



Bariatric Surgery Effectiveness within a Health Disparate Appalachian Population



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ABSTRACT

Limited data exist on those who receive bariatric and metabolic surgery in a rural population such as health disparate Appalachia. The objective of the current study was to examine predictors of percent excess body weight loss (%EBWL) among patients undergoing metabolic surgery in West Virginia. A retrospective electronic medical record (EMR) data extraction was performed on patients receiving sleeve gastrectomy and roux-en-y gastric bypass bariatric surgeries at a large tertiary academic medical center within Appalachia between 2013-2017. Data was extracted from patient medical records. Average patient population was 92.5% Caucasian, 79.3% female, 62.8% married, 45±11.1 years old, and 75.8% receiving bypass surgery; average baseline measures included weight of 301.1±62.9 pounds (n=545) with a BMI of 48.6±8.1 kg/m² (n=545); preoperative EBW was 147.1±54.8 pounds (n=545). Subjects with one-year follow-up (n=235) had an average reduction in weight, BMI, and EBW of 97.7 pounds, 15.1 kg/m², and 95.9 pounds, respectively. Traditionally, surgical success at one year is measured with a 50% EBWL or greater. %EBWL from baseline to one year follow up was 68.8±20.2% (n=235). Matched pairs t-test analyses from pre to one-year postsurgical identified significant decreases in weight, BMI, and EBW (all p's <0.0001). We further assessed 19 variables significant in univariate analysis as predictors of %EBWL after surgery. All significant spearman rho correlations remained in analysis for full regression model. Full model for surgery as a primary predictor (F (10,88) = 6.55, p<0.001) was statistically significant with an adjusted R² value of 0.36. The covariate model (F (9,89) = 3.10, p=.028) was also statistically significant with an adjusted R² value of 0.16. Change in adjusted R² value, surgery accounted for 20% of variance within %EBWL. In full regression model, surgery type, baseline diabetes and clinical depression remained a significant predictor of %EBWL (p<.001). Findings suggest patients completing surgery within an Appalachian region have successful surgical outcomes, as indicated by significant reductions in %EBWL. These reductions are comparable to and exceed national definitions of surgical success. However, findings suggest taking consideration of additional support for those with co-morbidities such as diabetes and depression.

OBJECTIVE

What is the 'success' outcomes of bariatric surgery patients residing in the Appalachian region at one-year post surgery?

- 'Success': 50% excess body weight loss
- Examine predictors of Percent Excess Body Weight Loss (%EBWL) among patients undergoing metabolic surgery in West Virginia

METHODS

Collaborative effort

- Medicine, surgery, psychology, physiology, and nutrition
- Over 20 trained research students

A retrospective electronic medical record (EMR) data extraction

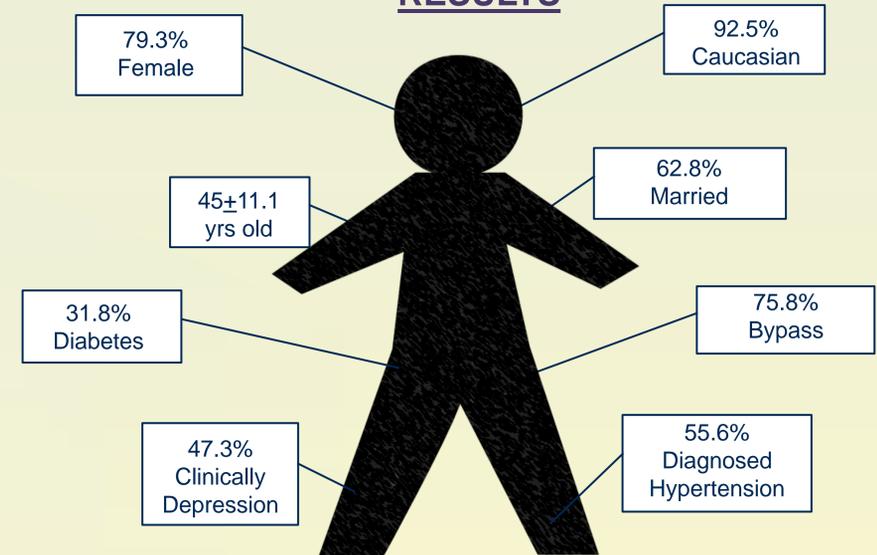
- Patients receiving sleeve gastrectomy and roux-en-y gastric bypass bariatric surgeries at a large tertiary academic medical center within Appalachia between 2013-2017

