

COLUMBUS STATE UNIVERSITY

UNDERSTANDING THE IMPORTANCE OF PSYCHOLOGICAL SCREENINGS FOR  
PATIENTS UNDERGOING ELECTIVE, INVASIVE COSMETIC SURGERY: A  
LITERATURE REVIEW

A THESIS SUBMITTED TO THE  
HONORS COLLEGE  
IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR HONORS IN THE DEGREE OF NURSING

BACHELOR OF SCIENCE IN NURSING  
SCHOOL OF NURSING  
COLLEGE OF EDUCATION AND HEALTH PROFESSIONS

BY

JAZMIN N. RUSH

COLUMBUS, GEORGIA

2020

Copyright © 2017 Jazmin @ Honors

All Rights Reserved.

UNDERERSTANDING THE IMPORTANCE OF PSYCHOLOGICAL SCREENINGS FOR  
PATIENTS UNDERGOING ELECTIVE, INVASIVE COSMETIC SURGERY

By

Jazmin N. Rush

A Thesis Submitted to the

HONORS COLLEGE

In Partial Fulfillment of the Requirements

for Honors in the Degree of

BACHELOR OF SCIENCE IN NURSING

SCHOOL OF NURSING

COLLEGE OF EDUCATION AND HEALTH PROFESSIONS

Approved by

Dr. Deryus Tillman, Committee Chair

Ms. Tiffni Daniel, Committee Member

Dr. Ramesh Rao, Committee Member

Dr. Cindy Ticknor, Dean

Columbus State University

May 2020

## **Abstract**

All over the United States (U.S.), men and women alike are undergoing elective, invasive cosmetic surgery. Research has found there is an increasing number of patients choosing cosmetic surgery in hopes of alleviating psychological disorders such as body dysmorphic disorder and low self-esteem. The objective of this review is to analyze the literature available regarding cosmetic surgery and the psychological issues leading to the decision to undergo elective, invasive cosmetic surgery in order to understand and identify the possible benefits of psychological screenings. Information for this study was obtained from three electronic databases - Galileo, PubMed, and CINAHL. U.S. based studies published in peer-reviewed journals focusing on the psychological aspects of patients undergoing elective, invasive cosmetic surgery was assessed. This extensive search provided many articles to consider. A total of 22 articles was chosen to be used in this literature review. Cosmetic surgery is a growing industry. With more procedures being created, the features we perceive to be imperfect or undesirable can be corrected. Many people are now choosing surgery, often risky ones, to achieve the current, ever-changing "it" look. Researchers have found a clear, negative correlation between cosmetic surgery and mental health. In order to protect these patients, screenings need to be implemented to ensure that the patient has no underlying psychological condition that could be contraindicatory to surgery.

*Keywords:* cosmetic surgery, aesthetic surgery, psychological, body dysmorphic disorder, low self-esteem



## **Acknowledgements**

I would like to express my sincere gratitude to Dr. Deryus Tillman for mentoring me. His guidance, patience, and expert advice helped navigate me throughout this difficult project.

I would also like to thank Mrs. Tiffni Daniel and Dr. Ramesh Rao for agreeing to be members of my thesis committee, reviewing my work, and providing me with valuable feedback.

My sincere thanks also go to Dr. Cindy Ticknor and Dr. Susan Tomkiewicz for their constant support. Without their encouragement, this project would not have been possible.

**TABLE OF CONTENTS**

ACKNOWLEDGMENTS .....	iv
INTRODUCTION.....	1
MATERIALS AND METHODS .....	5
RESULTS .....	8
LITERATURE REVIEW .....	10
DISCUSSION .....	19
CONCLUSION .....	21
REFERENCES .....	27



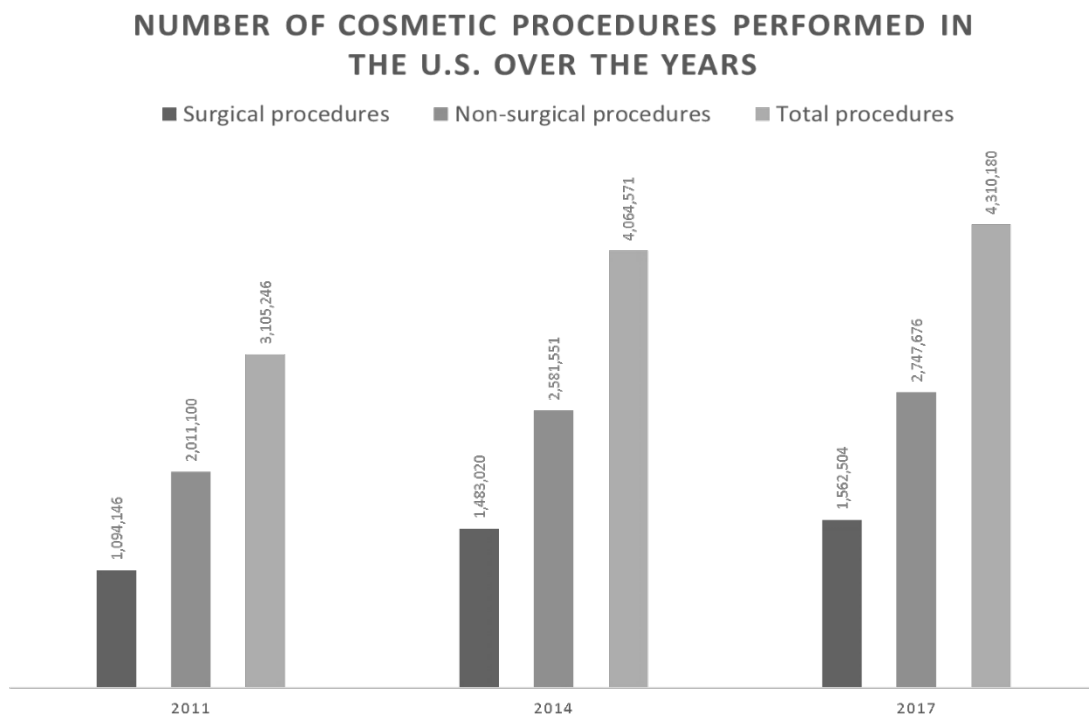


## INTRODUCTION

The turn of the century brought about a wave of medical and cultural innovations. Early 2000's, American television shows like "Extreme Makeover" (ABC) and "Dr. 90210" (E Network), introduced the United States (U.S.) to the beauty practices and secrets of the rich and famous. However, as of the 2010s, it is no secret that our favorite celebrities routinely partake in cosmetic procedures to maintain and modify their beauty. Whether it is using Botox to achieve a youthful look like actress Jenny McCarthy or having ten cosmetic procedures in a day like reality television personality Heidi Montag, cosmetic medicine has solidified itself in popular culture. Celebrities and influencers, who have admitted to cosmetic procedures, have become walking advertisements for the cosmetic world and have helped to bridge the gap between this world and the rest of society. With the promise of transformative results to virtually any part of the body, an astonishing amount of people are now choosing to go 'under the knife'.

