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Accessibility to Reconstructive Plastic Surgery in the United States

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Under the advisement of Professor Jane Toot

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Table of Contents

I. Introduction	pg. 2
II. Methods	pg. 2
III. Summarized Literature Review	pg. 3
• Plastic Surgeon Preference	pg. 4
• Insurance	pg. 5
• Barriers to Accessibility	pg. 6
• Congenital Abnormality: Cleft Lip or Palate	pg. 10
• Breast Reconstruction	pg. 13
• Implications of Reconstructive Plastic Surgery	pg. 17
IV. Results	pg. 18
V. Discussion/Conclusion	pg. 20
References	pg. 25

I. Introduction

The global volume of surgery is around 234 million operations per year, and preliminary estimates from the Disease Control Priorities Project suggests that around 11% of the global burden of disease can be eliminated through surgical techniques (Ozgediz, 2009). Most of that 11% originates from three main areas: injuries, malignancies, and congenital anomalies, all of which can be treated using plastic surgery techniques (Debhas, 2006). Although it may be reasonable to assume that access to surgical services in low-income countries is problematic, many people may not be aware of the issues surrounding access to surgical care, and more specifically reconstructive plastic surgery, in a developed nation such as the United States. This essay aims to use a limited secondary review of the literature to investigate access to reconstructive plastic surgery in the United States, including how barriers to access change depending on the socioeconomic status and geographic location of the individual. It will allow for a deeper understanding of how complicated reconstructive plastic surgery can be, what the greatest barriers are to accessing care, and how those barriers might be overcome. Throughout this essay, there will be a focus on two areas of reconstructive plastic surgery, post-mastectomy breast reconstruction and reconstruction of a cleft lip or palate (CLP), to be used as specific examples to easier understand accessibility to reconstructive plastic surgery in the United States.

II. Methods

This essay is considered a limited secondary review of the literature because it includes several, but not all of the resources pertaining to reconstructive plastic surgery in the United States. The majority of the information for this thesis was obtained through utilization of the Grand Valley State University Library Database. Key words used in searches included: plastic surgery, reconstruction, barriers, accessibility, socioeconomic status, geography, disparity,

cultural competency, and insurance, among others. With limited knowledge of the topic prior to undertaking this secondary literature review, general searches initially run to determine the important aspects of this topic. Following this, more specific searches were run for each important aspect, and several relevant review papers were identified. Each review article referenced several other articles that were subsequently accessed and investigated. Throughout the writing process, if issues were identified as needing additional information, supplementary searches were done through the GVSU Library Database and the National Center for Biotechnology Information (NCBI). If the information needed was not able to be accessed using those two tools, general internet searches were used as a last resort.

The rest of the information included in this essay originated from personal interviews. One interview was with physician volunteers at Operation Smile Nicaragua. Relatively little information was used as the thesis evolved from a global review of accessibility to a national one for the sake of clarity and conciseness. The other informational interview was with a reconstructive and cosmetic plastic surgeon, Dr. DeLuca-Pytell, employed by Beaumont Hospital in Troy, Michigan. She originally worked in Texas at a hospital with close ties to the prison and migrant worker populations, and currently works in a very wealthy area of Michigan. As a result, she has a good idea of concerns relevant to accessibility to surgical services across a variety of socioeconomic and geographic conditions.

III. Summarized Literature Review

To start, it is best to outline what reconstructive plastic surgery is, and how it differs from other types of plastic surgery. In broad terms, plastic surgery is defined by the Merriam Webster's Dictionary as "a branch of surgery concerned with improving the function or appearance of parts of the body through reconstructive or cosmetic medical procedures." Typical

procedures that come to mind when thinking of plastic surgery are largely cosmetic with an end goal of cosmetic *enhancement*, and may include things such as rhinoplasty or breast augmentation. This essay is particularly interested in the other half of the plastic surgery world, which is based in reconstruction with a primary goal of *restoring* appearance and function.

Plastic Surgeon Preference

As a developed nation, many people in the United States have surplus income, and are turning to cosmetic surgery as a way to improve their images of themselves. This process can be very lucrative for surgeons in the field, more so than reconstructive surgery. In fact, in 2013, there were 15.6 million cosmetic procedures performed compared to only 5.8 million reconstructive surgeries (Newstex, 2016). Unfortunately for those in need of reconstructive procedures, more and more surgeons are switching to private cosmetic practices due to increased competition, rising malpractice and overhead costs, and decreased reimbursement for reconstructive procedures (McInnes, 2012). These trends go hand in hand with the United States healthcare system, and can be visualized through the disparity in rates of cosmetic and reconstructive surgeons in two developed nations: the United States and Canada. In Canada, 75% of plastic surgery practices are based in reconstruction, whereas in the United States the rates are as low as 50% (McInnes, 2012). This is thought to be the result of two factors; better reimbursement for surgeons of insurance covered procedures in Canada, and low priority of reconstructive surgical programs in the United States as a result of lower profit potential (McInnes, 2012). If a certain program generates less money than others, there is less incentive for hospital administration to grow that particular program.

