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## Bariatric Surgery, Help or Hype?

### An Annotated Bibliography Exploring Medical Studies and Public Perception

#### Summary of the Issue:

Marketdata values the U.S. weight loss industry at over \$60 billion dollars annually and the American Society for Metabolic and Bariatric Surgery (ASMBS) reports nearly 200,000 Americans underwent weight loss surgery in 2015. I am researching the question of whether bariatric surgery is a successful intervention for morbid obesity and what criteria define success for different stakeholders. With much of the surgical cost covered by private and public healthcare plans, even fit citizens have a stake in the answer to this question.

The media heavily covers the obesity epidemic, celebrity weight loss stories, and new obesity interventions. Yet, public perception seems to be that these surgeries are only short term fixes for people too undisciplined to diet. My survey subjects overwhelmingly report that their peers who have undergone surgery were not very successful. But medical study data finds otherwise. What can account for this disparity?

Bacon, Linda. *Health at Every Size: The Surprising Truth about Your Weight*. Dallas, TX:

BenBella, 2008. Print. 62-66.

Linda Bacon, Ph.D., holds degrees in physiology, nutrition, and other related topics. She earns her living writing and speaking about the “Health at Every Size” movement but claims no corporate affiliations or grants. Her book is a treatise on accepting fatness and focusing instead on health. In her chapter on weight loss surgeries, she unequivocally denounces them as dangerous, ineffective and unnecessary. She says they shouldn’t be called lifesaving procedures but instead “labeled high-risk disease-inducing cosmetic surgery.”

Bacon argues that doctors mislead patients about the seriousness of being overweight and sell them on surgery with misplaced fear. She insists that because of the high profits to be gained from surgery, “accuracy and integrity in research and reporting go by the wayside.” Bacon quotes several of the least promising studies about surgery outcomes, though she mentions that other sources, which she hints are biased, do report better statistics.

She goes on to list all the possible complications of surgery but in a way engineered to frighten. For example, one side effect of bariatric surgery is that one might become deficient in vitamin B-12. It’s well documented, and patients receive repeated warnings before and after surgery that lifetime supplementation is a must. If a patient disregards this advice for years, then a variety of neurological problems could start to manifest. Instead of explaining this, Bacon lists every B-12 deficiency side-effect as a surgical side-effect. I feel this is misleading. She also lists both the limited ability to eat and vomiting from overeating as side effects. To my mind, these are the intended effects of the surgery and help the patient to modify poor behaviors such as binge eating and over-eating junk foods. She also cites much higher mortality rates than I’ve seen in other studies, so I’m planning to look her studies up.

Additionally, some of the ways she represents study data are disturbing. In her manifesto, she uses this example:

Assumption: Health is declining as a result of an “obesity epidemic.”

False! While it’s true that we’re moderately fatter than we used to be, life expectancy has increased dramatically during the same time period in which our weight rose (from 70.8 years in 1970 to 77.8 years in 2005). That’s right, government statistics predict that the average kid can now expect to live almost eight years longer than his or her parents!

(Bacon, 276)

When taken at face value, this can seem like good news. But what was going on in 1970 that might have influenced life expectancy to be shorter than today? First, life expectancy rates are heavily influenced by infant deaths. Have we gotten better at saving premature babies in the last 45 years? Of course we have. We were also in the middle of the Vietnam war during 1970, a conflict which killed off approximately 200,000 young men. Cancer treatments have improved, smoking has drastically declined, and seatbelts have come into wide use. People are statistically living longer today for a wide variety of reasons and I don’t think Bacon’s conclusions here are logical. Weight rising with life expectancy doesn’t prove excess weight is harmless.

Cremieux, Pierre-Yves, et al. "A Study on the Economic Impact of Bariatric Surgery." *American Journal of Managed Care* 14.9 (2008): 589-596. *CINAHL Complete*. Web. 6 Nov. 2016.

Pierre-Yves Cremieux, Ph.D. and his associates authored this study to examine the economic impact of bariatric surgery on third party payers. Giving context to the issue, they highlight statistics such as the rise of obesity by 24% between 2000 and 2005. They also detail how healthcare costs for the morbidly obese are 81% higher than for their non-obese

counterparts. By examining insurance claims from 3,651 patients over a five-year postoperative period, they conclude that third-party payers will enjoy overall savings beginning 2-4 years after surgery, depending on if the procedure was a laparoscopic or open procedure.

The study seems well-considered and the authors take the time to explain both their methodology and why their study shows more positive results than previous studies. For example, they cite the movement toward laparoscopy as a huge force in driving down costs. This change took place just a few years before their study data which would set their findings apart from other studies. Unlike other studies, they examined actual claims data instead of data based on average estimated costs. They also ignored costs like worker absenteeism, focusing solely on medical claims.