Cosmetic surgery has an extensive history. Although it has been reported that the first cosmetic surgery procedure was performed in 16th-century Britain, the origins of this field can be traced as far back as 6th-century BCE India (Ip & Ho, 2019). In ancient India, Sushruta, a physician, was responsible for the development of significant surgical techniques (Mark, 2018). Due to his innovations in rhinoplasty and suturing, he is reported to be the inventor of cosmetic surgery and has been dubbed the "Father of Plastic Surgery" (Mark, 2018). Sushruta paved the way for the growth of modern cosmetic surgery. Although cosmetic surgery has a long history, it can be considered a fairly new practice in the U.S. Cosmetic surgery first gained traction in the U.S. after World War II. Soldiers who became disfigured in battle were returning home and finding it hard to obtain employment compared to their counterparts who were not injured (Ip & Ho, 2019). Due to this, surgeons then helped these soldiers regain their aesthetics which they found greatly improved the social productivity of the soldiers (Ip & Ho, 2019). Since then,

cosmetic surgery, although often stigmatized, has become a widely noted practice. In 2017, over 21 million cosmetic procedures (invasive and noninvasive) were performed in the world with the U.S. performing 18.4% of these surgeries, becoming the hotspot for cosmetic procedures with Brazil and Japan following behind (Ip & Ho, 2019). All over the U.S., men and women alike are undergoing elective cosmetic procedures and the statistics continue to grow throughout the years (Figure 1).

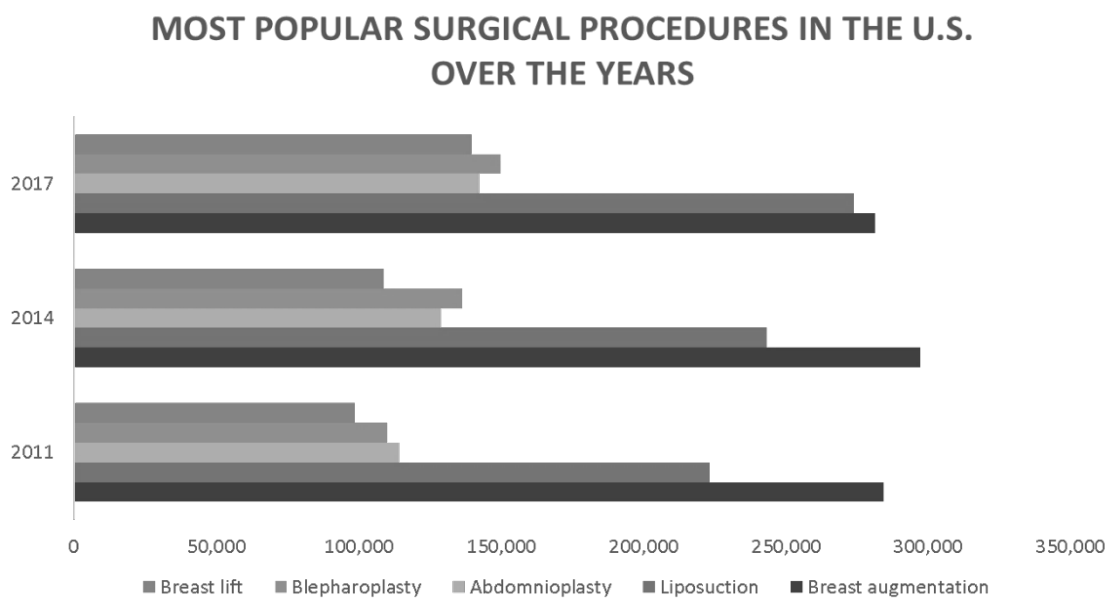


**\*Figure 1: Number of cosmetic procedures performed in the United States according to the International Society of Aesthetic Plastic Surgery**

With the ever-changing standard of beauty and growth of surgical innovations, cosmetic surgery is a flourishing industry with no decline in sight. New procedures and methods are constantly being marketed in attempts to deliver consumers their desired look. Patients can choose from an array of both invasive (surgical) and non-invasive (non-surgical) cosmetic

procedures. According to the International Society of Aesthetic Plastic Surgery (ISAPS), there are currently over 40 procedures available to U.S. patients. Invasive procedures include rhinoplasty, bone facial contouring, facelift, breast lift, and buttock rejuvenation. These procedures require using some form of anesthesia, usually general anesthesia, and making surgical incisions. This exposes the patient to more risks like respiratory distress, infection, and blood clots, in comparison to non-invasive (non-surgical) procedures. These types of procedures include chemical peels, dermabrasion, hair removal, cellulite treatment, and injectables (e.g. lip fillers). These procedures pose less risk of complications due to the common use of local anesthesia and the dermis of the skin rarely being infiltrated.

Of the numerous invasive procedures available, the most popular among the American public identified by the ISAPS are: Breast augmentation, liposuction abdominoplasty, blepharoplasty, and breast lift. These have been the top choice surgical cosmetic procedures for years and together they account for over two-thirds of the total surgical procedures performed (Figure 2).



**\*Figure 2: Most popular U.S. procedures according to the International Society of Aesthetic Plastic Surgery**

Procedures like these have been performed on numerous people and have proven to greatly aid in improving physical features as well as psychological hardships (Ip & Ho, 2019). Though true, research has found an alarming increase in the number of patients misusing cosmetic surgery in hopes of abolishing psychological conditions like body dysmorphic disorder and low self-esteem (Ip & Ho, 2019). Body dysmorphic disorder (BDD) and low self-esteem can greatly affect how someone perceives themselves physically. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM – 5), body dysmorphic disorder is an illness in which personal physical perception is distorted (Sansone & Sansone, 2007). Minute or even imaginary defects may be viewed as disfiguring (Newell, 2011). These perceived defects are obsessively fixated to the point of severe psychological distress that can impair function (e.g., avoiding social situations, increased risk of suicide) (Witte et al, 2012). Newell (2011) found that those with BDD have “abnormalities in their visual processing systems, consistent with obsessive thoughts and compulsive behaviors such as ritualistically checking appearance in a mirror or applying makeup” (p.318). Low self-esteem and insecurities are often mistakenly interchanged. Low self-esteem is defined as having poor confidence in one's worth. Insecurities are usually designated to one trait that can be more easily corrected and does not affect one's overall view of self. Having an adequate level of self-esteem is needed to have a healthy, prosperous life, and when it is lacking, a person may need psychiatric counseling (Ip & Ho, 2019).

People with BDD and low self-esteem have an increased chance of seeking cosmetic surgery. It is usually sought out due to the assumption that surgery will reduce the distress brought on by their condition (Witte et al, 2012). These disorders have been regularly noticed among people who have had cosmetic surgery, although the disorders are viewed as surgical contraindications (Spriggs & Gillam, 2016). Although a patient suffering from a psychological disorder can benefit significantly from cosmetic surgery, it should not be revered as the sole form

of treatment (Castle, Honigman, & Phillips, 2002). Healthcare professionals have a responsibility to ensure that all patients are eligible for surgery, and this eligibility should not be limited to physicality and ability to pay but also psychological well-being. Therefore, implementing a psychological screening is imperative to differentiate between patients who desire to enhance their beauty and those who believe cosmetic surgery will alleviate the psychological symptoms of BDD and low self-esteem.

### ***Purpose of Study***

The purpose of this research is to review the literature available regarding cosmetic surgery and the psychological issues leading to the decision to undergo elective, invasive cosmetic surgery in order to understand the need for mandatory psychological screenings. The goal is to examine the correlation between cosmetic surgery and mental health, and measure the precautions taken to protect these patients from further mental health complications.