Insurance

One of the biggest concerns with any medical procedure is cost, and whether or not health insurance will cover all or part of those costs. Without getting into too much technical terminology, there are two main types of health insurance in the United States. One is a group health plan, and is provided by an individual's employer or union, and the other is individual health insurance, which has two subcategories: private as paid for by the individual, and public as paid for by the federal government ("Breast Reconstruction"). As far as plastic surgery goes, as long as the procedure can be deemed medically necessary, it can be covered at least partially by insurance. Depending on the type of insurance one has, he/she may have to pay a co-pay or deductible, but the overall out of pocket cost will be lower than without insurance. For something to be medically necessary, it must include "health-care services or supplies needed to prevent, diagnose, or treat an illness, injury, condition, disease, or its symptoms and that meet accepted standards of medicine as well as the treatment of any debilitating symptoms or side effects created by the condition" (Olmos, 2018). This means that breast augmentation for purely cosmetic purposes would not be covered by insurance, but breast reduction for back pain or post-mastectomy breast reconstruction would. Although this is true for most health insurance, it is not always the case for government-based health insurance such as Medicare or Medicaid, and furthermore, not everybody has health insurance in the first place.

Before the Patient Protection and Affordable Care Act (ACA), about 17% of Americans were uninsured at any given time (Doh, 2012). This legislation attempted to expand access to healthcare by increasing low-cost options for health insurance, but utilization of these new health insurance options has not been uniform across the board (Shippee, 2014). According to the U.S. Census Bureau, in 2009, 15.8% of white people were uninsured, as compared to 21.0% of blacks

and 32.4% of people from Hispanic origins (U.S. Census Bureau, 2009). Insurance coverage has been found to be significantly associated with rates of reconstructive surgery. For example, one study found that while 91% of patients with private insurance underwent post-mastectomy breast reconstruction, the rates dropped to 7% for those with public insurance, and only 2% for the uninsured (Shippee, 2014). Although health insurance is important, its presence or absence alone does not ensure access or quality of care, and there are several other barriers one might face when seeking access to reconstructive plastic surgery.

Barriers to Accessibility

According to Dr. DeLuca-Pytell, a plastic surgeon from Michigan practicing in the affluent Beaumont Hospital, there are five main barriers to accessing plastic surgery in the United States: cost, co-morbidity, physician bias, geography, and education (2018). The cost barrier is tied closely to the aforementioned insurance issues, but is also related to things such as transportation to and from surgical appointments, follow-ups, and other travel expenses if one needs to cover a long distance to obtain surgical care.

Co-morbidity refers to having more than one condition or disease present in an individual at the same time, and can create complications in any medical procedure, including reconstructive plastic surgery. One of the main co-morbidities precluding reconstructive surgery is diabetes, due to the possibility of vasculature issues potentially preventing proper wound healing (Preminger, 2012). The prevalence of Type 2 diabetes is increased in areas of low socioeconomic status attributable to several risk factors including obesity, physical inactivity, and smoking (Connolly, 2000). This is just one reason that individuals of lower socioeconomic status may have decreased accessibility to reconstructive surgery.

Physician bias is when the physician or surgeon treats different patients differently for reasons other than those that are purely medical. Two of the most prominent examples relating to accessing reconstructive plastic surgery are age and cultural competency. Advanced patient age has been found to have a significant association with failing to refer an individual to a plastic surgeon for reconstruction. There are two possible explanations for this; one is the perpetuation of the perception that breast reconstruction is more important for younger, more sexually active patients, and second is the misconception that older people will have more co-morbidities that preclude surgery (Preminger, 2012). Despite this popular opinion, a study of 242 women post-mastectomy found that complications with reconstruction of the breast were actually lower in patients above 60 than those under 60 (August, 1994). Differences between patient and physician cultures can also create a barrier to accessing quality care. Language barriers alone have been shown to be associated with more unmet needs, inadequate insurance, and a lack of care in children with special health care needs, such as those who need to undergo reconstruction for a cleft lip or palate (Yu, 2004). This can also be seen in rates of post-mastectomy breast reconstruction between whites, blacks, and high/low acculturated Latinas. Acculturation refers to the acclimation of an individual to a culture other than their own through education and adaptation. In a study of 3,252 post-mastectomy patients in Los Angeles and Detroit, 40.9% of whites underwent reconstruction, as compared to 33.5% of blacks, 41.2% of highly acculturated Latinas, and only 13.5% of less acculturated Latinas (Alderman, 2009). Through this study, it was clear to see that the race of the individual on its own did not have as large of an effect on rates of reconstruction as the level of acculturation, which in the US includes the ability to speak fluent English. Since the decision making process for post-mastectomy breast reconstruction is complicated due to a variety of possible surgical approaches, language barriers can reduce the

