

## Leadership Connection 2018 (15-18 September)

### A Retrospective Study Measuring BMI and Related Comorbidities Before and After Bariatric Surgery

**Samantha Ray Hoselton, BSN**

*School of Nursing, Master's Program, Missouri Western State University, Saint Joseph, MO, USA*

One of Healthy People 2020's Leading Health Indicators is to reduce the proportion of adults who are obese (2018). In 2016, The Centers of Disease Control and Prevention (CDC) reported 30% of America as obese. This leads to a higher rate of obesity related comorbidities such as diabetes, hypertension, hyperlipidemia, sleep apnea, and acid reflux which in turn leads to higher health care costs. The issue grows when over 35% of obese people in America have less than a high school education and make less than \$15,000 a year because these people may not have the money or access to healthy foods or safe places to exercise (CDC, 2018). Many Americans cannot lose weight on exercise and dieting alone so many are turning to bariatric surgery. The two most common bariatric surgeries include Laparoscopic Sleeve Gastrectomy (LSG) and Laparoscopic Roux-en-Y Gastric Bypass (LRYGB). The LSG removes approximately 80% of the stomach, leaving a tubular pouch that looks like a banana (American Society for Metabolic and Bariatric Surgery [ASMBS], 2018). The procedure restricts the amount of food consumed, changes hormones linked to hunger, and is not reversible. The LRYGB is considered the 'gold standard' of weight loss surgery. A small one ounce pouch is made at the top of the stomach. The rest of the stomach and first part of the small intestine is bypassed. The remaining small intestine is connected to the small pouch. The procedure restricts the amount of food consumed, changes hormones linked to hunger and the remission of Type 2 Diabetes (T2DM), and the procedure is reversible (ASMBS, 2018). Both can lead to long-term vitamin deficiencies so daily supplements are recommended. Mboyato, Somasse, and Coppieters (2012) reported the motivations to have LRYGB surgery include: importance of physique, need for being with the mode, request of a spouse, or for decreasing health risks. The psychological repercussion of obesity was found to be a larger factor than the request of family members or the pressure of society in regards to wanting LRYGB. The study emphasized the importance for social support of the family and friends, during and after the surgery so there was more acceptance and success with the surgery. Researchers Pin, Hongwei, Xiaodong, Jianzhong, Yulong, Kun, and Qi (2016) reported LRYGB as a safe and effective procedure for improving glycemic control, obesity, body fat percentage, blood pressure, and blood lipid levels, without malnutrition or severe anemia in patients with T2DM and obesity. Garg, Priyadarshini, Aggarwal, Agarwal, and Chaudhary (2017) reported the percentage of excess of weight loss was similar in the LSG and LRYGB groups at the one year follow-up but, weight loss was significantly greater for the LRYGB group after two years when compared to LSG group. The complication rate and impact of LRYGB and LSG on T2DM, hypertension, sleep apnea and hypothyroidism was similar after the LRYGB and LSG. However, GERD resolved in all patients undergoing LRYGB while it only resolved in 50% of the LSG cases. 8.3 percent of patients developed new-onset GERD after LSG surgery. A systematic review and meta-analysis of randomized controlled trials compared LRYGB surgery and medical treatment for T2DM in obese patients (Yan, Sha, Yao, Wang, Kong, Liu, Zhang, Zhang, Hu, & Zhang, 2016). LRYGB surgery was associated with a higher T2DM remission rate and serum level of high-density lipoprotein cholesterol than medical treatment alone. Hemoglobin A1c, BMI, waist circumference, triglyceride, low-density lipoprotein cholesterol, and systolic blood pressure were lower after LRYGB surgery. However, total cholesterol, and diastolic blood pressure were not significantly different between the 2 treatment groups. Medicine use and quality of life were solely improved in the LRYGB group. Nutritional deficiencies and anemia were noted more frequently in the LRYGB group. The researchers concluded the LRYGB surgery was superior to medical treatment for short- to medium-term remission of T2DM, improvement of metabolic condition, and cardiovascular risk factors. Additional studies indicate similar findings. ( Sam, Sam, & Jones, 2018; .....)

