



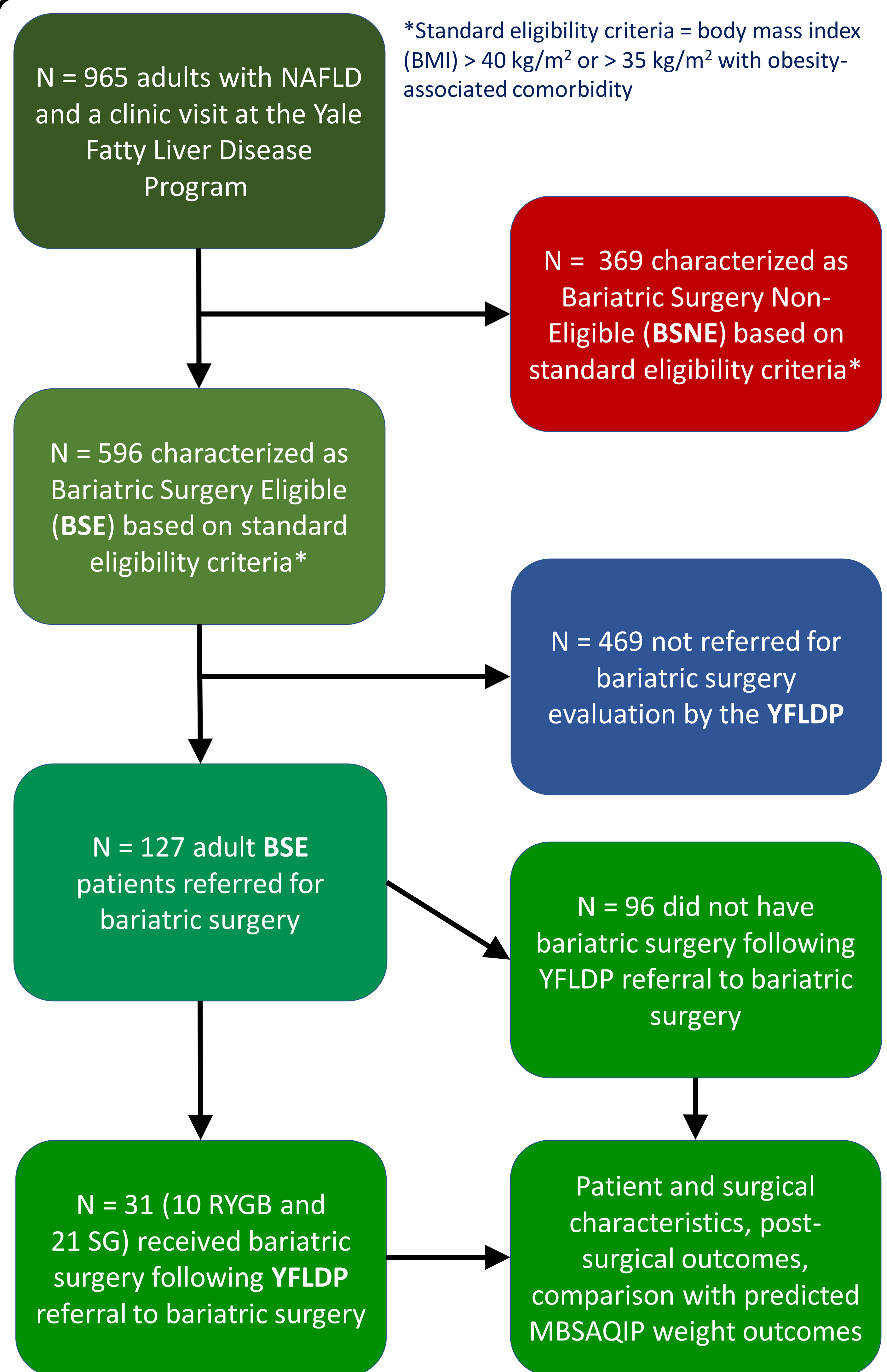
# Weight Loss in Bariatric Surgery Patients Treated at a Novel Clinic Incorporating Obesity Medicine for Treatment of Nonalcoholic Fatty Liver Disease