## **MATERIALS AND METHODS**

For this review, information was obtained from three electronic databases - Galileo, PubMed, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Through the literature search, which took place over the span of six months (September 27, 2019 – March 15, 2019), studies published in peer-reviewed journals on the psychological aspect of patients undergoing elective, invasive cosmetic surgery were the focus. Following an inclusion and exclusion criteria (Table 1), only studies published in English and based in the United States were included. A date range of 20 years (e.g., 2000 – 2020) was used due to the scarcity of current literature on this topic.

<u>Inclusion Criteria</u>	<u>Exclusion Criteria</u>
Cosmetic surgery	Plastic surgery
Aesthetic surgery	Reconstructive surgery
Body dysmorphic disorder	International
Self- esteem	Date <2000
Psychological	
Peer-reviewed	
English	
United States	
Date 2000 - 2020	

**\*Table 1: Inclusion and Exclusion Criteria**

Three sets of searches were conducted per database. Nine individual searches were completed in total. Each search strategy contained the primary key words, *cosmetic surgery* and *aesthetic surgery*, while each set was individualized by the secondary key words, *psychological*, *body dysmorphic disorder*, or *self-esteem*. (For a detailed look at each search strategy used, see Table 2). These key words were chosen to produce the most relevant articles available while still adhering to the inclusion and exclusion criteria. The secondary search terms were chosen to make available an array of articles to choose from that would still produce useable information. The key word *psychological* was implemented first in order to provide a broad view into this topic. From this, the key word *body dysmorphic disorder* was chosen due to little, prior knowledge of this disorder and the desire to understand what the disorder entails. *Self-esteem* was also then chosen to allow for a search that can encompass a larger part of society. Any article reporting on plastic surgery or reconstructive surgery were excluded due to these procedures being a necessity to achieve aesthetics that were lost due to uncontrollable factors like disease (e.g. cancer), birth

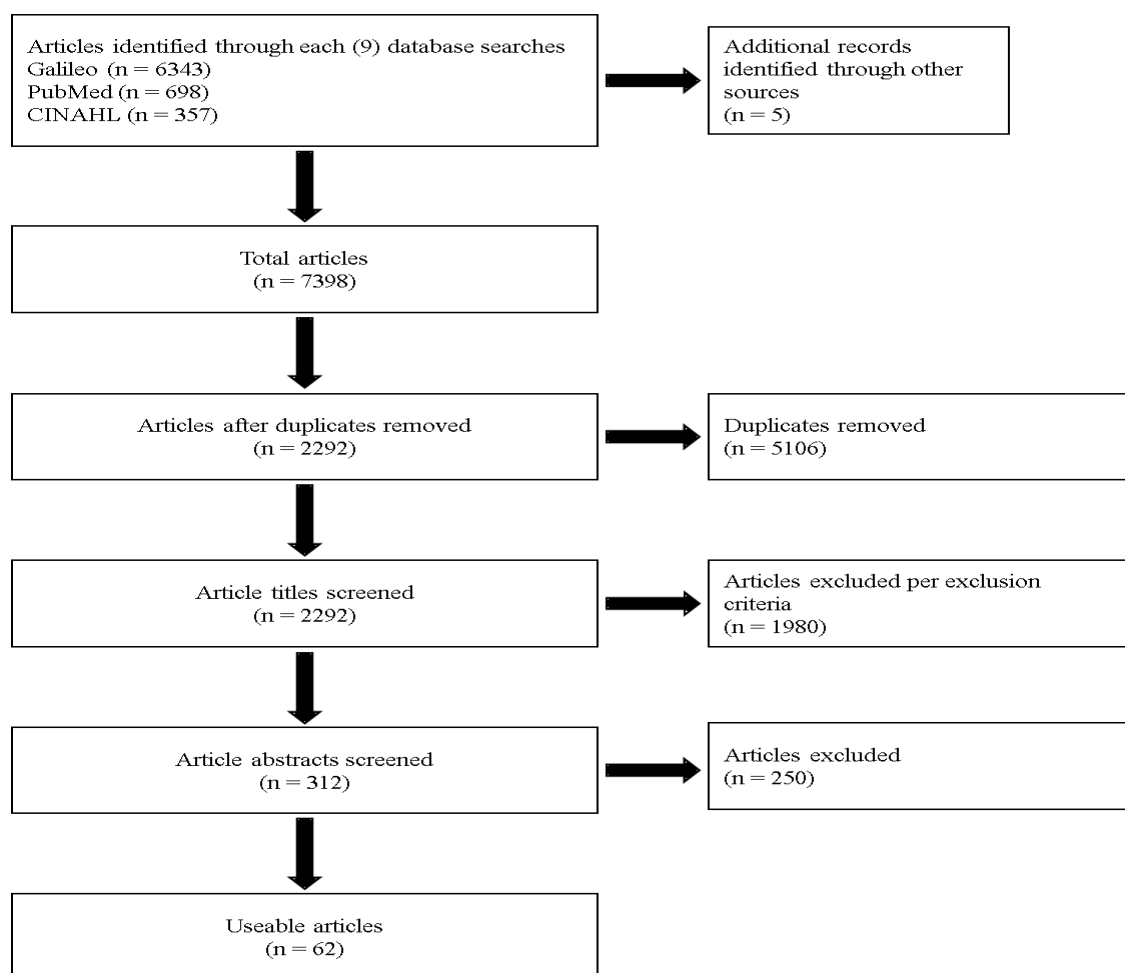
defects (e.g. hypospadias, cleft lip), and accidents (e.g. burns, animal bites). Any articles including statistics founded outside of the U.S. and dated before the year 2000 were also excluded per the criteria.

Search Strategies			
	Galileo *Filters manually applied: Scholarly (Peer-reviewed) Journals; Published Date 20000101- 20201231; English; United States	PubMed *English language filter manually applied	CINAHL *Filters manually applied: Scholarly (Peer reviewed) Journals; Published Date 20000101- 20201231; English; USA
<b>Search 1</b>	((cosmetic surgery OR aesthetic surgery AND psychological))	((("surgery, plastic"[MeSH Terms] OR "surgery"[All Fields] AND "plastic"[All Fields]) OR "plastic surgery"[All Fields] OR ("cosmetic"[All Fields] AND "surgery"[All Fields]) OR "cosmetic surgery"[All Fields] OR ("aesthetic surgery"[All Fields] OR "surgery, plastic"[MeSH Terms] OR "surgery"[All Fields] AND "plastic"[All Fields]) OR "plastic surgery"[All Fields] OR ("esthetic"[All Fields] AND "surgery"[All Fields]) OR "esthetic surgery"[All Fields]) AND psychological[All Fields] AND ("loattrfree full text"[sb] AND ("2000/01/01"[PDAT] : "2020/12/31"[PDAT])) AND (free full text[sb] AND ("2000/01/01"[PDat] : "2020/12/31"[PDat]))	((cosmetic surgery OR aesthetic surgery AND psychological))
<b>Search 2</b>	((cosmetic surgery OR aesthetic surgery AND self-esteem))	((("surgery, plastic"[MeSH Terms] OR "surgery"[All Fields] AND "plastic"[All Fields]) OR "plastic surgery"[All Fields] OR ("cosmetic"[All Fields] AND "surgery"[All Fields]) OR "cosmetic surgery"[All Fields] OR ("aesthetic surgery"[All Fields] OR "surgery, plastic"[MeSH Terms] OR "surgery"[All Fields] AND "plastic"[All Fields]) OR "plastic surgery"[All Fields] OR ("esthetic"[All Fields] AND "surgery"[All Fields]) OR "esthetic surgery"[All Fields]) AND ("self concept"[MeSH Terms] OR "self concept"[All Fields] OR "self esteem"[All Fields] OR "loattrfree full text"[sb] AND ("2000/01/01"[PDAT] : "2020/12/31"[PDAT]))	((cosmetic surgery OR aesthetic surgery AND self esteem))
<b>Search 3</b>	((cosmetic surgery OR aesthetic surgery AND body dysmorphic disorder))	((("surgery, plastic"[MeSH Terms] OR "surgery"[All Fields] AND "plastic"[All Fields]) OR "plastic surgery"[All Fields] OR ("cosmetic"[All Fields] AND "surgery"[All Fields]) OR "cosmetic surgery"[All Fields] OR ("aesthetic surgery"[All Fields] OR "surgery, plastic"[MeSH Terms] OR "surgery"[All Fields] AND "plastic"[All Fields]) OR "plastic surgery"[All Fields] OR ("esthetic"[All Fields] AND "surgery"[All Fields]) OR "esthetic surgery"[All Fields]) AND ("body dysmorphic disorders"[MeSH Terms] OR "body dysmorphic disorders"[All Fields] OR "body dysmorphic disorders"[All Fields] OR "body dysmorphic disorder"[All Fields] OR "body dysmorphic disorder"[sb] AND ("2000/01/01"[PDAT] : "2020/12/31"[PDAT]))	((cosmetic surgery OR aesthetic surgery AND body dysmorphic disorder))