This retrospective study examines if there is a significant differences between adults age, sex, ethnicity, race, body mass index, hemoglobin A1c, hypertension, gastroesophageal reflux disease, sleep apnea, hyperlipidemia, and diabetes status. Current medications will also be examined before and up to two years after Laparoscopic Roux-en Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy surgery.

IRB approval was received through the university and northwest regional medical center prior to data retrieval. The informatics team retrospectively collected data on patients who had LSG or LRYGB between January 1, 2015 and March 31st, 2018. Names were de-identified and numbered chronologically. To qualify for either surgery patients had to be over 18 years of age, consent to surgery, pass a psychological evaluation, and have a BMI > 35kg/m<sup>2</sup> with two obesity related comorbidities or have a BMI >40kg/m<sup>2</sup>. Risks and benefits are explained prior to surgery. Risks include potential for blood clots, surgical infection, bleeding, vitamins deficiencies, and even death. The benefits include decreasing BMI, hemoglobin A1c, blood pressure, and potential improvement in diabetes, hypertension, hyperlipidemia, GERD, and sleep apnea.

The sample size is 510 patients. 366 (72%) females and 144 (28%) males. 426 (83.5%) had the LRYGB, 52 (10.2%) had the LSG, 29 (5.7%) had the band to LRYGB, 2 (0.4%) had the Band to LSG, and 1 (0.2%) had the LSG to LRYGB. The data analyzed will compare these patients using an independent t-test, dependent t-test, and an ANOVA test. Demographics and comorbidities will be analyzed before, 1 month after, 3 months after, six months after, 1 year after, and 2 years after the bariatric surgery.

The results will provide evidence of the success of the northwest regional medical center's bariatric program. It will aid in education of patients, families, and practitioners on the benefits of bariatric surgery. In turn, it is expected there will be no direct benefits to the patients in the study although it may enhance program growth and lead to a healthier population. Limitations include the potential for human error when data is entered. Due to earlier processes that did not include postoperative hemoglobin A1c's. There is not a Hemoglobin A1c on each patient post-operatively. This process has been recently changed and the hemoglobin A1c is now draw on every patient each year.

---

**Title:**

A Retrospective Study Measuring BMI and Related Comorbidities Before and After Bariatric Surgery

**Keywords:**

BMI, bariatric and comorbidities

**References:**

Abdelkader, A. M., Ali, H. E., Mitwally, R. A., & Yousef, M. S. (2017). Laparoscopic sleeve gastrectomy compared with Roux-en-Y gastric bypass surgery: 2-year outcome of body weight, obesity-associated comorbidities, and quality of life. *Egyptian Journal Of Surgery*, 36(4), 432-439. doi:10.4103/ejs.ejs\_75\_17

Arabi Basharic, F., OlyaeManesh, A., Raei, B., Goudarzi, R., Arab Zozani, M., & Ranjbar Ezzatabadi, M. (2017). Cost-effectiveness of laparoscopic sleeve gastrectomy and laparoscopic Roux-en-Y gastric bypass in two hospitals of Tehran city in 2014. *Medical Journal of the Islamic Republic of Iran*, 31, 22. <http://doi.org/10.18869/mjiri.31.22>

Biter, L. U., Gadiot, R. P. M., Grotenhuis, B. A., Dunkelgrün, M., van Mil, S. R., Zengerink, H. J. J., Smulders, J. F., & Mannaerts, G. H. H. (2015). The sleeve bypass trial: a multicentre randomized controlled trial comparing the long term outcome of laparoscopic sleeve gastrectomy and gastric bypass for morbid obesity in terms of excess BMI loss percentage and quality of life. *BMC Obesity*, 2, 30. <http://doi.org/10.1186/s40608-015-0058-0>

Carbajo, M. A., Luque-de-León, E., Jiménez, J. M., Ortiz-de-Solórzano, J., Pérez-Miranda, M., & Castro-Alija, M. J. (2017). Laparoscopic One-Anastomosis Gastric Bypass: Technique, Results, and Long-Term Follow-Up in 1200 Patients. *Obesity Surgery*, 27(5), 1153–1167. [http://doi.org/10.1007/s11695-016-2428-](http://doi.org/10.1007/s11695-016-2428-1)