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## Introduction

- **NAFLD prevalence is rising with the obesity epidemic** in the United States.
- Bariatric surgery is the **most effective treatment of NAFLD**, but the national estimated referral rate of eligible patients is **low at 1%**.
- The Yale Fatty Liver Disease Program (YFLDP) is a novel clinic using weight management techniques.  
**We studied bariatric surgery outcomes in a novel clinic model that integrates standard hepatology care with obesity medicine for adults with NAFLD.**

## Methods

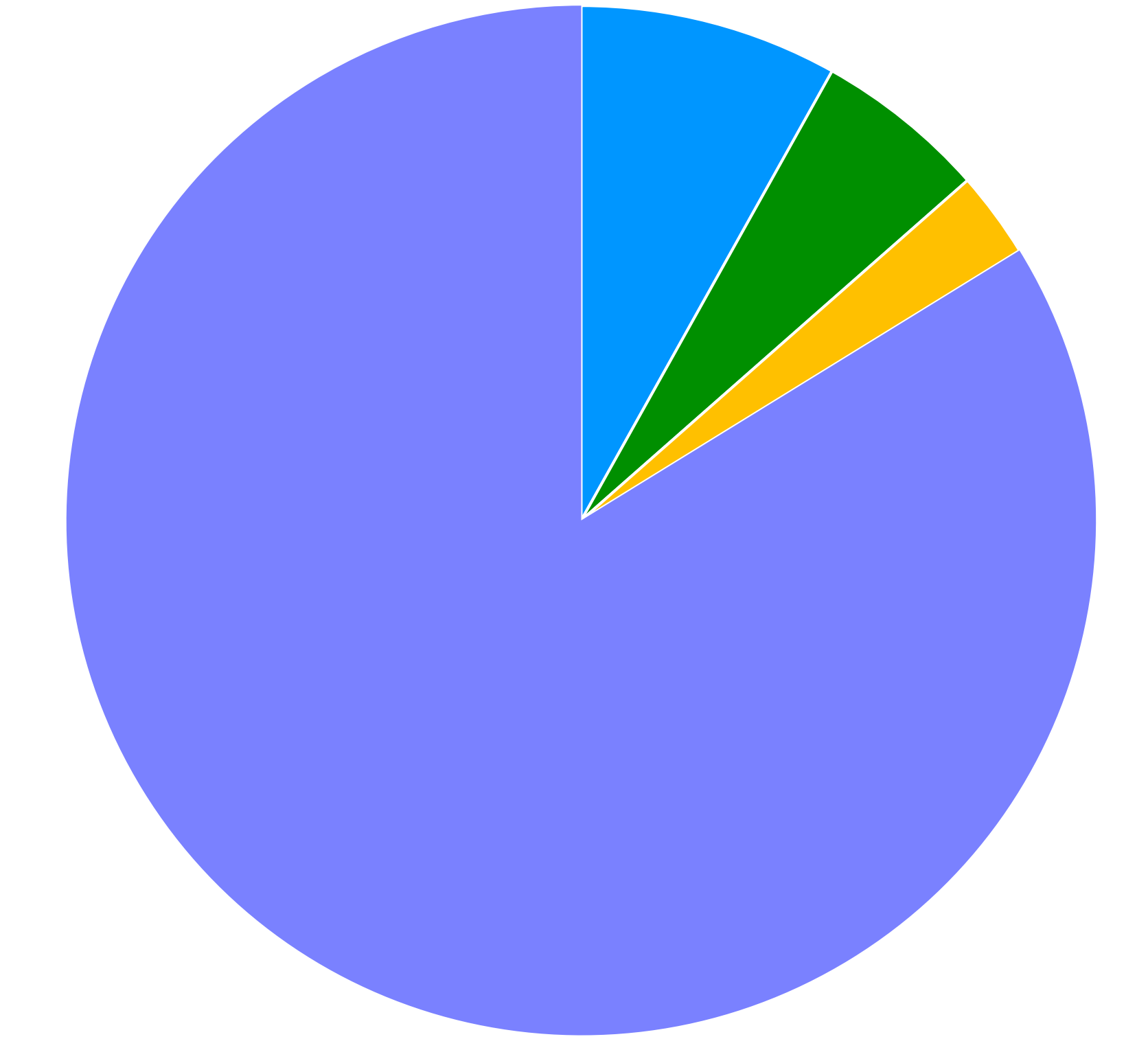


## Results

### Patient Characteristics & Weight Outcomes

Patient Characteristics		(+) Surgery	(-) Surgery	p-value
Number of patients	n = 127	31	96	
Sex (%)				0.14
	Male	6 (20)	32 (33)	
	Female	25 (80)	64 (57)	
Age (SD)		49 (10.5)	52 (13.1)	0.248
Medicare Qualifying (%)		2 (6)	16 (17)	
