypertension	54.12/77.13, p<.0001	54.12/56.35, p<0.0016	54.12/47.95, p<.0001	77.13/56.35, p<.0001	77.13/47.95, p<.0001	56.35/47.95, p<.0001
	Angina	4.34/5.7, p<0.0002	4.34/2.24, p<.0001	4.34/1.69, p<.0001	5.7/2.24, p<.0001	5.7/1.69, p<.0001	2.24/1.69, p<0.0023
	Peripheral Vascular Disease	1.33/3.17, p<.0001	1.33/0.89, p<0.0012	1.33/0.58, p<.0001	3.17/0.89, p<.0001	3.17/0.58, p<.0001	0.89/0.58, p<0.007
	Pulmonary Hypertension	4.54/6.06, p<.0001	4.54/4.16, p<0.187	4.54/2.6, p<.0001	6.06/4.16, p<.0001	6.06/2.6, p<.0001	4.16/2.6, p<.0001
	Asthma	26.12/24.46, p<0.0164	26.12/16.25, p<.0001	26.12/12.05, p<.0001	24.46/16.25, p<.0001	24.46/12.05, p<.0001	16.25/12.05, p<.0001
	Obstructive Sleep Apnea	50.15/57.59, p<.0001	50.15/43.52, p<.0001	50.15/33.87, p<.0001	57.59/43.52, p<.0001	57.59/33.87, p<.0001	43.52/33.87, p<.0001
	Obesity Hypoventilation Syndrome	2.29/4.59, p<.0001	2.29/1.45, p<.0001	2.29/1.19, p<.0001	4.59/1.45, p<.0001	4.59/1.19, p<.0001	1.45/1.19, p<0.0733
	DVT/Pulmonary Embolism	3.28/6.04, p<.0001	3.28/2.3, p<.0001	3.28/1.55, p<.0001	6.04/2.3, p<.0001	6.04/1.55, p<.0001	2.3/1.55, p<.0001
	Coronary Artery Disease	3.56/11.35, p<.0001	3.56/3.53, p<0.9235	3.56/2.34, p<.0001	11.35/3.53, p<.0001	11.35/2.34, p<.0001	3.53/2.34, p<.0001
	Lower Extremity Edema	32.55/40.44, p<.0001	32.55/26.2, p<.0001	32.55/20.71, p<.0001	40.44/26.2, p<.0001	40.44/20.71, p<.0001	26.2/20.71, p<.0001
ABDOMINAL/HEPATOBILIARY AND ENDOCRINE/METABOLIC	Abdominal Hernia	6.9/8.32, p<0.0011	6.9/4.8, p<.0001	6.9/3.99, p<.0001	8.32/4.8, p<.0001	8.32/3.99, p<.0001	4.8/3.99, p<0.0019
	Cholelithiasis	24.22/28.77, p<.0001	24.22/19, p<.0001	24.22/14.59, p<.0001	28.77/19, p<.0001	28.77/14.59, p<.0001	19/14.59, p<.0001
	GERD	49.89/53.76, p<.0001	49.89/45.78, p<.0001	49.89/39.59, p<.0001	53.76/45.78, p<.0001	53.76/39.59, p<.0001	45.78/39.59, p<.0001
	Abdominal Panniculitis	11.24/10.08, p<0.0175	11.24/6.25, p<.0001	11.24/5.73, p<.0001	10.08/6.25, p<.0001	10.08/5.73, p<.0001	6.25/5.73, p<0.0768
	Liver Disease	7.7/7.32, p<0.357	7.7/6.2, p<.0001	7.7/3.57, p<.0001	7.32/6.2, p<.0001	7.32/3.57, p<.0001	6.2/3.57, p<.0001
	Stress Urinary incontinence	26.88/29.96, p<.0001	26.88/22.29, p<.0001	26.88/20.4, p<.0001	29.96/22.29, p<.0001	29.96/20.4, p<.0001	22.29/20.4, p<0.0002
	Diabetes Mellitus	35.68/54.22, p<.0001	35.68/32.3, p<.0001	35.68/24.69, p<.0001	54.22/32.3, p<.0001	54.22/24.69, p<.0001	32.3/24.69, p<.0001
	Gout	5.42/7.19, p<.0001	5.42/3.18, p<.0001	5.42/2.15, p<.0001	7.19/3.18, p<.0001	7.19/2.15, p<.0001	3.18/2.15, p<.0001
	Menstrual Irregularity	24.67/29.58, p<.0001	24.67/22.15, p<.0001	24.67/17.08, p<.0001	29.58/22.15, p<.0001	29.58/17.08, p<.0001	22.15/17.08, p<.0001
	Dyslipidemia	35.27/57.66, p<.0001	35.27/40.35, p<.0001	35.27/34.82, p<0.6081	57.66/40.35, p<.0001	57.66/34.82, p<.0001	40.35/34.82, p<.0001
	Polycystic Ovarian Syndrome	5.34/2.23, p<.0001	5.34/5.56, p<0.4897	5.34/5.24, p<0.8059	2.23/5.56, p<.0001	2.23/5.24, p<.0001	5.56/5.24, p<0.2432
	Pseudotumor Cerebri	2.64/1.87, p<0.0007	2.64/1.8, p<.0001	2.64/1.2, p<.0001	1.87/1.8, p<0.5438	1.87/1.2, p<0.0003	1.8/1.2, p<0.0002
PSYCHOLOGICAL/ BEHAVIORAL AND SOMATIC	Alcohol Use	20.55/20.33, p<0.7337	20.55/33.73, p<.0001	20.55/33.48, p<.0001	20.33/33.73, p<.0001	20.33/33.48, p<.0001	33.73/33.48, p<0.6693
	Tobacco Use	9.03/6.85, p<.0001	9.03/6.31, p<.0001	9.03/7.27, p<0.0004	6.85/6.31, p<0.0075	6.85/7.27, p<0.2494	6.31/7.27, p<0.0013
	Substance Abuse	0.9/0.64, p<0.0498	0.9/0.36, p<.0001	0.9/0.45, p<0.0027	0.64/0.36, p<.0001	0.64/0.45, p<0.0892	0.36/0.45, p<0.2376
	Psychological Impairment	26.31/27.29, p<0.1709	26.31/14.69, p<.0001	26.31/14.3, p<.0001	27.29/14.69, p<.0001	27.29/14.3, p<.0001	14.69/14.3, p<0.3651
	Mental Health Diagnosis	18.48/18.26, p<0.7288	18.48/9.34, p<.0001	18.48/8.86, p<.0001	18.26/9.34, p<.0001	18.26/8.86, p<.0001	9.34/8.86, p<0.1797
	Depression	44.01/46.71, p<0.0007	44.01/32.49, p<.0001	44.01/31.47, p<.0001	46.71/32.49, p<.0001	46.71/31.47, p<.0001	32.49/31.47, p<0.0771
	Fibromyalgia	4.67/8.23, p<.0001	4.67/2.59, p<.0001	4.67/1.88, p<.0001	8.23/2.59, p<.0001	8.23/1.88, p<.0001	2.59/1.88, p<0.0002
	Back Pain	57.54/60.95, p<.0001	57.54/46.96, p<.0001	57.54/40.23, p<.0001	60.95/46.96, p<.0001	60.95/40.23, p<.0001	46.96/40.23, p<.0001
	Impaired Function	5.32/11.71, p<.0001	5.32/1.85, p<.0001	5.32/1.52, p<.0001	11.71/1.85, p<.0001	11.71/1.52, p<.0001	1.85/1.52, p<0.0484
	Musculo-skeletal Pain	46.02/57.94, p<.0001	46.02/41.96, p<.0001	46.02/35.16, p<.0001	57.94/41.96, p<.0001	57.94/35.16, p<.0001	41.96/35.16, p<.0001