\*Table 2: Each search strategy used per database

## RESULTS

Prior to the literature search, articles discussing gender-specific procedures (e.g. penile enhancement, vaginal rejuvenation, etc.) were excluded. This decision was created in hopes to not divide these findings by gender. However, after the search, it was decided to include these types of procedures due to several articles discussing them and in order to have a more in-depth, multifaceted approach to this subject. Once each search was complete, article titles were screened and then discarded if they did not meet the inclusion criteria. Duplicates were removed, and the remaining articles were assessed for relevancy through abstract or article review (Figure 3).



**\*Figure 3: Flow diagram of quantity of articles identified and excluded**



This extensive search provided many articles to consider. In retrospect, using a database with less range as opposed to Galileo could have been beneficial. However, that would possibly run the risk of obtaining fewer applicable articles. The total amount of articles provided from each search can be found in Table 3.

<b>Number of Articles Identified per Database Search</b>			
	<b>Galileo</b>	<b>PubMed</b>	<b>CINAHL</b>
<b>Search 1</b>	<b>2,213</b>	<b>475</b>	<b>119</b>
<b>Search 2</b>	<b>2,092</b>	<b>188</b>	<b>---*</b>
<b>Search 3</b>	<b>2,038</b>	<b>35</b>	<b>---*</b>

**\*Table 3**

**\* The final two CINAHL searchers produced duplicated articles from the first search, so no articles were reviewed from those searchers.**

Once duplicates were discarded and sources were screened, 312 articles were left to review. The abstracts of these articles were examined, and 250 were discarded for not meeting the set criteria by discussing reconstructive surgery or reporting on international findings. This left 62 acceptable articles eligible for inclusion. A total of 22 articles was then chosen to be used in this literature review. To obtain statistical and historical understanding, information was also viewed from the following: International Society of Aesthetic Plastic Surgery (ISAPS); American Society of Plastic Surgeons; Ancient History Encyclopedia; American Board of Cosmetic Surgery (<https://www.americanboardcosmeticsurgery.org/>); Plastic and Cosmetic Surgery Screening (PACSS) (<https://www.thepacss.com/>).

## **Literature Review**

In 2001, the court case *Lynn G vs Hugo* was heard by the Court of Appeals of the State of New York (Newell, 2011). The plaintiff, a patient of the defendant, had over 50 cosmetic procedures performed on her by the defendant (Newell, 2011). After a particularly unsuccessful procedure, the patient went on to sue her surgeon, claiming that due to body dysmorphic disorder, she was not competent to consent to the procedure, although she did sign consent forms (Newell, 2011). The court concluded that there was not enough evidence to prove the patient had BDD, so the case was dismissed. This case took place near the beginning of the century and before the notably significant surge in cosmetic surgery. Regardless of the verdict, it invoked discussion about the topic of cosmetic surgery and its impact on mental health. But, did the case gain enough traction to produce a significant change in how patients are assessed for psychological disorders? *Lynn G vs Hugo* illuminated the contradictions between cosmetic surgery and psychological issues. It showed that those diagnosed with mental illnesses and disorders like BDD may not be competent enough to consent to and withstand cosmetic procedures (Newell, 2011).

### ***Body dysmorphic disorder***

BDD, also known as dysmorphophobia, causes one to become fixated on a physical feature (usually a facial feature) for as much as three to eight hours a day (Gorbis & Kholodenko, 2005). These people develop an obsession with a feature and are often overwhelmed with the desire to correct it. However, instead of aiming to correct this mental disorder from a psychological standpoint, cosmetic surgery is usually utilized to alleviate the distress. Diagnosing BDD proves oftentimes difficult. Neziroglu, Roberts, & Yaryura-Tobias (2004) reported on a study with patients in a psychiatric outpatient clinic. Out of 500 patients in the clinic, none were diagnosed with BDD when the physicians followed the facility's "routine unstructured clinical"

(Neziroglu, Roberts, & Yaryura-Tobias, 2004, p. 916). However, when a second survey with the same number of patients was conducted using a “structured diagnostic interview”, BDD was found in 3.2% of patients (Neziroglu, Roberts, & Yaryura-Tobias, 2004, p. 916). The researchers found that although the chief complaint of these patients was not BDD related, the majority were seeking treatment for BDD symptoms but were embarrassed sharing their symptoms with the physician (Neziroglu, Roberts, & Yaryura-Tobias, 2004). Scenarios like this happen often in the medical field. Either a patient withholds information that could conclude a diagnosis, or a physician simply overlooks symptoms. For instance, in a study consisting of 122 patients, 13.2% were not diagnosed with BDD by their primary physician even though they reported that their symptoms were troublesome (Grant, Suck won Kim, & Crow, 2001). Newell (2011) found that 84% of surgeons operated on these patients due to not recognizing that the patient had the disorder. In order to rectify this issue, Newell (2011) suggests the implementation of preoperative screening tools like Preoperative Facial Cosmetic Surgery Evaluation (PreFACE). If a patient receives a score of 11 or higher, out of a possible 28 points, on this scoring system, then they should not be permitted to undergo surgery without further assessment or counseling. Newell (2011) also reported on another study that found 70% of surgeons that did recognize BDD chose to perform on the patient regardless.

Unfortunately, less than ten percent of the patients diagnosed with BDD who undergo cosmetic surgery report experiencing relief from BDD symptoms after surgery (Newell, 2011). Cosmetic procedures rarely improve the symptoms of BDD because in many cases once a patient has undergone surgery, the obsessive, negative thoughts are usually then projected onto another part of the body (Gorbis & Kholodenko, 2005). This shows that cosmetic surgery is not a definitive solution for BDD and should not be treated as such. Patients need to understand that

using cosmetic surgery to mask psychological issues will not be successful, but solving the underlying cause needs to be the focus.