Race (%)				0.236
	White	21 (68)	76 (79)	
	Black	4 (13)	8 (8)	
	Asian	1 (3)	0 (0)	
	Other/Declined	5 (16)	12 (13)	
Ethnicity (%)				0.86
	Hispanic	6 (20)	20 (21)	
	Non-Hispanic	25 (80)	76 (79)	
Insurance Status (%)				0.035
	Uninsured	0 (0)	0 (0)	
	Medicaid	14 (46)	25 (26)	
	Medicare	2 (6)	24 (25)	
	Private	15 (48)	46 (49)	
Median House Income by Zip Code (%)				0.74
	< \$50,000	7 (23)	18 (19)	
	\$50,000-\$100,000	19 (61)	66 (69)	
	> \$100,000	5 (16)	12 (12)	
Interventions and Outcomes				
Anti-Obesity Medication Trials (%)				0.59
	Lifetime	13 (42)	32 (33)	
	Since YFLDP	8 (26)	26 (27)	
Surgery Type				
	Gastric Bypass (RYGB)	10		
	Sleeve Gastrectomy (SG)	21		
Mean BMI Reduction (SD)				< 0.0001
	RYGB	8.3 (5.4)	1.3 (3.9)	
	SG	9.1 (6.3)		< 0.0001
% Total Body Weight Reduction (SE)				< 0.0001
	RYGB	20 (2.7)		< 0.0001
	SG	21 (2.1)	2.5 (0.81)	< 0.0001