Du, X., Zhang, S., Zhou, H., Li, X., Zhang, X., Zhou, Z., & Cheng, Z. (2016). Laparoscopic sleeve gastrectomy versus Roux-en-Y gastric bypass for morbid obesity: a 1:1 matched cohort study in a Chinese population. *Oncotarget*, 7(46), 76308–76315. <http://doi.org/10.18632/oncotarget.12536>

Garg, H., Priyadarshini, P., Aggarwal, S., Agarwal, S., & Chaudhary, R. (2017). Comparative study of outcomes following laparoscopic Roux-en-Y gastric bypass and sleeve gastrectomy in morbidly obese patients: A case control study. *WorldJournal of Gastrointestinal Endoscopy*, 9(4), 162–170. <http://doi.org/10.4253/wjge.v9.i4.162>

Mboyato, S., Somasse, E., & Coppieters, Y. (2012). Qualitative analysis of factors supporting the motivation for gastric bypass. *Revue Medicale De Bruxelles*, 33(5), 457-465

Office of Disease Prevention and Health Promotion. (2018). Nutrition and weight status. Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives#4968>

Peterli, R., Wölnerhanssen, B. K., Vetter, D., Nett, P., Gass, M., Borbély, Y., Peters, T., Schiesser, M., Schultes, B., Beglinger, C., Drewe, J., & Bueter, M. (2017). Laparoscopic Sleeve Gastrectomy Versus Roux-Y-Gastric Bypass for Morbid Obesity—3-Year Outcomes of the Prospective Randomized Swiss Multicenter Bypass Or Sleeve Study (SM-BOSS). *Annals of Surgery*, 265(3), 466–473. <http://doi.org/10.1097/SLA.0000000000001929>

Pin, Z., Hongwei, Z., Xiaodong, H., Jianzhong, D., Yulong, Z., Kun, L., & Qi, Z. (2016). Effectiveness and safety of laparoscopic Roux-en-Y gastric bypass for the treatment of type 2 diabetes mellitus. *Experimental & Therapeutic Medicine*, 11(3), 827-831. doi:10.3892/etm.2016.2973

Praveenraj, P., Gomes, R. M., Kumar, S., Perumal, S., Senthilnathan, P., Parthasarathi, R., Rajapandian, S., & Palanivelu, C. (2016). Comparison of weight loss outcomes 1 year after sleeve gastrectomy and Roux-en-Y gastric bypass in patients aged above 50 years. *Journal of Minimal Access Surgery*, 12(3), 220–225. <http://doi.org/10.4103/0972-9941.183481>

Rosenthal, R. J. (2017). MBSAQIP Database Should Be Used as a Tool to Continually Improve Our Clinical Practices for Optimal Patient Outcomes. *Bariatric Times*. p. 3.

Tang, Q., Sun, Z., Zhang, N., Xu, G., Song, P., Xu, L., & Tang, W. (2016). Cost-Effectiveness of Bariatric Surgery for Type 2 Diabetes Mellitus: A Randomized Controlled Trial in China. *Medicine*, 95(20), e3522. <http://doi.org/10.1097/MD.0000000000003522>

The Centers of Disease for Control and Prevention and Control. (2016). Percent of adults aged 18 and older who have obesity- National. Retrieved from <https://chronicdata.cdc.gov/Nutrition-Physical-Activity-and-Obesity/Percent-of-adults-aged-18-and-older-who-have-obesi/cwdv-83mi>

Wiklund, M., Olsén, M. F., & Willén, C. (2011). Physical activity as viewed by adults with severe obesity, awaiting gastric bypass surgery. *Physiotherapy Research International*, 16(3), 179-186. doi:10.1002/pri.497

Yan, Y., Sha, Y., Yao, G., Wang, S., Kong, F., Liu, H., Zhang, G., Zhang, H., Hu, C., & Zhang, X. (2016). Roux-en-Y Gastric Bypass Versus Medical Treatment for Type 2 Diabetes Mellitus in Obese Patients: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Medicine*, 95(17), e3462. <http://doi.org/10.1097/MD.0000000000003462>

## **Abstract Summary:**

This study examines the differences between adults' body mass index, hemoglobin A1c, hypertension, gastroesophageal reflux disease, sleep apnea, hyperlipidemia, and diabetes status. Current medications will also be taken before and up to two years after Laparoscopic Roux-en Y Gastric Bypass or Laparoscopic Sleeve Gastrectomy surgery.