BDD is only found in one percent of the U.S. population, yet it affects nearly 16 percent of those undergoing cosmetic procedures (Newell, 2011). In a survey conducted by Witte et al. (2012), 200 participants diagnosed with BDD were asked about previously performed cosmetic procedures. Of this sample, 9.5% reported having one procedure done and 7% reported two or more, for a total of 61 procedures performed within this sample (Witte et al., 2012). Some participants also reported having had the same procedure performed more than once in hopes of achieving satisfaction (Witte et al., 2012). There is even evidence reporting on 25 patients who had 46 procedures performed between them before they were diagnosed with BDD, and nine of these patients admitted to actually performing surgical procedures on themselves (Gorbis & Kholodenko, 2005).

Having BDD often makes it difficult to understand that satisfaction may not be achieved through cosmetic surgery. For patients who are dissatisfied with the results, they end up feeling resentful or remorseful with themselves or the surgeon. This then leads to exacerbated BDD symptoms or an increase in the chances of obtaining a comorbidity like major depression disorder, obsessive compulsive disorder, and eating disorder (Sansone & Sansone, 2007). Undergoing cosmetic surgery with BDD, can also cause plastic surgery addiction. Plastic surgery addiction indicators includes a “delusional fixation on minor defects and such extreme obsessions concerning appearance that the patient is unable to engage in normal, everyday activities”(Newell, 2011, p.319). This indicator is nearly parallel to the symptoms of BDD, and it is possible for someone to have either disorder or both at the same time. Once patients with BDD have experienced cosmetic surgery, it is not uncommon for patients to ask their surgeons to contact them when new cosmetic procedures become available. (Newell, 2011).

Healthcare providers are obligated to do what is best for the patient, and since cosmetic surgery is rarely beneficial for patients with BDD, it is ultimately unethical and negligent to perform on these patients (Castle, Honigman, & Phillips, 2002). However, some studies have found that not approving surgery for some of these patients could be more harmful than not. Studies show that people diagnosed with BDD possess a “remarkably high rate of completed suicide compared to the general population” (Spriggs & Gillam, 2016, p.710). They are found to be 45 times more likely to exhibit suicidal behavior (Witte et al., 2012). By using the Hamilton Depression Rating Scale on a sample of participants diagnosed with BDD, Witte et al. (2012) found that 78% of the sample has exhibited suicidal behaviors. Refusing surgery to a patient with the presumption that the procedure will fix their ‘abnormality’ could be traumatic and cause an increase in suicidal ideation and intent (Spriggs & Gillam, 2016).

### *Low self-esteem*

Another psychological issue that needs to be assessed for in patients seeking cosmetic surgery is low self-esteem. Firstly, it is common and normal for everyone to feel insecure or unsure of themselves sometimes, but having a low self-esteem is a thinking disorder and can severely disrupt daily living. By creating and implementing an assessment questionnaire that measures participants’ level of body image, self-esteem, and well-being, Lee et al. (2014) found that self-esteem is a significant determinate of psychological health. The more satisfied someone is with their body, the higher their self-esteem and their psychological well-being. Body dissatisfaction is common in the U.S., and due to this, many Americans find themselves dealing with low self-esteem as well as other psychological matters like stress and depression (Lee et al., 2014). Lee et al. (2014) determined that regardless of culture and social status, without a healthy, stable level of self-esteem, people will not be able to have a prosperous life. After conducting a

clinical trial using the Contour Drawing Rating Scale created by Thompson and Gray in 1995, Markey & Markey (2009) concluded that those who are more dissatisfied with their bodies were more likely to pursue cosmetic surgery.

A study by Scott (2009) highlights the effects of cosmetic surgery on the patient's relationship with the inner-self and between family and friends. One relationship that Scott (2009) explores is the effect mass media has on one's self-esteem. With culturally ideal men and women being scrutinized daily on television and in magazines, this leaves the average, everyday person to doubt and judge their own attributes harsher (Scott, 2009). This can cause a strained relationship with self and lead to the contemplation of cosmetic surgery (Scott, 2009). If the patient decides to undergo surgery, the effects this decision can have on their social life can be difficult. The patient's family and friends may not be approving of this decision and may, intentionally or unintentionally, express their concerns in a verbally abusive manner which can intensify the inner conflict (Scott, 2009). Ip & Ho (2019), required three women who have previously received cosmetic surgery to complete three assessment tools. These tools, Acceptance of Cosmetic Surgery Scale (ACSS), the Fear of Negative Appearance Evaluation Scale (FNAES), and the Multidimensional Body-Self Relations Questionnaire (MBSRQ), were used to measure the relationship each participant had regarding psychological trauma, body image, and cosmetic surgery. From using these tools, Ip & Ho (2019) concluded that although cosmetic surgery can boost self-confidence and relieve some cases of psychological distress, it can also encourage appearance-enhancing practices that can lead to plastic surgery addiction and increase distress related to the fear of others discovering or noticing they have had cosmetic surgery. A participant in this study explained that they would never tell their family nor significant other about the cosmetic surgery they had because of the fear of criticism and ostracization.

Deciding to have cosmetic surgery can also affect the children of these patients. Scott (2009) reported on a case of a mother who underwent rhinoplasty and influenced her daughter to do so as well. The mother's reasoning for this was to ensure that her daughter's self-esteem would not suffer (Scott, 2009). However, instead of letting her daughter have a say in this decision, she ended up projecting her own insecurities and past experiences on her daughter. The relationship between the patient and the child can also be altered if the child witnesses the parent fixated on or speaking negatively about their own physical features (Scott, 2009). The child views the parent's body-dissatisfaction and adopts those feelings as their own and risks the development of low self-esteem.

Research has also found that teasing/bullying plays a large role in low self-esteem and cosmetic surgery (Ip & Ho, 2019). Whether it be aggressive (e.g., bullying) or family-peer teasing, this can cause self-consciousness and if this is not solved, it can become harmful, thus producing low self-esteem (Markey & Markey, 2009). Through a clinical trial, the authors found that participants who recalled being bullied for one body part were also bullied for another (Markey & Markey, 2009). In a study conducted by Ip and Ho (2019), participants were requested to complete three assessment tools (Multidimensional Body-Self Relations Questionnaire Appearance Scales, Fear of Negative Appearance Evaluation Scale, and Acceptance of Cosmetic Surgery Scale), in order to measure the relationship between cosmetic surgery, body image, and psychological trauma. The patients were also asked to recall their reasons for undergoing cosmetic surgery. The participants each explained that their reasons had something to do with easing the aftereffects of past trauma like bullying and failed relationships. From the responses, it was concluded that cosmetic surgery had the ability to not only enhance physicality, but also help promote body image thus self-esteem (Ip & Ho, 2019). However, some participants then later shared that while they were satisfied with their new look, it did not fix the issues they were

dealing with before surgery as they had hoped. After a negative experience, the patient stated “I know [the negative experience] was the consequence and cost of cosmetic surgery... I never feel happy as I am unlovable and worthless” (Ip & Ho, 2019, p.8). Too often, patients like this one are left disappointed or ashamed of their surgery due to not understanding that a change in physical appearance does not always change situations. Unfortunately, patients like this one, mistakenly correlate attractiveness with being more competent and successful than those deemed unattractive (Ruel, 2007). Although surgery can help remove negative feelings like worthlessness for some, that is not the case for all.

