UNDERUTILIZED: AN ACTOR NETWORK THEORY ANALYSIS OF BARIATRIC SURGERY IN THE 21ST CENTURY

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

Obesity has been a growing issue in America dating back to the 1970s (Temple, 2022, pp. 1-2). During August 2021–August 2023, the prevalence of obesity in adults was 40.3% (CDC, 2024). Patients with obesity are at an increased risk of developing diabetes, high blood pressure, heart disease, and many other problems (CDC, 2022). Obesity-related diseases such as heart disease, stroke, and diabetes are among the top leading causes of death in America (*FastStats*, 2024) (*10 Leading Causes of Death in the U.S.*, n.d.). Many different treatments and diets have been created to help patients manage their obesity. One of these treatments is called bariatric surgery. Bariatric surgery is an umbrella term for surgeries such as gastric bypass, sleeve gastrectomy, and gastric balloon that are all aimed at helping patients manage their food intake and lose weight. Although the first bariatric surgeries were being developed around the mid-1900s, the treatment remained largely in obscurity until the 1990s when the obesity epidemic was officially recognized in the medical community (Faria, 2017).

Although the obesity epidemic largely expanded the use of surgery as a treatment for obesity, the treatment still remains severly underutilized. It is estimated that almost 30 million adults in the U.S. are eligible for bariatric surgery under the NIH criteria (BMI over 35 or BMI over 30 with a weight-related health condition) (Liu & Funk, 2020, p. 210). Despite this vast qualification, only about 280,000 surgeries are performed annually (*Estimate of Bariatric Surgery Numbers, 2011-2022 - American Society for Metabolic and Bariatric Surgery*, n.d.). The consequences of untreated obesity can be very severe. The expansion of bariatric surgery as a treatment for obesity can help lower the risks of these diseases for millions of people. This begs the question: why is a treatment that could be highly beneficial to millions of people so underutilized?

The goal of this paper is to give insight into this question by investigating the many organizations that work together to provide bariatric surgery. Specifically, I will examine bariatric equipment companies, hospitals and physicians that provide bariatric surgery, health insurance companies, and the interactions between them all to find the strengths and weaknesses in the process of providing a bariatric surgery. Through this analysis, I aim to uncover how these factors contribute to the vast majority of patients being unable to receive surgery that could significantly improve their health and make recommendations on steps that could be taken to ease this issue. To support my argument, I will draw on the STS Framework of actor-network theory (ANT) which claims that all technical projects can be viewed as a network of human and non-human actors assembled by a network builder to accomplish a particular goal (Cressman, 2009, p. 3). I will develop a network of actors that are associated with the bariatric health care field to analyze the steps they can take to achieve the goal of broadening access to bariatric surgery, reducing obesity in America, and lowering risk for common fatal diseases. To support my analysis, I will primarily analyze peer-reviewed scholarly articles from professionals in the field.

Context and Literatrue Review

9.2% of adult Americans and 6.1% of children and adolescents have a BMI over 40 classifying them as severely obese. This number continues to grow as the obesity problem in America continues to worsen (Tiwari & Balasundaram, 2024). Patients that have already tried dieting, exercising, and medicine often turn to bariatric surgery for treatment. The most common bariatric surgery performed today is sleeve gastrectomy. This surgery is usually performed using minimally invasive methods and is relatively simple. The gastrectomy shrinks the size of a patient's stomach leaving a portion that resembles a sleeve as opposed to a pouch (*Bariatric*

(Weight Loss) Surgery, n.d.). This helps the patient feel full with less food and therefore limits how much food they consume. The gastric sleeve also helps lower the production of a hunger-causing hormone called ghrelin ("The Truth About Appetite Suppression After Weight Loss Surgery," 2020). When patients aren't eating as much food, it is easier for them to stay in a caloric defecit and lose weight. Statistics from the American Society for Metabolic and Bariatric Surgery (ASMBS) found that patients can lose up to 77% of their excess weight in a year after surgery (*Metabolic and Bariatric Surgery*, 2021). They also found that a vast majority of patients experienced remission in obesity related diseases such as type 2 diabetes, obstructive sleep apnea, and hypertension. All of these benefits only came with a risk of death at about 0.1% and major complication rate of 4%. Other studies from Aminian et al. (2016) and Feng et al. (2019) confirm that bariatric surgery is a very safe procedure and that the benefits that come from the potential weight loss largely outweight the risks.