I found the study itself credible but had some concern with the authors' potential conflicts of interest. Ethicon Endo-Surgery, Inc. funded the study. This company is a subsidiary of Johnson & Johnson and manufactures a variety of surgical instruments including those used in laparoscopy. Further, one of the authors owned stock in Ethicon Endo-Surgery.

Freedman, Marian. "Journal Club. Two Sides to Bariatric Surgery for Teens." *Contemporary Pediatrics* 33.3 (2016): 10. *CINAHL Complete*. Web. 16 Nov. 2016.

This Journal article is a summary and analysis of the Inge study with a comment from Michael G Burke, M.D., an associate professor of pediatrics at Johns Hopkins University School of Medicine. I've read the research abstract as well but this analysis provided a better "layman" overview, and Burke's commentary is compelling. The study followed 242 teens for three years after their weight loss surgeries. At the three-year mark, only 26% of the subjects had lost enough weight to no longer be obese. Mean weight loss was 27%. On the positive side, at least

89% of them had a 10% or better BMI reduction and there was a 95% remission from type 2 diabetes. But 2-4% weighed more after three years, and 57% of participants had a micronutrient deficiency. These last two data points suggest that the post-surgical guidelines are not being followed by many the patients.

Burke's commentary explains that while the surgery was not a solution for everyone, this intervention may be "the best we have to offer" and the earlier the obese receive it, the better it works for managing co-existing conditions. I find the statistics a bit hard to analyze against adult studies since they are offered in a different way, so I'll need to dig a bit more to be able to compare them easily.

Grayson, Bernadette E., et al. "Weight Loss by Calorie Restriction Versus Bariatric Surgery

Differentially Regulates the Hypothalamo-Pituitary-Adrenocortical Axis in Male Rats."

*Stress: The International Journal on the Biology of Stress* 17.6 (2014): 484-493.

*Academic Search Premier*. Web. 6 Nov. 2016.

Bernadette Grayson, Ph.D. is a professor of Neurobiology and Anatomical Sciences at the University of Mississippi Medical Center. Her study on brain chemistry in dieting used male test rats separated them into five groups. The first two groups were control groups of lean and obese rats, both maintained on steady diets. The next three groups were obese rats placed on a reduced calorie diet to lose weight and then offered one of three interventions: Gastric Sleeve, Gastric Bypass, or a sham surgery which pinched the stomach but made no alterations. All three groups were returned to normal food access and the study monitored their hypothalamo-pituitary-adrenocortical (HPA) response. The study acknowledged previous studies that showed calorie restriction drives up the HPA response and compels dieters to compensate for their

“starvation” by overeating after weight loss, to return to the body’s “defended” weight. Their findings supported this and found this hormonal response was “abrogated” after bariatric surgery. Unlike the rats who received the sham surgery, the other two groups had lower HPA levels and regained far less of their weight loss than the dieting group.

I felt this study was carefully engineered to account for all manner of variables. The fact that they even gave the control rats a sham surgery was impressive and helped account for any trauma the surgical rats might have encountered that could have skewed results. The evidence can’t explain *why* this change in HPA happens post-surgery, but theories focus on a relationship between circulating hormones created in the gut that may interact with hormones in the brain. The study was supported by several NIH awards but also from financial assistance from corporations who may have a stake in the outcome (Ethicon Endo-Surgery, Pfizer, etc.).

*Perspectives on Weight Loss*. Personal Survey, November 2016.

[docs.google.com/forms/d/e/1FAIpQLSfJvtfEBMOV8fFvoBSeIZb8127Ir2QIYk\\_GriyDrJWceCdLxA/viewform](https://docs.google.com/forms/d/e/1FAIpQLSfJvtfEBMOV8fFvoBSeIZb8127Ir2QIYk_GriyDrJWceCdLxA/viewform).

I created this survey to gather opinions and observations from the public on the effectiveness of weight loss surgery. It asks for personal views on the effectiveness as well as views on any peers or loved ones that the respondent know to have undergone weight loss surgery. They report on the efficacy of the operation and their opinion on why the patient’s results may not have merited a “very successful” rating.

At this point, an average of 52% of respondents believe the patients they know were less than successful because they “failed to embrace the necessary lifestyle changes.” Second most popular at 28% was “surgery is an inherently problematic weight loss solution.” Still, a full 58%

rated weight loss surgeries as “useful or very useful for well-qualified patients.” The two most common reasons for rating a patient's results as low were "not losing all the weight" and regaining “a lot” of their weight. Very few (around 8%) reported that patients regained most or all their weight.