Pérez-San-Gregorio et al. (2016) conducted a study comparing the effects of cosmetic breast surgery on total of 135 women. Each woman underwent one of three procedures: breast augmentation, mastopexy, or breast reduction. The mean mental health of the women was determined before the procedure, 1 month after the procedure, 6 months after the procedure, and 12 months after the procedure. In order to determine the participants’ current state of mental health during each term, the researchers required each woman to complete two, psychologist administered surveys: the State-Trait Anxiety Inventory (STAI), which measures state and trait anxiety, and the 12-Item Short-Form Health Survey (SF-12 v.2) which measures the facets of quality of life including role- emotional, social functioning, and mental health. Pérez-San-Gregorio et al. (2016) found a 7% increase in mental health 1-month post-operation, and then a steady 1% increase during the 6th and 12th month. This showed that cosmetic surgery can produce a positive effect on mental health. However, during the 1-month post-operative stage, each cohort experienced a decrease in family/social life due to the extensive healing process (Pérez-San-Gregorio et al., 2016). Most surgeries, and the healing time associated with them, take a toll on the patient. It can be inferred that this toll is even more severe for a patient suffering from low self-esteem.



With the increase of the Internet and expansion of cosmetic surgery, it is difficult to ignore the steady growth of genital cosmetic surgery. According to the American Society of Plastic Surgeons, the most common genital cosmetic surgery is labiaplasty (Horton, 2017). This procedure consists of either removing, lifting and/or injecting fat or filler into parts of a woman's labia minora (Horton, 2017). There has been a significant rise in labiaplasties performed in the U.S. over the last 5 years (Horton, 2017). In 2016, there was over 12,000 procedures performed, which is a 39% increase compared to the amount of procedures performed in 2012 (Horton, 2017). While these procedures are usually performed to improve confidence and sexual satisfaction, researchers have shed light on the possibility of genital cosmetic surgery seeking due to low self-esteem and body dysmorphic disorder. Scholars have conducted studies to find a correlation between genital cosmetic surgery and pornography consumption. It is argued that genital targeting procedures such as labiaplasty are on the rise due to people comparing themselves to the readily available, extensive amount of pornographic imagery.

Loehle et al. (2017) performed a survey sampling 214 heterosexual-identifying men. The investigators used three assessment tools to gather their findings: The Male Genital Self-Image Scale-7 (MGSIS-7), the Male Body Image Self-Consciousness Scale (MBISCS), and the Social Appearance Anxiety Scale (SAAS). From these scales, Loehle et al. (2017) found that there was a significant correlation between pornography and how men viewed their own genitals. The participants in the study who admitted to frequently viewing pornography demonstrated a lower genital self-image (Loehle et al., 2017). These men believed their penises were too small due to comparing themselves to the frequently larger than average penises of pornographic actors (Loehle et al., 2017). This may prompt pursuing cosmetic surgery to improve the size and length of the penis.

In terms of female genital dissatisfaction, according to a surgeon of the American Society of Plastic Surgeons, women who seek labiaplasty are “not usually” doing so because of the influence of pornography (Horton, 2017). Yet, Creighton (2014) and Willis, Wong, & Patel (2020) found that the search for the ‘ideal’, female genitalia has developed from the increased convenience of pornographic content. The main reasons women report seeking labiaplasty are to improve functional/physical discomfort (e.g. pain during intercourse and during certain exercise), to improve appearance (e.g. they may not like the look of their genitals), and to improve psychological and emotional distress (Spriggs & Gillam, 2016). Although Spriggs and Gillam (2016) found that labiaplasty improved BDD symptoms in a sample of women, they did acknowledge the contraindication of labiaplasty in patients with psychological disorders and the importance of psychological screenings.

To further understand the psyche of women seeking genital cosmetic surgery, researchers Zielinski et al. (2012) produced a clinical trial using the Genital Self-Image Scale Content Validity Index assessment tool. This was used to measure the level of genital body image within the women of this experiment (Zielinski et al., 2012). The researchers recommend this tool to clinicians to assess for genital image dissatisfaction in patients seeking genital cosmetic procedures (Zielinski et al., 2012). Loehle et al. (2017) concluded that it is imperative to understand a “patient’s genital self-image ... to better understand the contribution of genital self-image to one’s sexual functioning and overall self-esteem (p. 137). Psychological screenings like the one Zielinski et al. (2012) used would be useful in determining patient genital satisfaction, as well as if the patient would be the right candidates for surgery or if further assessment will be needed.

## **DISCUSSION**

From this literature search, it can be seen that within the last 20 years, several researchers have explored the relationship between cosmetic surgery and psychological disorders. Many scholars have discovered the importance of psychological screenings for patients considering elective, invasive cosmetic surgery. Studies included in this literature review highlight the risks of cosmetic surgery as it relates to BDD and low self-esteem. However, some studies that identify the benefits of cosmetic surgery in patients with psychological disorders were discovered. Researchers like Spriggs and Gillam (2016) found that cosmetic surgery could greatly aid in diminishing the symptoms of BDD which could decrease the rate of suicide within these patients. So, if these patients are more likely to commit suicide before surgery, and if they have surgery, they are at risk of having intensified BDD symptoms, which can lead to an increased tendency to commit suicide, what can be done?

An issue that can arise from mandatory psychological screenings is patients seeking cosmetic procedures from irreputable sources. Gorbis and Kholodenko (2005) found that sometimes patients can be so desperate to find relief from mental disorders that they will resort to performing procedures on themselves. It can be assumed that with more regulations, more patients will seek service from uncertified surgeons. By doing this, not only is the mental health of patients often ignored, but the procedures are not performed correctly. With the higher probability of having a botched procedure, patient mental health is at risk of becoming even more fragile.

Throughout this research, the topic of mass media was discussed in several studies. The media influences most of the U.S, but is it solely to blame for the development of BDD and low self-esteem, and the pursuit of cosmetic surgery? Media has often been scrutinized for encouraging viewers to pursue cosmetic surgery and other beauty regimens to increase self-esteem and enforce positive personal growth (Marwick, 2010). Enhancing or boosting one's self

is not necessarily a negative concept. However, it seems that the media constantly feeds this message to its audience, it can be inferred that without constantly enhancing your beauty, you can never truly be satisfied. This can easily diminish the esteem of viewers. Although emulating your life after celebrities and influencers is often frowned upon, it is reasonable to say that not doing so becomes very difficult when the lives of these people are heavily advertised. Highly rated reality television shows like “Keeping Up with the Kardashians” and the “Real Housewives” franchise, follow the glamorous, day-to-day lives of entrepreneurial socialites. The cast members are usually so transparent about the cosmetic procedures they have performed that they even allow their procedures to be filmed. This constant representation of easily accessible cosmetic surgery is likely to effect what viewers perceive as beautiful and acceptable.

Although the physical representation of cosmetic surgery is generally positive, there are some stars that have, unfortunately, become models for cosmetic surgery failures. The late, King of Pop, Michael Jackson (1958 – 2009) is arguably the most notable celebrity to have had a drastic transformation through cosmetic surgery. It was said that Jackson had over ten procedures performed to change his appearance. Due to this, when comparing his younger appearance to the most recent appearance before his death, it is easy to assume that it is two different people. Jackson’s consistently changing look has had many speculate if the artist suffered from low self-esteem or BDD.