### **Content Outline:**

Title- A retrospective study measuring BMI and related comorbidities before and after bariatric surgery

1. Introduction
  1. One of Healthy People 2020's Leading Health Indicators is to reduce the proportion of adults who are obese (2018).
  2. In 2016, The Centers of Disease Control and Prevention (CDC) reported 30% of America as obese.
2. Body
  1. Review of Literature
    1. Bariatric Surgery is safe and effective
      1. Arabi Basharic, F., OlyaeManesh, A., Raei, B., Goudarzi, R., Arab Zozani, M., & Ranjbar Ezzatabadi, M. (2017).
      2. Pin, Z., Hongwei, Z., Xiaodong, H., Jianzhong, D., Yulong, Z., Kun, L., & Qi, Z. (2016).
    2. Bariatric Surgery improves Type 2 Diabetes, hypertension, GERD, sleep apnea, and hyperlipidemia
      1. Garg, H., Priyadarshini, P., Aggarwal, S., Agarwal, S., & Chaudhary, R. (2017).
      2. Praveenraj, P., Gomes, R. M., Kumar, S., Perumal, S., Senthilnathan, P., Parthasarathi, R., Rajapandian, S., & Palanivelu, C. (2016).
      3. Yan, Y., Sha, Y., Yao, G., Wang, S., Kong, F., Liu, H., Zhang, G., Zhang, H., Hu, C., & Zhang, X. (2016).
  2. Methods
    1. Criteria for inclusion
      1. Over 18 years of age
      2. Pass a psychological evaluation
      3. BMI > 35kg/m<sup>2</sup> with two obesity related comorbidities or have a BMI >40kg/m<sup>2</sup>
    2. Retrospective study
      1. January 1<sup>st</sup>, 2015 to March 31<sup>st</sup>, 2018
      2. Had Laparoscopic Roux en Y Gastric Bypass or Sleeve Gastrectomy surgery, Band to Bypass, Band to Sleeve, Sleeve to Bypass, no revisions
      3. Data analyzed before, 1 month after, 3 months after, six months after, 1 year after, and 2 years after surgery.
  3. Results
    1. Sample size N=510,
      1. Female 366 (72%), 144 Male (28%)
      2. Gastric bypass 426 (83.5%), Sleeve 52 (10.2%), band to bypass 29 (5.7%), Band to Sleeve 2 (0.4%), Sleeve to Bypass 1 (0.2%)
    2. Will be discussed and shared
- Conclusion
  1. Bariatric surgery is safe and effective, leads to a healthier population
  2. Results aid in educating patients and providers about the benefits of bariatric surgery

First Primary Presenting Author  
**Primary Presenting Author**

Samantha Ray Hoselton, BSN  
Missouri Western State University  
School of Nursing, Master's Program  
Student, Registered Nurse Bariatric Coordinator  
Saint Joseph MO  
USA

**Professional Experience:** 2011-2012 received BSN through Missouri Western State University. May 2016- current. Earning Master's in Nursing Leadership. Anticipate to graduated in December 2018. 2013-2014 Mosaic Life Care Medical surgical, telemetry floor. 2014-July 2018 Mosaic Life Care orthopedic and neurology floor. August 2018- present Bariatric Nurse Coordinator. April 2017- Inducted into the National Society of Leadership & Success. May 2015-Invited by Hospital Leadership to attend the National Association of Orthopedic Nurses Annual Conference in Nashville, TN. Spring 2012-Inducted into Omicron Nu, Sigma Theta Tau Nursing Honor Society. Fall 2009- Inducted into the Phi Theta Kappa Honor Society. Spring 2008- Inducted into the Psi Beta National Honor Society in Psychology.

**Author Summary:** Samantha Hoselton is a Registered Nurse with a Bachelors in Nursing currently pursuing her Master in Nursing Leadership. Samantha is the Bariatric Coordinator at Mosaic Life Care in Saint Joseph, Missouri.