In response to the advances in safety and understanding of bariatric surgery, in 2022, the ASMBS and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) released new recommendations for the criteria for bariatric surgery (Eisenberg et al., 2022 p. 2). These new guidelines were intended to open the surgery up to more patients so that the surgery could be utilized more effectively. However, a 2024 survey of primary care providers found that 95% of respondents at a single institution had no knowledge of the updated guidelines with 72.3% of them additionally reporting poor education about bariatric surgery (Hulse et al., 2024, pp. 3-4). It is reasonable to assume that this lack of knowledge of the new guidelines was not unique to this particular institution. Hospitals across the U.S. must be able to ensure that physicians are up to date with the latest standards of care. This gap in knowledge from bariatric

surgery organizations and primary care providers could provide insight into the underutilization of the procedure.

Another large factor in patients decisions to get bariatric surgery is insurance companies. A 2019 survey of insurance coverage for bariatric surgery found that most private insurance companies still require a supervised medical weight management program prior to approval for the coverage of bariatric surgery (Gebran et al., 2020 p. 3). The survey also found that most companies will not cover adolescent bariatric surgery unless specific criteria that is not supported by evidence is met. Another research report from 2022 (came before the new ASMBS guidelines) also found significant variance in coverage policies (Waidmann et al., 2022, pp. 32-38). All health care plans were found to be required to cover screening and counseling and most to cover surgery but treatments such as nutritional counseling and pharmacotherapy were very scarcely covered. Nutritional counseling and pharmacotherapy are very important for patients post operation as they are what will help patients lose weight and prevent them from gaining it back. Since both of these surveys were taken before the 2022 guidelines update from ASMBS and IFSO, it is possible, but unlikely, that these inconsistencies have changed. These inconsistencies in the insurance coverage of bariatric surgery and the associated treatments required for it to be successful could be contributing to its underutilization.

In order to accommodate bariatric surgery patients, new hospital equipment had to be developed to be larger, stronger, and wider. Although this new equipment can be effective for the less severe cases of obesity, it often struggles when dealing with the extreme cases such as Class III obesity. Class III obesity is defined as a BMI of 40 or above or a BMI of 35 or higher with an obesity related health condition. A 2013 article from the Pennsylvania Patient Safety Authority details the struggles of Class III obese patients trying to get treatment at a hospital (*Class III*

Obese Patients: Is Your Hospital Equipped to Address Their Needs? Advisory, n.d.). There were many reports of a complete lack of bariatric equipment, wait time to get access to equipment, and even equipment failure. Due to the high cost of bariatric facilities and equipment, many hospitals may decide to rent their bariatric beds or chairs leading to inconsistent access for patients. The equipment itself must meet certain design requirements that might not be ideal for serving patients. For example, bariatric chairs must be designed to fit through standard doorways even if the patient cannot fit comfortably. This lack of access to the proper equipment may also be contributing to the underutilization of bariatric surgery.

While these sources offer some insight into the reasons that bariatric surgery is underutilized, each one individually can not be soley responsible for the mere 1% utlilization rate of bariatric surgery. It has already been proven that the surgery is safe and effective. This research aims to advance the current understanding behind the underutilization of bariatric surgery by analyzing the factors surrounding the use of the surgery in conjunction with each other to determine the underlying shortcomings.

Research Approach

To help frame the analysis of the underutilization of bariatric surgery, this research draws upon the STS framework of actor-network theory. Actor-Network Theory (ANT) is a social theory that aims to analyze science and technology by considering both human and non-human entities as active participants in technological or scientific processes (Sismondo, 2010, p. 81). These actors possess "interests that cause them to act" and "form associations" with other actors, thereby establishing a network (Sismondo, 2010, p. 81). Each actor must behave in a way that works to benefit the network and solve the problem. The spaces within the network where actors engage with one another are referred to as "translation," while the particular action an actor must

take to ensure successful translation and achieve the desired network behavior is known as the "obligatory passage point" (OPP) (Callon, 1984, pp. 6-8).

ANT is an appropriate framework to analyze the underutilization of bariatric surgery because performing the therapy involves human stakeholders such as physicians and patients along with non-human actors such as health organizations, insuance companies, and medical device manufacturers. The solution to utilizing bariatric surgery properly may be revealed by analyzing the translations and OPP with ANT. Based on the evidence from the literature review, there is a disparity between the degree of underutilization and the ways each group is contributing to the problem. While each group is certainly playing a factor, their actions do not indicate that the surgery should only be used at a 1% rate. Each actor was analyzed individually and alongside the relevant co-actors to determine steps that can be taken to get bariatric surgery to more patients. All of the evidence for the analysis was taken from research studies and articles from various hospitals, health organizations, and universities.