RESULTS

Medicare/Medicaid/Private/Self age (56+-12/40+-11/44+-11/44+-12), weight (133+-0.2/136+-0.4/129+-0.1/129+-0.3kg), BMI (47+-0.1/49+-0.1/46+-0.02/45+-0.1), % women (74/86/78/77), % African-American (12/17/11/4), %Caucasian (78/61/76/83), % Hispanic (5/16/7/9) varied by insurance (p<0.0001). 33 obesity co-morbidities varied by insurance. Medicare highest in 24. Medicaid highest in 7. Private alcohol use, PCOS. Self 0. See Table 1.

CONCLUSIONS

In surgical patients with obesity, demographics, BMI, and weight-related co-morbidities vary dramatically by health insurance. Medicare: 24/33 co-morbidities highest - cardiopulmonary, metabolic, somatic, and hepatobiliary, possibly related to increased Medicare age. Medicaid: highest asthma, mental health diagnosis, liver disease, and tobacco and substance abuse. Private: highest alcohol abuse and PCOS. Self-Pay: highest in none. For surgical patients with obesity, variation by health insurance can provide risk stratification for medical complication, supplemental to clinical judgement, especially for high-risk Medicare and Medicaid individuals Our review of the literature indicates that these clinical variations by health insurance in a surgical patients with obesity, across the spectrum of demographics, BMI and co-morbidities have not been reported previously and are significant findings of this study.