patient's understanding of their options as well as their ability to communicate their desires for surgery.

Geography is another barrier that can reduce access to any medical service, including reconstructive plastic surgery. In a study of rural versus urban breast cancer patients, 47% of those living in an urban area underwent mastectomy, of which 96% underwent reconstruction, and while the percentage of patients undergoing mastectomy in rural areas was similar at 53%, only 4% of rural patients also received reconstruction (Shippee, 2014). Furthermore, women receiving care from large hospitals had nearly twice the odds of a reconstruction compared to those who received care in small hospitals (Shippee, 2014). This is a trend that has been seen several times throughout history. In 1988-1995 reconstruction rates were 4.2% for Utah and 4.0% for Iowa, both of which have relatively lower populations compared to metro Atlanta, GA and San Francisco, CA, which had rates of 16.0% and 8.9% respectively (Polednak, 2000). Later, in 1998-2002, rates increased but showed a similar trend, with reconstruction rates of 17.9% in Utah and 11.4% in Iowa, compared to 34.7% in Atlanta and 14.4% in San Francisco (Alderman, 2006). This was not only the case for breast reconstruction, and families of children with orofacial clefts often cite travel time as one of the greatest areas of concern regarding care (Cassell, 2014). In the 2014 study by Cassell, over half of the 475 participants had to travel over an hour to receive care, as most hospitals with the necessary specialties are located in major urban areas.

Education was the last barrier discussed in the interview with Dr. DeLuca-Pytell, and is something research has found to be imperative in having a satisfactory experience with surgery in the United States. Lower education may reduce a patient's ability to access information about a procedure, leading to a negative association with reconstruction regardless of race or ethnicity

(Alderman, 2009). In a study of 626 people across the United States, it was found that the greatest predictor of eventual reconstruction following mastectomy was medical record documentation of a discussion about reconstruction with the physician (Greenburg, 2008). The same study found some curious differences in who actually received a discussion with their physician. It turned out that younger, more educated, Caucasian women, who were also not overweight, tended to have more discussions relative to other groups (Greenburg, 2008). Furthermore, for the people who *did* have a discussion about reconstruction with their surgeons, those with an 8th grade education had a 31% chance of undergoing reconstruction, compared to those with a high school education (56% chance), and college graduates (69% chance) (Greenburg, 2008). This also ties in with the physician bias barrier, as there are racial and ethnic variations in physician-patient communication that influence patient perception about the quality of communication with their physicians (Johnson, 2004). Theoretically it is possible that some minorities, such as Latinas, have lower rates of reconstruction due to cultural preference, but that is not what the data shows. Both high and low acculturated Latina women had a 79% satisfaction with a decision to undergo reconstruction, but highly acculturated Latinas had a 69% satisfaction with a decision to not undergo reconstruction, compared to less acculturated Latinas with a mere 56% satisfaction with decisions to forgo the operation (Alderman, 2009). This speaks to rates of reconstruction not being governed by cultural preferences, but perhaps instead by a lack of understanding of the information presented due to education level.

Aside from the five main barriers presented by Dr. DeLuca-Pytell, there have been other studies done across the United States that evaluate barriers in slightly different contexts. For example, one study about orofacial clefts in North Carolina identified a different set of five barriers to surgery: pragmatics, skills, marginalization, expectations, and knowledge/beliefs

(Cassell, 2014). In this study, the six most commonly reported barriers to access to care were all in the pragmatics category, and included time off work (45.3%), long waiting room time (37.6%), time away from household responsibilities (29.7%), long wait for appointment (27%), costs (25%), and meeting other family member needs (29.5%) (Cassell, 2014). Inconsistent with other aforementioned studies, two of the least commonly perceived barriers were doctors not being fluent in the native language of the patient (3.1%) and doctors not believing in home or traditional remedies (3.5%) (Cassell, 2014). The discrepancies seen here may have to do with the nature of the reconstruction; post-mastectomy breast reconstruction has many options from which the patient must decide, while craniofacial cleft reconstruction is very complicated and decisions are more physician directed. Another possible reason for this discrepancy was that the study was done in North Carolina, and 83% of the respondents were young, married, white women, which could have skewed the observed results (Cassell, 2014). One aspect that was consistent with results of previous studies was the strong association of maternal health care coverage with three of the five barrier subscales (skills, marginalization, and knowledge/beliefs) (Cassell, 2014). The next portion of this essay will cover craniofacial clefts and breast reconstruction in detail, to better understand how complicated each procedure is, and why access to reconstructive surgery is so imperative to the health of the affected individuals.