In 2014, the E Network aired a revolutionary television program titled “Botched”. This show illuminates the lives of people who, as the title suggests, have been left with botched features from cosmetic surgery. For six seasons, there has been a slew of patients seeking help from the duo, Los Angeles based, surgeons, Dr. Paul Nassif and Dr. Terry Dubrow. Although most patients seeking treatment are objectively disfigured, there is another population that frequently seeks assistance for the surgeons. From human Barbie and Ken dolls undergoing

over 50 surgeries, to aspiring celebrity doppelgangers spending more than \$150,000 on procedures, “Botched” has highlighted the extremes people will go to achieve and maintain their desired look.

Shows like “Botched” and the celebrities who have, deemed by the public, taken cosmetic surgery too far have opened the world up to the risks of cosmetic surgery. Cosmetic surgery should not be viewed as simple or enjoyable. It needs to be revered by patients and surgeons as a life-altering option that can have a significant impact on mental health. Seeing the radical alterations in appearances and reading articles reporting on patients who have undergone several surgeries, invokes questions like, ‘Why did physicians allow these patients to have so many procedures?’, ‘Are these patients suffering under the guise of vanity?’, and ‘How can these patients be protected?’

## CONCLUSION

Cosmetic surgery is a growing industry. With more procedures being developed, the features we perceive to be imperfect or undesirable can be corrected. Cultivating one’s beauty is not a negative thing, however it is often misconstrued due to the beauty industry preying on the population’s insecurities and desires regarding physical appearance (Scott, 2009). These messages are hard to evade, and researchers have found that those who “internalize these messages to a greater degree than their peers will be more likely to indicate an interest in pursuing cosmetic surgery to change their bodies” (Markey & Markey, 2009, p.160). These people are also at a higher risk of developing low self-esteem and BDD.

Unlike BDD, low-self-esteem can easily affect the general public. With mass media (e.g., television, films, magazines) and social media (e.g., Instagram, Twitter, Tumblr), we are constantly bombarded with advertisements telling us that we need to be more attractive. Even

before the drastic rise in media, the population, mainly women, was swarmed with different notions of beauty and how to achieve it. This was done not only by the media but also by healthcare professionals. For instance,

“in 1983, the American Society of Plastic Reconstructive Surgeons argued for the deregulation of [breast] implants in response to growing concern over the detriment small breasts posed to the mental health and well-being of women. It was argued that implants would cure the small breast “disease” that caused feelings of inadequacy and lack of self-confidence ” (Ruel, 2007, p.120).

While the ideal, male body has changed throughout history it does not compare to the changes in the female image (Loehle, 2017). In the 90s and early 2000s the ideal female body was the tall, very skinny, runway model. This image has drastically evolved within the last decade to an Instagram model, with a small waist and an astronomically large derriere. Although some of these physiques are naturally obtained, many women are undergoing surgery, often risky ones, at the expense of their mental health to achieve the current, ever-changing “it” look.

When compared to other areas of medicine, it seems that cosmetic medicine is not as heavily regulated. For instance, patients undergoing bariatric surgery are required to participate in a psychological evaluation prior to surgery (Bedine, 2003). This evaluation is required due to studies showing that major depressive disorder and eating disorders often contradict the effectiveness of surgery (Bedine, 2003). In order to ensure that these patients understand that bariatric surgery is a supplementary solution while lifestyle changes ultimately provide long-lasting results, the patients must be cleared through this evaluation (Bedine, 2003). Unfortunately, Gorbis & Kholodenko (2005), found that cosmetic surgeons were not recognizing or taking the proper measures to identify BDD symptoms, and this allowed their patients to “undergo a succession of invasive procedures” (p.79). Researchers like Newell (2011), understood the

importance of mandated screening for psychological issues like BDD in those seeking cosmetic surgery. They deemed that state boards should require surgeons to implement psychological screening tools into their preoperative care, as well as additional consultations in case more assessment is needed (Newell, 2011). Spriggs and Gillam (2016) also concluded that psychiatric interventions have been proven to produce more therapeutic responses for these patients than surgery. These findings directly correlate with the hypothesis of this literature review. There is a clear, negative correlation between cosmetic surgery and mental health. Therefore, in order to protect these patients, some sort of implementation needs to be enforced to ensure that patients have no underlying psychological condition that could be contraindicative to surgery. A psychological screening would greatly aid in differentiating between patients who desire to enhance their beauty and those who believe cosmetic surgery will alleviate the psychological symptoms of BDD and low self-esteem.

### ***Future research***

There are more peer-reviewed articles reporting on the effects of cosmetic surgery in those with BDD than low self-esteem. It is difficult to decipher between the two since symptoms can present similarly. Yet, it is possible that having low self-esteem for an extended time can develop into BDD. To further expound on this, determining the most frequently used psychological screening tools and concluding which one is most effective could be implemented. A new screening tool or survey designed to assess the psychological state of these patients can also be created. In order to gather relevant data, this survey would be distributed to a population desiring invasive cosmetic surgery. This population would be divided into an experimental group and a control group to determine if the tool is effective. The survey would consist of questions formed to gauge for BDD or/and low self-esteem (and other psychological disorders like major

depressive disorder that could possibly contradict surgery). The goal of such a survey would be to determine whether a patient should undergo further psychological evaluation before being approved for an invasive procedure. Depending on how the participants answer these questions will determine if a healthcare provider or surgeon needs to further assess the patient. Sample questions that could be used in this hypothetical assessment tool are included in this review (Table 6). Another method that can be used to gather more information would be to inquire about this topic from surgeons themselves. The articles reviewed in this paper obtained their information mainly from patients. A study conducted on the surgeons willing to disclose their experience with patients with psychological disorders could be vital in this topic of research. Healthcare providers would be interviewed on if and how they evaluate the mental health of their patients. Although doing so may limit the research due to location and surgeon availability, receiving information from the surgeons who frequent these patients could be progressive.

Throughout this literature review, screening tools like Preoperative Facial Cosmetic Surgery Evaluation (PreFACE) and Acceptance of Cosmetic Surgery Scale (ACSS) were found. Through a search outside of the databases used (e.g. Google), the Plastic and Cosmetic Surgery Screening (PACSS) tool was also found. The creators of PACSS allow surgeons to access an electronic screening tool to use on their patients. There is no further readily available evidence on if this tool is used or if it is effective. The PACSS website does state that 2,561 patients have been screened using this tool. However, out of millions of patients undergoing surgery in the U.S. this is not a significant amount. Future research should compare tools like these to determine the responsiveness of the population to such tools and how well they are with identifying BDD and low self-esteem.

Researching how cosmetic surgery affects the mental health of transgender people can also be helping in expanding this research. During the search of the literature, no articles



regarding the mental health of transgender people and cosmetic surgery were produced. The cosmetic and medical industry have made huge strides in involving and accommodating the transgender community. Within the past few decades, cosmetic surgeons have found themselves performing gender-affirming surgery (feminizing and masculinizing surgery), on an increased number of people who identify as transgender. Some surgeons have dedicated their practice to aligning these patients' bodies with their psyche. There is controversy surrounding the use of the term transgenderism to refer to the discontent transgender people feel within their bodies (Johnson, 2010). This term insinuates that transgender people have a disorder, although, in the broad view, distress produced from a biological, physical feature, can be viewed as a form of body dysmorphia. However, it is more specifically defined as gender dysphoria. This term is not commonly accepted either due to the fact that not every transgender person experience distress due to their physicality (Johnson, 2010). Nevertheless, there are some who do, and they may turn to cosmetic surgery to alleviate this stress. Transgender people who choose to undergo surgery to enhance either their femininity or masculinity may experience the same symptoms as those diagnosed with BDD and have the same negative relationship with cosmetic surgery.