One of the major limitations of ANT is that all actors and their point of views must be accounted for. If an actor is left out it could lead to a significant gap in understanding how the network functions. A comprehensive list of actors in this networks was created, however, there is always the possibility that unknown ones may exist.

The Actors

The IFSO and ASMBS

These two organizations are the main authorities for bariatric surgery in America. They most recently updated their guidelines on bariatric surgery in 2022 to include patients with a BMI above 35 or a BMI above 30 with an obesity related disease (Eisenberg et al., 2022 p. 2).

Further adjustments to BMI thresholds based on different races were also recommended. It is the responsibility of these organizations to keep physicians and hospitals up to date on the standards for bariatric care in America.

Physicians

Physicians are the primary group to recommend and perform bariatric surgery on patients. It is their responsibility to keep up with the recommendations from health organizations, inform patients of the risks associated with surgery, and support the patients throughout the entire process. However, a 2024 study found that 95% of physicians had no knowledge of the new reccomendations for bariatric care sent out by the IFSO and ASMBS (Hulse et al., 2024, pp. 3-4). This means that physicians could have been performing more surgeries than they thought they could have.

Insurance Companies

Insurance companies are responsible for providing coverage to patients for any health care needs they have. If bariatric surgery is not covered by a patients insurance company, they are less likely to get the surgery. It is very important that as many patients as possible are covered due to the life changing potential that this surgery could provide them. Inconsistent coverage policies could prevent patients that need the surgery from getting it.

Hospital Equipment Manufacturers

Hospital equipment manufacturers are responsible for designing and producing devices that can accomadate bariatric patients in a hospital setting. Inadequate access to proper equipment could slow down the efficiency at which surgery could be performed. In extreme cases, using equipment not built for them could potentially injure patients. To ensure the surgery

goes smoothly and without complication, hospital equipment companies must design and distribute the equipment necessary to perform bariatric surgery.

Patients

Patients are the ultimate deciding factor on whether or not a bariatric surgery is performed or not. The patient must consider the financial costs, risks, and benefits of the surgery when deciding to go through with it or not. The patient is also the one that must seek out medical treatment for their condition as opposed to traditional methods of weight loss such as dieting and exercise. Understanding the patients wants and needs will determine the best course of action to give them the care they need.

Analysis and Discussion

In order to provide a bariatric surgery, the actors must translate in the following ways: a patient must qualify for the surgery under the guidelines of the health organizations, a physician must recommend surgery as an option, the hospital must have the proper facilities to provide the surgery, and the treatment has to be paid for by either the patient or an insurance company. However, none of these things can happen without the patient wanting the surgery. Here lies the obligatory passage point. While there may be problems with the actors that work to provide the surgery, the driving force that allows it to happen is the patients themselves. If a patient does not know about it or wish to undergo the procedure, the other actors can not come into play.

Throughout this research it was assumed that the majority of patients would want the surgery if they knew about it and had access to it. However, there are many factors that would lead a patient to not want the surgery even if they could get it. Fears around the lifestyle change, lack of knowledge about the surgery, and desire to lose weight using other methods could all

play a role in patients decisions. Possible improvements could be better advertising of the surgery, medical advancements to lower the risks of adverse side effects, and generally lowering the stigma surrounding obesity. Currently the only mainstream treatments that are advertised for weight loss are medicinal methods. If more people know about the surgery they are more likely to get it.

First, I recommend that a standard information sheet about bariatric surgery be created to help phyisicians inform their patients about the treatment. This sheet would highlight the safety of the procedure as well as the many benefits that come along with it. It would also standardize the way that physicians advertise the surgery to their patients to get a consistent view of the surgery across the board. Next, I recommend that the IFSO and ASMBS do a better job of advertising their guidelines and the surgery itself. As mentioned previously, many physicians were completely unaware that these organizations had changed their guidelines. Clearer communication from these organizations will keep physicians informed and reach more patients that could potentially be interested in the surgery. We need to be doing everything we can to get the word out about this surgery.

To improve access to the surgery, I also recommend that steps be taken to improve insurance coverage and equipment development. Legislation could be passed to subsidize the costs of the surgery and the equipment required to perform it. Making the surgery cheaper for both the individual and the hospital would help more people get it. While this might seem like a very expensive project, I believe that the benefits of the surgery outweigh the costs.

With this basis for increasing the use of bariatric surgery, the problem can hopefully begin to improve. Even increasing the use of the surgery by a few percentage points would mean improving the lives of millions of Americans. If this project were to continue I would focus more

on the patients themselves to gain insight into their decision making process. I think it would be useful to understand all of the factors at play when they are deciding how they want to manage their obesity. This knowledge would improve the way the rest of the actors in the network respond to provide the help that they need.

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