Congenital Abnormality: Cleft Lip or Palate

Normal development of the lip and palate occurs during the embryonic period over the first 12 weeks of life; during this time, if the two palate shelves do not fuse as they usually do, a cleft palate can result (Papell, 2006). Clefts lips can be unilateral or bilateral, complete or incomplete, and may be isolated or present in conjunction with a cleft palate (Papell, 2006). Clefts can also be associated with over 300 syndromes, early feeding problems, compromised

airway, abnormalities in growth and development, speech disorders, recurrent ear infections, and other physiological concerns (Wyszynski, 2002). Each child is different and may have all of none of the aforementioned complications, which can make treatments, including surgery, difficult. In fact, facial reconstructive surgery is one of the top three riskiest plastic surgery procedures (Newstex, 2016).

Orofacial clefts are one of the most prevalent birth defects in the United States at 1/960 live births (Parker, 2010). The rates are still high despite prevalence having decreased in countries where prenatal examination allows for early diagnosis and possible abortion of the fetus (Santoni-Rugiu, 2007). Throughout history, many congenital abnormalities, including CLP, have been considered evidence of the presence of an evil spirit, and even Plato said that drowning or abandoning affected children was an appropriate means of ridding the society of evil omens (Santoni-Rugiu, 2007). It took until 1600 for Fabricius ab Aquapendente to suggest the theory of abnormal embryo development as an explanation for the occurrence of a CLP, and although this is still the current accepted explanation, some people still believe that the reason for abnormal embryonic development is religious or superstitious in nature (Santoni-Rugiu, 2007).

As far as treatment is concerned, the first documented reconstruction of CLP was 390 B.C. in China on an 18 year old male; his instructions were to avoid moving his mouth for 100 days and the surgery was a success (Santoni-Rugiu, 2007). By the 17th century, it was declared by Hendrik van Roonhuysen that surgery is more effective on a child 3-4 months old, and although anesthetic techniques have changed from red wine to more complicated chemical compounds, the 3-6 month old time frame is still accepted as standard practice in 2018 (Santoni-Rugiu, 2007). In the 21st century, most all children with CLP receive a tympanostomy tube placed in their ear at the same time as reconstructive surgery to their lip and palate in order to

prevent chronic ear disease, which is a co-morbidity experienced at high rates in individuals with CLP (Papel, 2006). Starting at two years old, children are monitored to see if they have a velvopharyngeal insufficiency (inadequate physiology of the throat which affects speech patterns), with subsequent surgery for those identified as having this abnormality (Papel, 2006). Due to the numerous surgeries and associated travel costs, the average patient incurs over \$100,000 in medical expenses over a four year period *after* initial reconstruction. (Wes, 2018).

Since reconstructive surgery is so expensive for individuals with CLP, insurance coverage is a must. Congenital abnormalities such as CLP are usually identified at birth, and if the family is uninsured at the time, the child would be assigned a social worker and case manager to help them obtain insurance before undergoing reconstruction (DeLuca-Pytell, 2018). Unfortunately, many of those children end up on public insurance such as Medicaid or CHIP (Children's Health Insurance Program), and specialty care may be more difficult to obtain. A study in 2011 found that in an urban area with a high number of specialists available, 66% of callers with public insurance were denied an appointment, while only 11% of callers with private insurance were denied (Bisgair, 2011). Furthermore, of the individuals who *were* able to obtain an appointment, children with public insurance waited an average of 42 days to see a specialist, while children with private insurance such as Blue Cross Blue Shield only had to wait an average of 20 days (Bisgair, 2011).

One of the most recent developments in reconstruction of CLP is the realization that for the most satisfactory results, surgeons need to operate on CLP patients frequently, and work in interdisciplinary teams (Santoni-Rugiu, 2007). A surgeon who performs similar surgeries several times each year will be better equipped to handle any complications that may arise. A study of over 20,000 patients found that subjects undergoing cleft palate repair at a high volume

institution had significantly less risk of experiencing a complication than those who underwent repair at a low volume hospital (Wes, 2018). In this study, the ten hospitals that were deemed “high volume” accounted for 38.4% of the total surgeries, most of which were teaching hospitals located in urban areas of high population (Wes, 2018). In fact, even though CLP is one of the most common congenital abnormalities, many community hospitals may only see one case every few years, and due to this, healthcare workers in these hospitals are ill prepared to manage the abnormality after the child is born (Wyszynski, 2002).