Persson, Karl. "Why Bariatric Surgery Should Be Given High Priority: An Argument from Law and Morality." *Health Care Analysis* 22.4 (2014): 305-324. *CINAHL Complete*. Web. 6 Nov. 2016.

Karl Persson is not a medical doctor. He is Swedish and works for the University of Gothenburg in the department of Philosophy. His specialty within Philosophy is scientific theory and language. His paper is an examination of the moral argument for prioritizing the obese for surgical treatment within the Swedish healthcare system. He examines and cites dozens of studies and papers on the topic and uses those findings to conclude that the obese suffer a great deal and are not, overall, responsible for their conditions, nor do they can they resolve their conditions on their own. For these reasons, he believes their case requires help.

Persson’s argument is compelling because he has very little stake in the outcome himself but he’s obviously investigated the issue in depth. He’s not working for a surgical company and not running a study funded by anyone with a stake in the findings. He’s also not a bariatric surgeon, nor is he himself overweight. He uses a huge amount of the work of others to support his position and the works he cites are from a wide variety of sources: medical studies, philosophical papers, national healthcare data and so on.

It’s hard for me to find points to disagree with in Persson’s paper. He’s very balanced in his arguments and relies on a lot of study data to shoot down assumptions about addictive behavior.

One thing I did find startling and had to read several times was one of his arguments about non-culpable ignorance. He asserts that the obese are kept ignorant of the difficulty of losing weight conventionally because health organizations and media are constantly promoting weight loss through calorie restriction while none discuss the low success rates of this approach. He argues, “Many people have a strong sense of control over their own actions, which is not a vice but a necessity for a well-functioning and happy life. This control makes it difficult to grasp the fact that we may be unable to accomplish simple goals, such as adhering to advice.” When I thought more about this, I recognized the demoralizing cycle this disconnect sets us up to experience: a lifetime of attempted and failed diets and a decreasing sense of self-worth.

Petty, Natasha “Impact of Commissioning Weight-loss Surgery for Bariatric Patients.” *British Journal of Nursing* 24.15 (2015): 776-780. *CINAHL Complete*. Web. 6 Nov. 2016.

Petty, a British Nursing student, outlines the financial burden the British obesity epidemic places on the public health system and cites criticisms from those opposed to ramping up spending on surgical interventions. She reports critics feel those funds are better spent on obesity prevention and education but Petty argues that these interventions would take time to have an effect and do little to address the current crisis taking a toll on the health and finances of the nation.

Overall, Petty’s findings on cost are similar to Cremieux’s, but not quite as optimistic. Her cited studies show costs are recouped over a period of 3-5 years rather than 2-4. This could be because of different healthcare costs in each country, but it’s hard to imagine that a public health system would be more expensive than a for-profit system. Regardless of the precise



timeline, Petty cites studies that conclude bariatric surgery was the *only* medical intervention successful in maintaining a 15% or better weight loss over a ten-year period.

I sought out this article because it was written by a senior year nursing student and focuses mostly on studies and surveys completed by various British health organizations and other European sources. Because the author is a student with no monetary gain at stake and because the study data came primarily from social health care systems, I felt it would be a good alternate source. It appears both for-profit and not-for-profit healthcare systems find weight loss surgeries to be worth the cost, if on somewhat different timelines.

“Program for Reduction of Obesity in Teens.” Greenville Health System, [www.goproteens.com](http://www.goproteens.com).

Web. 17 November 2016.

This website is the program overview for a bariatric surgery practice for teens. The site offers an overview of the operation types, eligibility, and the process of qualifying for surgery. Unlike other websites, several rhetorical choices indicate this site is seeking teens themselves as their audience. The opening paragraph signals this shift with the greeting, “Have you ever thought, “I wish I could play with my friends, but I just can't keep up” or “I'm trying so hard to lose weight and am not seeing any results”? PRO-Teens™ is a surgical weight loss program specifically designed for teens, like you, from 14-18 years old.”

While I’m not entirely opposed to teens seeking surgery, I find the idea of a hospital marketing surgery to my child deeply offensive and disturbing. The authors may have wanted to make an explanation of the procedure accessible to a younger audience, but they could have offered this in a pamphlet for qualified patients. Their choice to invest in a search-engine-optimized website and a catchy brand name tells me they are marketing to kids.

Smith, Sherman. "Bariatric Surgery Myths and Facts." *Rocky Mountain Associated Physicians' Surgical Classes*, 21 August 2014, Salt Lake City, UT.