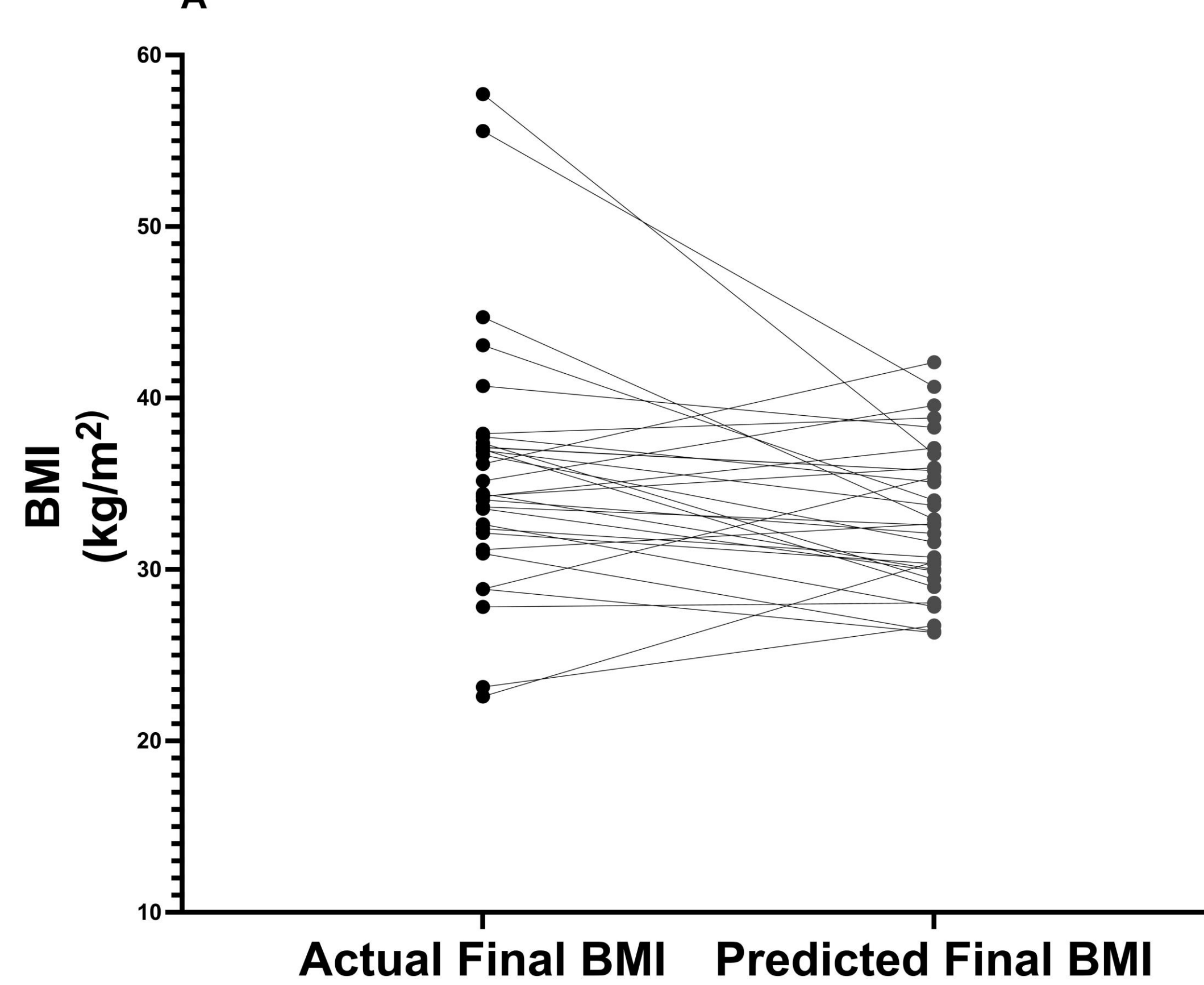
### Perioperative and Post-Surgical Complications