Another problem with CLP reconstruction is that facial structure, skin type, scarring, and the ability to disguise facial incision varies widely among different ethnic groups (Papel, 2006). Minority populations may face less than satisfactory care from their surgical team, due to a lack of understanding of patient desires by the physician that could otherwise allow the individual to maintain a healthy self-image (Papel, 2006). Generally, coordination between the primary care provider, the cleft palate team, and the family gives optimal outcomes; however, this coordination may be difficult to maintain if the individual lives in an area far from a major hospital, or lives in a low-income situation hindering transportation or time off work (Wyszynski, 2002). There are a few services available in the United States to help out families who are struggling to pay for services related to the repair of CLP, but they will be discussed later in the area of possible solutions to the problem.

Breast Reconstruction

Post-mastectomy breast reconstruction is an area of plastic surgery that can be used to illustrate different aspects of reconstruction and possible barriers to access to care. According to the American Cancer Society, an estimated 232,340 women will be diagnosed with breast cancer in the United States each year (Shippee, 2014). Of these, an average 37% of women will undergo

mastectomy as a treatment for their breast cancer, and depending on a variety of conditions, some of those individuals will also undergo reconstruction (Habermann, 2010). Before reconstruction, the individual must have a consultation with their reconstructive plastic surgeon to discuss whether or not they are a candidate for reconstruction, and if they are, what options are available to them and the side effects of each (DeLuca-Pytell, 2018). There are three main types of breast reconstruction: one is to remove the breast(s) and reconstruct using extra muscle from the body such as a latissimus dorsi flap, another is to remove the breast(s) and reconstruct using an implant, and the third is to remove the cancerous part of the breast in a lumpectomy instead of a mastectomy (DeLuca-Pytell, 2018). The first two surgeries are typically done during one appointment, but the third option requires the individual to come in three separate times; once for the lumpectomy, another to make the non-affected breast visually balanced, and a third to follow up with radiation or chemotherapy (DeLuca-Pytell, 2018). Since this option requires more appointments than the other two, the use of breast conserving therapy is higher in teaching hospitals and centers located in urban areas (Nattinger, 1992). All in all, a breast reconstruction with full reconstruction of the breast, areola, and nipple could take up to a year (DeLuca-Pytell, 2018).

In the past several decades, legislation has been passed to increase patient accessibility to post-mastectomy breast reconstruction. In 1998, The Women's Health and Cancer Rights Act (WHCRA) was put in place to ensure all insurance plans that cover breast cancer treatment also cover implants, reconstruction of the breast on which the mastectomy was performed, and any surgery needed on the other breast to produce a balanced appearance. This law also requires insurance providers to notify their customers of this coverage at the time of enrollment as well as every subsequent year ("Breast Reconstruction"). Unfortunately, as was mentioned previously,

not all women have insurance coverage, and health insurance rates are disproportionately low in minority populations.

Temporarily ignoring issues regarding cost of the operation and insurance coverage, there are several additional layers of complexity to obtaining breast reconstruction. First and foremost, even though reconstruction may be covered, not everyone is informed about reimbursement. There is a significant association between obtaining information before surgery and undergoing reconstruction (Tarkowski, 2017). This was illustrated in a study of nearly 600 patients, where of the 313 referred to a plastic surgeon, 91.7% actually ended up having reconstruction, and of the 287 patients not referred, none underwent reconstruction (Preminger, 2012). Unfortunately, even if a patient is referred to a plastic surgeon and informed of reimbursement from insurance there are still barriers to accessing care.

