ABSTRACT

Limited data exist on those who receive bariatric and metabolic surgery in a rural population such as health disparate Appalachia. The objective of this 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 75.6% receiving bypass surgery; average baseline measures included weight of 301±62.5 pounds (n=545) with a BMI of 48.6±8.1 kg/m² (n=545); preoperative EBW was 147±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 68.5±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 <.0001). We further assessed 19 variables significant in univariate analysis as predictors of %EBWL at surgery. All significant spearman rho correlations remained in analysis for full regression model. Full model for surgery as a primary predictor (F (10,88) = 3.10, p=0.0006*) was statistically significant with an adjusted R² value of 0.36. The covariate model (F (9,89) = 3.10, p=0.025*) was also statistically significant with an adjusted R² value of 0.19. 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.

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

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

RESULTS

Baseline n=547

<table>
<thead>
<tr>
<th></th>
<th>Bypass</th>
<th>Sleeve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>n=303.4 (64.2)</td>
<td>n=306.8 (58.3)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>48.5 (8.1)</td>
<td>49.4 (7.9)</td>
</tr>
<tr>
<td>EBW (pounds)</td>
<td>146.7 (55.6)</td>
<td>151.7 (52.3)</td>
</tr>
<tr>
<td>%EBWL</td>
<td>71.8 (16.8)</td>
<td>51.1 (16.6)</td>
</tr>
</tbody>
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Average %EBWL = 68.5 (18.4)

<table>
<thead>
<tr>
<th>Model 1: %EBWL = surgery</th>
<th>Model 2: %EBWL = surgery + diabetes</th>
<th>Model 3: %EBWL = surgery + diabetes + depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj R²</td>
<td>0.16</td>
<td>0.26</td>
</tr>
<tr>
<td>F-value</td>
<td>44.57</td>
<td>35.10</td>
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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.