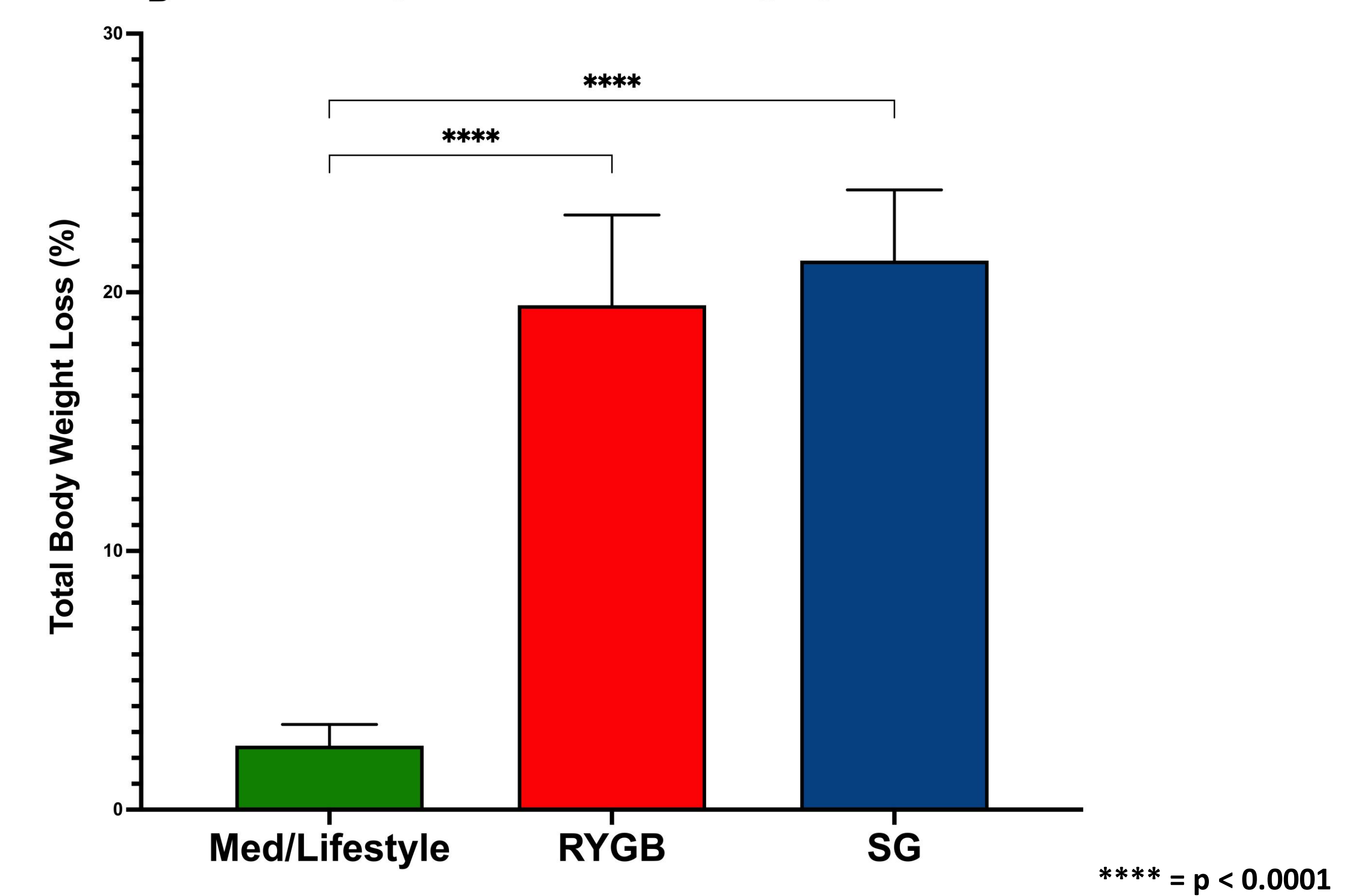
- Gastric Band Procedure Complication (3)
- Bariatric Procedure Complication (2)
- Postgastric Surgery Syndromes (1)
- Postsurgical Malabsorption (31)

### Patients with NAFLD Achieved Predicted BMI After Bariatric Surgery via MBSAQIP Calculator and Greater Weight Loss Compared to Medications and Lifestyle Changes Alone

#### Actual vs. Predicted Final Body Mass Index (BMI) post Bariatric Surgery



#### Total Body Weight Loss (TBWL) in Patients given Bariatric Surgery Referral



## Discussion

- YFLDP patients with obesity are **referred for bariatric surgery evaluation at a rate 25-times higher than the national average.**
- On average, patients receiving bariatric surgery had **≥ 20% reduction of total body weight, twice the weight loss necessary for NAFLD clinically-meaningful improvement.**
- Patients more likely to be referred were female, younger, white, privately insured, and of middle class; however, patients who did and did not undergo bariatric surgery had no statistical difference in insurance status.
- Perioperative complications in YFLDP patients were rare, except for postsurgical malabsorption, which was present in all patients.
- Incorporation of weight management care into a NAFLD clinic is associated with higher rates of bariatric surgery referral and reception with comparable weight loss to expected nationally-established metrics.
- Study strengths include the comprehensiveness of the sample demographics and metrics. The study is limited by the end sample size and the inability to comment on causality.
- We plan to evaluate cardiac and liver disease outcomes in these patients and to evaluate effects on sustained weight loss over time.

**Conclusion:** The YFLDP is an effective care model improving patient access to and utilization of bariatric surgery as weight loss intervention for the treatment of NAFLD and obesity.

### References

American College of Surgeons. (2022, May). Bariatric Surgical Risk/Benefit Calculator. Retrieved from <https://riskcalculator.facs.org/bariatric/>  
Conaty, E. A., Denham, W., Haggerty, S. P., Linn, J. G., Joehl, R. J., & Ujiki, M. B. (2020). Primary Care Physicians' Perceptions of Bariatric Surgery and Major Barriers to Referral. *Obesity surgery*, 30(2), 521–526.