The location of an individual looking to undergo breast reconstruction can have a big impact on whether or not they undergo reconstruction, and if they do, whether or not it is immediate or delayed. In an assessment of 1,130 women in North Carolina, compared to those who lived within 10 miles of the nearest breast reconstructive surgeon, women who lived 10-20 miles away had a 22% lower chance of receiving reconstruction, and over 20 miles away had a 27% lower chance (Roughton, 2016). Additionally, women living in rural counties were 63% more likely to receive delayed reconstruction instead of immediate (Roughton, 2016). In general, the rates of immediate breast reconstruction (IBR) rest around 33-36%, and are associated with urban areas, as well as younger age, fewer chronic conditions, and private insurance (Wexelman, 2014). The reasoning behind this is thought to be that younger patients are in general more educated, and are more likely to engage their provider in a discussion about reconstruction, and that women with public insurance may work at a job that does not allow for schedule flexibility

(Wexelman, 2014). A large discrepancy was seen between the national average rates of IBR and the average rate of IBR seen in West Virginia, because all 55 counties in West Virginia are in the largely rural Appalachian region (Holliday, 2017). Rates of IBR did increase over the ten year period from 4% (2006-2010) to 17.2% (2011-2015), probably due to implementation of the ACA, but at the end of the study, rates were still only half of the national average (Holliday, 2017).

In addition to geographic isolation, a 2011 report to congress from the Medicaid and CHIP Payment and Access Commission (MACPAC) indicated that the population of people on Medicaid is disproportionately high in medically underserved communities, which already have huge shortages of healthcare workers (Rosenbaum, 2014). This is largely due to payment issues that physicians have to negotiate when dealing with individuals on Medicaid, leading them to be less likely to take on Medicaid patients. In 2009, MACPAC reported that 88% of physicians were willing to take on new privately insured patients, but only 65% were willing to take on new publically insured patients (Rosenbaum, 2014). In areas of low socioeconomic status, there is on average less income per family, and since physicians need to make a living through their practice, they are less likely to set up in areas where they can't make as much money.

If all issues of geography and cost are taken out of the picture, some women still prefer to opt out of reconstructive surgery. In the interview with Dr. DeLuca-Pytell, the main reason women do not care to undergo reconstruction is the overwhelming number of decisions to make. Breast cancer is not an easy illness to deal with in the first place, and often times, the women have already seen so many doctors and specialists that one more thing is just too much. The patients have spent so much time seeing oncologists, radiologists, and getting bloodwork done that they avoid reconstructive surgery solely to avoid seeing another doctor (DeLuca-Pytell,

2018). In fact, in a study of nearly 500 women, 48.5% of those who did not undergo reconstruction stated the main reason being avoidance of additional surgeries (Morrow, 2014). The aforementioned sentiment was seen in all women regardless of race, but the black and Latina populations also reported concerns of not being able to take time off work or family responsibilities, and a lack of insurance coverage (Morrow, 2014). The same study aimed to assess the satisfaction with the decision making process as a whole, and in general most women reported a 3.9 on a 5 point Likert Scale, indicating at least moderate satisfaction (Morrow, 2014). Dissatisfaction with the decision making process (a score of less than 3) was significantly associated with being black or Latina, but did not show strong associations with income or educational levels (Morrow, 2014). This alludes to the possibility of differences of values between cultures, and some sort of barrier in patient-physician communication.

Implications of Reconstructive Plastic Surgery

Reconstructive plastic surgery is definitely helpful in terms of function, but is also helpful in the psychological sense. For a child with CLP, there are the obvious concerns of feeding problems or a compromised airway, but there are also psychological concerns of fitting in with peers throughout their life or having a more “normal” physical appearance. A link has been established between children with craniofacial conditions and behavioral and emotional difficulties. These include aggressive or defiant behavior as well as psychological problems such as social inhibition, anxiety, and depression among others (Richman, 1976). Through reconstructive plastic surgery, the difference in appearance due to CLP can be minimized, and the subsequent negative psychological and behavioral effects can be lessened.

Post-mastectomy breast reconstruction is an area of plastic surgery that also has significant psychological implications. Women who undergo mastectomy but do not undergo

reconstruction may experience disfigurement leading to depression, anxiety, reduced sexual functioning, and impaired overall quality of life (Fingeret, 2014). These difficulties are all related to body image, which is defined by Fingeret as a “multidimensional construct involving perceptions, thoughts, and feelings about the entire body and its functioning” (2014). Women who have received successful breast reconstruction were found to have significantly higher satisfaction with the appearance of their breasts than those who only had a mastectomy, and they also had better psychological, sexual, and physical functioning outcomes (Eltahir, 2013). The type of reconstruction, immediate breast reconstruction (IBR) versus delayed breast reconstruction (DBR), also has an effect on the psychological outcome of reconstructive plastic surgery. One study found that rates of anxiety and depression were lower in those with IBR than those with DBR, and that rates of body image and self-esteem were higher in those with IBR than those with DBR (Al-Ghazal, 2000). As far as satisfaction with one method over the other, 95% of IBR patients reported they would still prefer IBR, and after the surgery, 76% of DBR patients reported they would have preferred IBR; furthermore, 94% of IBR patients were very/moderately satisfied as compared to only 73% of DBR patients (Al-Ghazal, 2000).

