Weight Loss Across the Map: Rural–Urban Differences After Bariatric Surgery in Epic Cosmos

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Background

- Obesity disproportionately affects rural populations[1]
- Observational data suggests rural populations experience delays in receiving care related to geographic isolation and logistical barriers[2]
- Prior studies looking at rural metabolic and bariatric surgery (MBS) are limited by sample size[3,4]
- Little is known regarding the factors of rural living on the impact of weight loss after MBS

Methods

- A cross-sectional, retrospective analysis
- Data: Epic Cosmos
  - A prospectively maintained, all-payer, nationwide dataset
  - Electronic health records data from over 300 million patient charts
- Isolated patients who underwent roux-en-y gastric bypass (RYGB) and sleeve gastrectomy (SG) between 2017-2023
- Demographics and weight measurements in encounters after MBS
- Rural Urban Commuting Area (RUCA)[&] codes obtained for each patient
  - Scores from 1-6 were considered urban/suburban
  - Scores 7-10 were considered rural
- Exclusion criteria: revisional surgery, those without RUCA codes
- Percent Total Body Weight Loss (%TBWL) at 12 and 24-months were evaluated as well as primary non-response (loss of <10% TBWL)

&. https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes

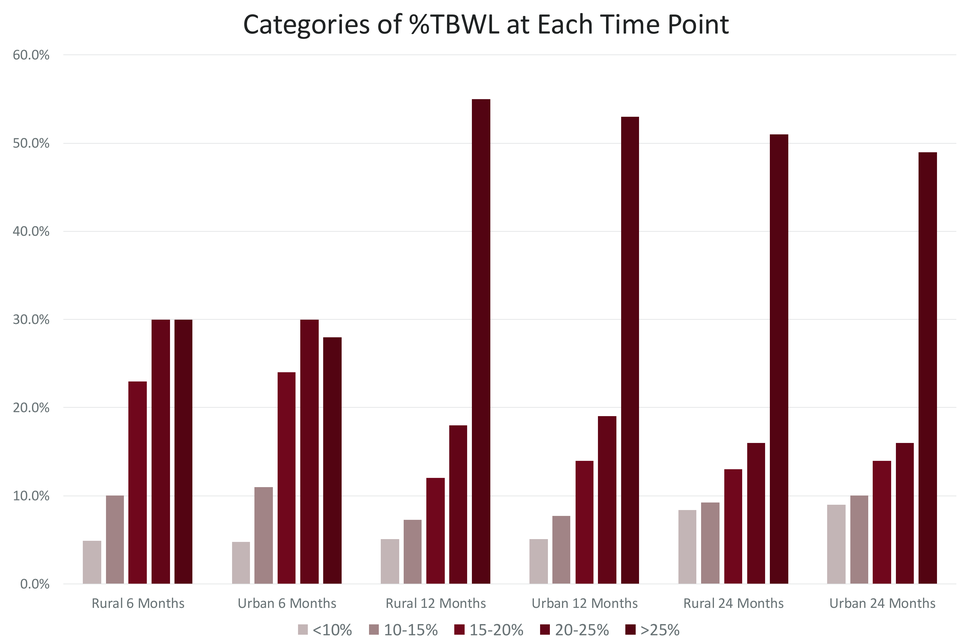
Demographics

	Rural (n=23,582)	Urban (n=306,893)	P-value
Age (median (IQR))	45 (37-55)	43 (35-53)	<0.001
% Female	80%	80%	>0.9
% with T2DM	35%	34%	<0.001
% with HTN	67%	62%	<0.001
% with OSA	56%	54%	<0.001
% with GLP use	5.5%	5.5%	>0.9
% RYGB	32%	28%	<0001
Social Vulnerability Index (median (IQR))	0.65 (0.43-0.83)	0.65 (0.37-0.86)	0.3
% White	82%	55%	<0.001
% Commercial Insurance	66%	70%	<0.001
Baseline Weight (lbs) (median (IQR))	271 (240-312)	268 (237-308)	<0.001

Weight Loss Results

	Rural (n=23,582)	Urban (n=306,893)	P-value
%TBWL at 6 mo*	22% (56.5% of pts)	21% (56.0% of pts)	<0.001
%TBWL at 12 mo**	26% (67.6% of pts)	26% (67.9% of pts)	<0.001
%TBWL at 24 mo***	25% (51.2% of pts)	25% (67.9% of pts)	<0.001
% patients with <10%TBWL at 6mo	6.1%	6.0%	0.5
% patients with <10%TBWL at 12mo	6.8%	6.6%	0.4
% patients with <10%TBWL at 24mo	11%	12%	0.3

*6 month dates ranged from 176-190 day
**12 month dates ranged from 356-380 days
***24 month dates ranged from 712-749 days



Discussion

- Rural patients were slightly older, more likely to be white, had higher rates of co-morbidities, and had a higher weight at the time of surgery.
- Rural patients were more likely to undergo RYGB than their urban counterparts
- Of the patients with available weight data at 6, 12, and 24 months, there were no differences in %TBWL between the groups
- The proportion of patients with primary non-response after MBS didn't differ between rural and urban patients

Conclusion

- In a large cohort or patients undergoing primary MBS, despite increased comorbidity burden, patients from rural areas demonstrated similar 6-,12-, and 24-month weight loss outcomes compared to their urban counterparts.
- This study strengthens evidence that MBS offers robust metabolic regardless of urban/rural dwelling status.
- Efforts should be undertaken to improve MBS access and coverage, particularly for those with fewer local resources

Cited Sources

1. Okobi, O. E., et. Al. (2021). The Burden of Obesity in the Rural Adult Population of America. *Cureus*, *13*(6), e15770. https://doi.org/10.7759/cureus.15770
2. Pourat, N., et. Al. (2022). Trends in access to care among rural patients served at HRSA-funded health centers. *The Journal of rural health : official journal of the American Rural Health Association and the National Rural Health Care Association*, *38*(4), 970–979. https://doi.org/10.1111/jrh.12626
3. Bauman, V., et. Al.(2021). Rural/urban weight-loss outcomes following bariatric surgery. *Obesity science & practice*, *7*(6), 797–802. https://doi.org/10.1002/osp4.515
4. Bergmann, K. L.,et. Al. (2017). Influence of a rural environment on patient access and outcomes for bariatric surgery. *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*, *13*(4), 632–636. https://doi.org/10.1016/j.soard.2016.11.009