This class was the second class in a series of preparedness courses this surgical practice uses to help ensure their patients know what is ahead. As one Utah's only "Center of Excellence" for bariatric surgery at that time, Rock Mountain Associated Physicians are, arguably, the most successful bariatric practice in the intermountain west in terms of outcomes. The speaker, an experienced bariatric surgeon of around 60, covered all the surgical options, the anatomical changes they create and their statistical outcomes. He also used a whiteboard to explain those statistics and what they mean over time. First, he charted the "typical" weight gain year over year of the average obese person without intervention. Then he charted Patient X who has surgery and drops 150 pounds. After a year, Patient X begins to regain some weight, but at a slower rate than his obese peers. After five years, he's recovered 20-30% of his loss. This regain, Smith explains, looks like a failure to the uninitiated. But, Smith points out, the change in the *trajectory* of Patient X's weight has added years to his life, effectively rolling back the clock on the damaging effects of obesity by 15-20 years.

I took several classes on weight loss surgeries and found this one of the most compelling arguments. Surgical patients rarely gain back *all* their weight, yet others tend to perceive any noticeable regain as failure. Because of several studies, doctors are now urging patients to make just a 5% to 10% reduction in weight to experience relief of many obesity co-conditions. These differing definitions of success may be one reason the public holds a low opinion of surgical intervention.

Sommerfield, Julia. "Teen Weight-loss Surgery: Is Benefit Worth the Risk?" *SeattleTimes.com*, 7 July 2003. [www.seattletimes.com/seattle-news/health/teen-weight-loss-surgery-is-benefit-worth-the-risk/](http://www.seattletimes.com/seattle-news/health/teen-weight-loss-surgery-is-benefit-worth-the-risk/). Web. 17 November 2016.

In this viewpoint synthesis article, Sommerfield profiles a 17-year-old girl that has lost around a hundred pounds after weight loss surgery. She describes the emotional turmoil—depression, anxiety, low self-esteem—that kept the girl socially removed from her peers and worsened her weight gain. From the subject's perspective, life is finally ready to begin now that she's closer to a "normal weight" but Sommerfield also points out the critics' views.

Those views range from the danger of the procedure itself to the long term nutritional deficiencies that can crop up, to the general unknowns of the effects on the human body 50 years after weight loss surgery. Until recently, only adults underwent the procedure, so there isn't study data with very long time periods.

I liked how balanced and fair this article was. Sommerfield relies on several methods; quoting statistics, interviewing the patient in the feature, and interviewing both surgeons and critics. Of the many news pieces I have read on surgery, this one of the fairest and the most accurate. I've read several features where it's obvious the author doesn't even understand the anatomical changes surgery produces and mistakes the features of one procedure for another. This author demonstrates her understanding of the nuanced after-effects of different procedures which boosts her ethos for me.

Weight Loss Surgery Survey. Personal Survey, November 2016.

[docs.google.com/forms/d/e/1FAIpQLScFgMfQkFRsprACCz9H02CaBeCNbdmzJ3XRoP0Bf5irXidFrw/viewform](https://docs.google.com/forms/d/e/1FAIpQLScFgMfQkFRsprACCz9H02CaBeCNbdmzJ3XRoP0Bf5irXidFrw/viewform).

I created this survey to poll a local population of weight loss patients. Respondents were asked to report on things like their health, quality of life, and level of support both before and after surgery. The survey also asked about negative reactions from peers and family and their level of disclosure about surgery.

It's important to note that this survey group is from an online surgical support group based in Salt Lake City. As such, respondents can reasonably be assumed to be engaged in their after-care and received an adequate amount of pre-surgical education.

Of those surveyed, 65% were 1-4 years out from surgery, and 14% were five years or more post-surgery. 23% surveyed were one year or less from their surgery dates. Respondents rated their pre-surgical quality of health mostly a 1 or 2 of 5 (72%), and their post-surgical health a 4 or 5 (97.3%). Questions about their quality of life showed similar results. The most common reaction from their peers matched closely with the most common opinions of those peers in the previous study: 85% of weight loss patients have heard comments from peers about the certainty of weight regain.

While I found Persson's arguments fascinating, I think I still need to narrow the topic. To do this, I will need to kick out softer moral or philosophical arguments and focus instead on the data. Do surgeries work? If so, what's the definition of success and how does that definition vary for other stakeholders? One thing the anti-diet crowd may have gotten right is that we shouldn't be so focused on thinness as a measure of health and the success of an intervention. If a thin appearance is the definition of success, it's possible no intervention will satisfy the public. Diabetes remission, improved quality of life, and life expectancy are likely better rulers by which to measure the success of any obesity intervention. By those standards, surgeries dominate.