IV. Results

In total, barriers to accessing care in the United States are all related, and many of the discussed issues are cyclic in nature. One barrier intensifies another, which intensifies several others, which in turn go back and intensify the first, and so on and so forth. As described in the literature, low socioeconomic status in addition to isolated geographic location leads to decreased accessibility to medical care, especially in a specialty such as reconstructive plastic surgery. Socioeconomic status is multifactorial, and is a measure of an individual’s economic and social standing in relation to others based on income, education, and occupation

("Socioeconomic Status"). If an individual is one of lower income, they may be less likely to seek out higher education due to financial difficulties, and as a result, may end up working a lower status job that is not forgiving for time off work. People with a low socioeconomic status also tend to have lower educational levels, and subsequently they may not have a job that provides health insurance benefits. Furthermore, they may not understand the importance of reconstructive plastic surgery, or the entirety of their related options. As observed through the literature, these both also lead to a decreased accessibility to surgical care.

Lastly, those of a low socioeconomic status may lead less healthy lives because of a lack of money and/or education, leading to more co-morbidities such as diabetes or cardiovascular disease. The presence of these co-morbid conditions results in difficulty obtaining surgical services, because surgeons do not want to operate on individuals with a high level of risk. Unfortunately, as seen through the literature, there is a disproportionately high rate of minority individuals living at a low socioeconomic status (SES). The reason for this is also multifactorial, but could be due to previously discussed issues of low cultural competency, and possible subsequent discrimination. Along with the concept of increased risk behavior as a result of low SES, minority populations and those living in rural areas are disproportionately affected by tobacco use and related diseases ("American Lung Association"). Reports from the CDC state that although minority populations have high rates of smoking, they also indicate a desire to quit. Unfortunately, compared to other populations they are also the least successful at quitting due to lower access to, and use of, cessation treatments of medication or counseling ("Centers for Disease Control"). This is relevant to accessibility to reconstructive surgery because maternal health, smoking included, is a risk factor for the abnormal development of a fetus resulting in CLP (Richards, 2015). Smoking is also a significant risk factor for the development of major

complications following post-mastectomy breast reconstruction (Lin, 2001). Due to the cyclic nature of this problem, those of a lower SES have a higher likelihood of needing reconstruction due to a congenital anomaly, and also may have a harder time obtaining other types of reconstruction due to the possibility of complications. This particular web of barriers encompasses more than just minority populations, and as mentioned previously, extends to rural communities.

As discussed in the review of the literature, geographically isolated areas generally have lower rates of reconstruction, and more self-reported barriers to surgical care. It is easy to assume the only reason this discrepancy exists is a result of physically being further away from a reconstructive plastic surgeon, but there may be more at play. A survey of over 42,000 adults in the United States found that residents of rural communities were significantly less employed, less educated, less insured, and had lower incomes compared to their urban counterparts (Agunwamba, 2016). Additionally, individuals living in a rural environment as opposed to urban had a significantly higher risk ($R=1.10$) of smoking, even after adjustment for age, gender, race, marital status, education, income, and insurance (Agunwamba, 2016). Geographic isolation may be the main reason reconstruction is observed less frequently in rural areas, but being isolated also leads to a higher risk of low socioeconomic status, both of which lead to decreased accessibility to reconstructive surgical care.

V. Discussion/Conclusion

People across the United States are unable to access the reconstructive plastic surgery that they deserve, and because of the interconnected nature of barriers to care, fixing this problem is not as easy as implementing a single solution. However, there are several things that can be done to start to improve the accessibility to surgical care. These include implementation

of programs to help the less fortunate, incentives for surgeons to work in underserved communities, breakdown of cultural barriers to increase patient-physician communication, and most importantly, education.

Programs to help the less fortunate are present around the world, but helping individuals gain access to specialized reconstructive surgical procedures is not seen nearly as much as one might like. Globally, there are programs like Operation Smile; an organization of volunteer health-care workers who provide free reconstructive plastic surgery to children with CLP without access to medical services (Operation Smile, 2017). Although these programs are important, they are mainly located in developing nations and do not help with accessibility issues in the United States. The one national program in the United States that does provide easier access to CLP reconstruction is myFace. This non-profit organization, previously known as the National Foundation for Facial Reconstruction (NFFR), was established in 1963 and is dedicated to providing treatment and financial assistance to anyone with a facial deformity or abnormality regardless of severity, length of treatment, or family's ability to afford care ("We Are myFace"). Over 70% of patients treated through this organization come from low income families, and myFace will pay for round trip tickets on Southwest Airlines (through a substantial grant donated by the airline), as well as apartments for out of town families to stay at ("We Are myFace"). There are also several states that have programs dedicated to helping children with a variety of special healthcare needs, some of which serve children affected by CLP. Although the existence of these programs is promising, insurance coverage can be a prerequisite to obtaining care, and as previously discussed, not everyone has health insurance.