Data

- Over 600 data points
- Demographics, Health History, Anthropometrics, Dietary Patterns
- One-year follow-up anthropometrics
- Inter-rater Reliability
- Multiple pass



RESULTS



Baseline n=547

Baseline Anthropometrics	Bypass		Sleeve		p
	n	mean (SD)	n	mean (SD)	
Weight (pounds)	407	300.3 (64.2)	127	306.8 (58.3)	0.1312
BMI (kg/m ²)	407	48.5 (8.1)	127	49.4 (7.9)	0.2443
EBW (pounds)	407	146.7 (55.6)	127	151.7 (52.3)	0.2344
One-year Anthropometrics	n	mean (SD)	n	mean (SD)	p
Weight (pounds)	188	199.2 (45.3)	36	227.0 (51.0)	0.0006*
BMI (kg/m ²)	188	32.8 (5.9)	36	37.4 (7.6)	0.0004*
EBW (pounds)	188	47.1 (37.5)	36	74.2 (46.3)	0.0003*
%EBWL	188	71.8 (16.8)	36	51.1 (16.6)	<.0001*

Average %EBWL = 68.5 (18.4)

DV	IV	Spearman ρ	p-value
%EBWL	Surgery type	-0.3627	<.001**
	Gender	0.0986	0.146
	Age	-0.2767	<.001**
	Ethnicity	0.0375	0.581
	Education level	0.0118	0.866
	State	0.0398	0.558
	Marital Status	-0.0971	0.159
	% Attended follow-up	-0.0434	0.523
	Diabetes	-0.2800	<.001**
	Diagnosed Hypertension	-0.1653	0.025*
	Clinical Depression	-0.1935	0.009**
	Cooking responsibilities	-0.0905	0.243

	Model 1: %EBWL = surgery	Model 2: %EBWL = surgery + diabetes	Model 3: %EBWL = surgery + diabetes + depression
Adj R ²	0.16	0.26	0.31
F-value	44.57	35.10	27.17

DATA ANALYSIS

Descriptive statistics (means+SD, frequencies)

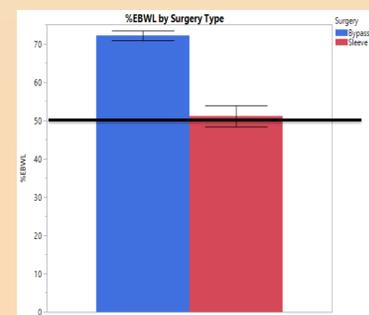
Group differences (Bypass/Sleeve):

- Independent t-test - parametric data
- Mann Whitney U - nonparametric data
- Pearson's chi square - categorical

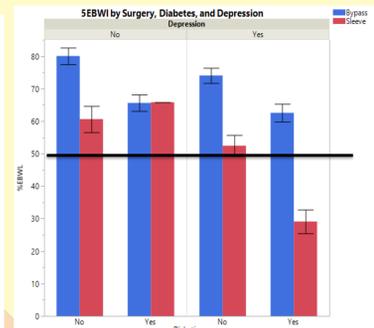
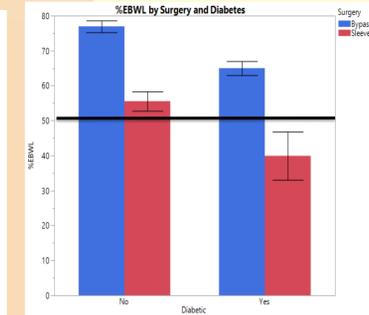
Spearman's rho correlation

- %EBWL

Significant correlations of p<.05 were included in next step of multiple linear regression model employed to test relationship with %EBWL



n= 223; p<.0001



CONCLUSIONS

Findings suggest patients completing surgery within an Appalachian region have successful surgical outcomes

- Significant reductions in BMI and %EBWL
- These reductions are comparable to and exceed national definitions of surgical success

Consideration of patients with diabetes and clinical depression

