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Characterization of Comorbidities Predictive of Bariatirc Surgery

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Introduction

The obesity epidemic continues to rise with only 1% of eligible patients undergoing bariatric surgery annually.

Patients enrolled in bariatric centers of excellence participate in extensive multidisciplinary preoperative counselling in order to select appropriate surgical candidates, which can contribute to surgical wait times.

We aimed to characterize commonalities between patients who were successful at obtaining bariatric surgery in an effort to better understand the major factors that make one an ideal candidate for surgical management.

Methods

Data Source

Retrospective chart review of all patients enrolled at a single, publically funded bariatric center of excellence in the year of 2015 was performed. Patient demographics, baseline comorbidities, and surgical data were extracted.

Statistical Analysis

Patient factors were correlated with surgery using the chi-square test. Binary logistic regression analysis was utilized to develop a statistical model to predict the likelihood of receiving bariatric surgery.

Results

666 New Patients at RAH Bariatrics Clinic - 2015
Male: 185 *Female: 481*

- Bariatric Surgery — *Total: 208*
- No Bariatric Surgery — *Total: 458*

Individual Factors Predicitive of Eligibility for Bariatric Surgery:

- *Alcohol Abuse ($\chi^2(1) = 4.34$, OR: 0.00)*
- *Anxiety ($\chi^2(1) = 4.53$, OR: 0.60)*
- *Gastroesophageal Reflux Disease ($\chi^2(1) = 10.16$, OR: 0.54)*
- *Hypothyroidism ($\chi^2(1) = 5.37$, OR: 1.59)*
- *Liver Disease $\chi^2(1) = 24.15$, OR: 0.20)*
- *Osteoarthritis ($\chi^2(1) = 7.49$, OR: 0.59)*
- *Mental Health Comorbidities ($\chi^2(1) = 8.95$)*
- *Other Medial Comorbidities ($\chi^2(1) = 13.39$)*
  (chronic pain, cardiovascular disease, and incontinence)

Linear Regression Analysis

Factors Increasing Likelihood of Bariatic Surgery

1. Female Sex (p=0.01, OR: 0.46, 95%:0.24-0.85)
2. Hypertension (p=0.04, OR: 1.71, 95%:1.03-2.83)
3. Dyslipedemia (p=0.00, OR: 2.09, 95%:1.26-3.46)

Factors Reducing Likelihood of Bariatic Surgery

1. GERD (p=0.04, OR: 0.62, 95%:0.4-0.97)
2. Liver Disease (p=0.00, OR: 0.25, 95%:0.12-0.55)
3. Osteoarthritis (p=0.01, OR: 0.52, 95%:0.33-0.83)
4. Mental Health Comorbidities (p=0.02, OR: 0.39, 95%:0.18-0.84)
5. Medical Comorbdities (p=0.02, OR: 0.39, 95%:0.18-0.84)
6. Increasing Number of Antihypertensive Medications (p=0.00, OR: 0.62, 95%:0.45-0.84)

* 95% Confidence Intervals provided for Odds Ratios.

The logistic regression developed successfully explained 25% of the variance in patients treated with bariatric surgery ($\chi^2(22) = 121.32$, $p<0.05$).

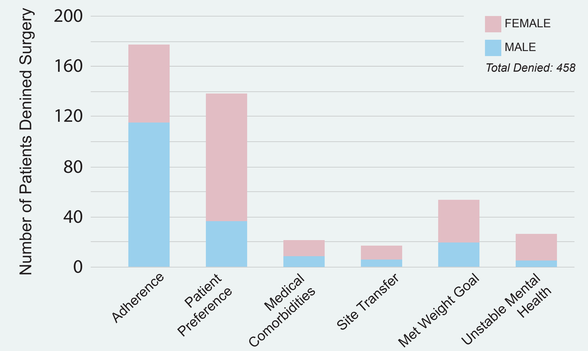
The model correctly classified 74.4% of the analyzed cases.

Other factors considered, but NOT predicitive of eligibility for bariatric surgery:

1. Coronary Artery Disease
2. Depresion
3. Diabetes
4. Insulin Use
5. Polycystic Ovarian Syndrome
6. Asthma
7. Obstructive Sleep Apnea
8. Smoking (including pack years)
10. Number of anti-depressive medications

Results

Reasons for Denial of Bariatric Surgery



Conclusions

The use of patient metrics allows for the formulation of a compressive predictive model, the usefulness of which becomes apparent when considering the increasing number of patients requiring bariatric surgery and the associated mortality and morbidity while on wait lists.

We hope this tool can assist clinicians in optimizing resource allocation to expedite access to surgery in eligible candidates while facilitating medical weight-loss options for non-surgical candidates.