There seems to be a surprisingly disproportionate amount of information regarding psychological issues and cosmetic surgery compared to the surge of cosmetic procedures performed in the U.S. This review hopes to shed light on the impact cosmetic surgery can have on patients with psychological disorders like BDD and low self-esteem and the importance of rectifying this issue as much as possible. Many studies have been conducted addressing cosmetic surgery performed on mentally disturbed patients, but scant amount of research seems to aim in resolving this matter. Implementing a mandatory screening for all patients considering cosmetic surgery could greatly aid in diagnosing patients thus treating them correctly and allowing them to live more prosperous lives.

### Sample Questions

- Have you ever been fixated on or concerned about a part of your body?
- Have you ever avoided a social gathering due to not being satisfied with your appearance?
- Do you find yourself checking your appearance in a mirror or reflections often?
- How often do you take photos of yourself?
- Have you ever been diagnosed with a psychiatric/mental disorder?  
If so, what was the diagnosis?
- How you ever experienced suicide thoughts or ideations?
- How you ever attempted suicide?
- Have you ever perceived a part of your body to be abnormal or unattractive?  
If so, what part of your body?
- Have you ever been bullied or abused for your outward appearance?  
If so, for what physical attribute?
- How satisfied are you with your overall appearance?
  - Satisfied, moderately, not satisfied
- How many hours do you spend on social media sites?
  - 0 – 2 hours, 2 – 5 hours, 5 + hours
- Rate your overall level of self-concept/self-esteem on a scale of 0 – 10.
- Have you ever considered undergoing cosmetic surgery?
- Have you ever received cosmetic surgery?
  - If so, when (date), where (country), and what was the procedure?

**\*Table 6**

## REFERENCES

- (n.d.). (2017). ISAPS Survey International on Aesthetic/Cosmetic Procedures Performed In 2017. Retrieved from [https://www.isaps.org/wp-content/uploads/2019/03/ISAPS\\_2017\\_International\\_Study\\_Cosmetic\\_Procedures\\_NEW.pdf](https://www.isaps.org/wp-content/uploads/2019/03/ISAPS_2017_International_Study_Cosmetic_Procedures_NEW.pdf)
- Atiyeh, B.S., Rubeiz, M.T., & Hayek, S.N. (2008). Aesthetic/Cosmetic surgery and ethical challenges. *Aesthetic Plastic Surgery*, 32, 829.
- Bedine, M. S. (2003). Obesity surgery: A gastroenterologist's perspective. *Journal of Laparoendoscopic and Advanced Surgical Techniques*, 13(4), 285-289.
- Castle, D. J., Honigman, R. J., & Phillips, K. A. (2002). Does cosmetic surgery improve psychosocial wellbeing? *The Medical journal of Australia*, 176(12), 601–604.
- Creighton, S. (2014). AGAINST: Labiaplasty is an unnecessary cosmetic procedure. *BJOG: Int J Obstet Gy*, 121: 768-768. doi:10.1111/1471-0528.12620
- Gorbis E, & Kholodenko Y. (2005). Plastic surgery addiction in patients with body dysmorphic disorder. *Psychiatric Times*, 22(10), 79–81.
- Grant, J. E., Suck won Kim, W. K., & Crow, S. J. (2001). Prevalence and clinical features of body dysmorphic disorder in adolescent and adult psychiatric inpatients. *Journal of Clinical Psychiatry*, 62(7), 517-522.
- Horton, K. (2017, April 25). Stats show labiaplasty is becoming more popular. *The American Society of Plastic Surgeons*. <https://www.plasticsurgery.org/news/blog/stats-show-labiaplasty-is-becoming-more-popular>
- Ip, K., & Ho, W. Y. (2019). Healing childhood psychological trauma and improving body image through cosmetic surgery. *Frontiers in psychiatry*, 10, 540.

- Johnson, J. (2010). Recognition of the nonhuman: The psychological minefield of transgender inequality in the law. *Law & Psychology Review*, 34, 153–164.
- Lee, H.-R., Lee, H., Choi, J., Kim, J., & Han, H. (2014). Social media use, body image, and psychological well-being: A cross-cultural comparison of Korea and the United States. *Journal of Health Communication*, 19(12), 1343–1358.  
<https://doi.org/10.1080/10810730.2014.904022>
- Loehle, B., McKie, R. M., Levere, D., Bossio, J. A., Humphreys, T. P., & Travers, R. (2017). Predictors of men’s genital self-image across sexual orientation and geographic region. *Canadian Journal of Human Sexuality*, 26(2), 130–141.  
<https://doi.org/10.3138/cjhs.262.a7>
- Mark, J.J. (2018). *Sushruta*. Ancient History Encyclopedia. <https://www.ancient.eu/sushruta/>
- Markey, C.N., & Markey, P.M. (2009). Correlates of young women’s interest in obtaining cosmetic surgery. *Sex Roles*, 61(3), 158-166.
- Marwick, A. (2010). There’s a beautiful girl under all of this: Performing hegemonic femininity in reality television. *Critical Studies in Media Communication*, 27(3), 251.
- Newell, B. (2011). Informed consent for plastic surgery. *Journal of Legal Medicine*, 32(3), 315–335.
- Neziroglu, F., Roberts, M., & Yaryura-Tobias, J. A. (2004). A behavioral model for body dysmorphic disorder. *Psychiatric Annals*, 34(12), 915.
- Pérez-San-Gregorio, M. Á., Martín-Rodríguez, A., Arias-Moreno, M. J., Rincón-Fernández, M. E., & Ortega-Martínez, J. I. (2016). Self-reported psychological development in cosmetic breast surgery patients. *Medicine*, 95(49), e5620.  
<https://doi.org/10.1097/MD.0000000000005620>
- Ruel, M. (2007). “Vanity Tax.” *Journal of Legal Medicine*, 28(1), 119.

- Sansone, R. A., & Sansone, L. A. (2007). Cosmetic surgery and psychological issues. *Psychiatry (Edgmont (Pa. : Township))*, 4(12), 65–68.
- Scott, K. (2009). Cheating Darwin: The genetic and ethical implications of vanity and cosmetic plastic surgery. *Journal of Evolution and Technology*, 20 (2), 1–8.
- Spriggs, M. and Gillam, L. (2016). Body dysmorphic disorder: contraindication or ethical justification for female genital cosmetic surgery in adolescents. *Bioethics*, 30: 706-713.
- Willis, R.N., Wong, C.S., & Patel, B.C. (2020). Labiaplasty labia minora reduction. *StatPearls*.  
<https://www.ncbi.nlm.nih.gov/books/NBK448086/>
- Witte, T., Didie, E.R., Menard, W., & Phillips, K. (2012). The relationship between body dysmorphic disorder behaviors and the acquired capability for suicide. *Suicide and Life-Threatening Behavior*, 42, 318-331.
- Zielinski RE, Kane-Low L, Miller JM, Sampsel C, Zielinski, R. E., Kane-Low, L., Miller, J. M., & Sampsel, C. (2012). *Journal of Sex & Marital Therapy*, 38(4), 309–324.  
<https://doi.org/10.1080/0092623X.2011.569639>