Another possible solution to the issue of access to reconstructive plastic surgery is providing incentives to surgeons willing to work in underserved communities. One of the reasons

that there is so little access to surgical care in minority or rural communities is the low number of healthcare workers who want to work in those locations. Motives for this include lifestyle concerns of limited social and cultural opportunities, a high percentage of Medicaid/Medicare and self-pay patients, and competition from better stocked urban hospitals (Full, 2001).

Fortunately, there are a few things that can be done to encourage healthcare workers to consider moving their practice to a typically underserved community. One method is to have recently graduated medical school students operate for minimal cost in these areas. For example, the Detroit Medical Center has a residency training program for the poorly insured. Here, the doctors in training are able to get the surgical experience they need while providing these services at a lower, and more manageable cost (DeLuca-Pytell, 2018). Other program types include the Continuity Care Program of New York State University, where medical students spend half of their third year shadowing a rural primary care physician (PCP), and the Philadelphia Jefferson Medical College's Physician Shortage Area Program, which reserves 24 of their 223 annual slots for students committed to participating in rural family medicine (Perch, 1997). Understandably, basic care needs to come before specialized care, and the aforementioned programs are almost always focused on increasing the number of PCPs over specialized healthcare workers.

Introducing programs that are specific to different areas of medicine is just the next step in increasing accessibility to underserved populations. Regardless, physicians raised in urban environments often have a difficult time appreciating the importance of rural practices, and one of the most important factors to increase physician interest in rural areas is increasing education surrounding rurality during medical school (Chan, 2005). Increased awareness of the issue, along with specific programs designed to attract healthcare workers may assist in increasing the overall access to care.

Breaking down cultural barriers to increase patient-physician communication is a different route to increasing accessibility to medical services, including reconstruction. As discussed previously, language and other cultural barriers lead to decreased understanding of options, and less use of specialized healthcare services. There exists a huge distinction between potential and realized accessibility; minority populations may live in an urban area with plenty of plastic surgeons and may be able to apply for health insurance, but because they can't communicate effectively with their physicians, they aren't able to realize their full potential. It is essential for medical professionals to look at each patient as an individual with unique values and desired outcomes, and take the necessary time to make sure each patient is aware of all options. This may require the presence of a translator or presenting the material in different ways, and is something that should be discussed heavily in medical school training.

Lastly, and possibly most important, is increasing education on reconstructive plastic surgery across all levels: potential recipients, care providers, and policymakers. Since the United States is a developed nation, it may be easy for someone to assume that access to medicine is a given. This is not always the case, and increased awareness surrounding these issues is a key to eventual resolution. If politicians were more educated on some of the main concerns, there is a higher likelihood that they might care enough to pass legislation to develop more government supported reconstructive surgery programs. The same could be said for medical school policymakers, and programs related to increasing cultural competency and physician participation in underserved areas. Along with education of institution leaders and physicians, the education of the patients themselves plays a huge role in realization of access to reconstructive plastic surgery.

As discussed previously, The Women's Health and Cancer Rights Act of 1998 maintains that if insurance covers mastectomy, reconstructive surgery must also be covered. The major issue with this is not all populations are informed to the same extent. One of the biggest determinants of obtaining post-mastectomy reconstructive care is the discussion of options with a reconstructive surgeon, and certain minority subgroups are disproportionately uninformed. Although informing all patients is not currently mandatory, there is legislation in the works to rectify this discrepancy. The Breast Cancer Patient Education Act will require the Secretary of Health and Human Services to implement an educational campaign informing all women of their federal right to breast reconstruction, as well as provide each individual on options that will work best for their recovery plan ("Breast Cancer"). This act is a good first step to increasing patient education, but since it is specific to post-mastectomy reconstructive plastic surgery, it is not a generalizable solution.

Reconstructive plastic surgery should be readily accessible to every person in the United States regardless of socioeconomic status or geographic location. Unfortunately, without addressing the issues presented throughout this essay, this will not be a reality. Increasing awareness of the problem is the first step in improving access to these surgical services. Only once the issues are defined can there be any attempt made to resolve them. By increasing resources and effort, there can be an increase in accessibility to reconstructive plastic surgery. This can in turn help to decrease the national burden of disease and improve the lives of many.

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